FIRSTLINE SCHOOLS
EDUCATION FOR LIFE

DISTANCE LEARNING FOR FIRSTLINE STUDENTS

PACKET #3

Start Date: Tuesday, April 14, 2020

GRADE:

K 1 2 3 4 5 6 7 (8)

CONTENT INCLUDED:

(ELA) MATH SCIENCE SOCIAL STUDIES

Printer Warning:
This packet is lengthy. Determine whether you want to print both sections, or only print Section 1 or 2.

i-Ready®

Grade 8 Reading

Student At-Home Activity Packet 1

This At-Home Activity Packet includes two parts, Section 1 and Section 2, each with approximately 10 lessons in it. We recommend that your student complete one lesson each day.

Most lessons can be completed independently. However, there are some lessons that would benefit from the support of an adult. If there is not an adult available to help, don't worry! Just skip those lessons.

Encourage your student to do the best they can with this content. The most important thing is that they continue to work on their reading!

Flip to see the Grade 8 Reading activities included in this packet!

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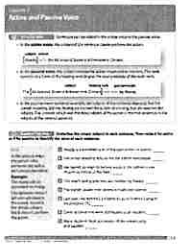
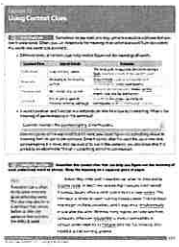
Grade 8 Reading Activities in Section 1

Lesson	Resource	Instructions	Page(s)
1	Grade 8 Ready Language Handbook Lesson 7 	• Read the Introduction. • Complete Guided Practice. • Complete the Independent Practice.	**9–10**
2	Grade 8 Ready Language Handbook Lesson 13 	• Read the Introduction. • Complete Guided Practice. • Complete the Independent Practice.	**11–12**

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Grade 8 Reading Activities in Section 1 (Cont.)

Lesson	Resource	Instructions	Page(s)
3	Grade 8, Ready Reading Lesson 8	•Read the Introduction. •Complete Modeled and Guided Instruction: "Holden and Pops."	**13–15**
4	Grade 8, Ready Reading Lesson 8	• Complete Guided Practice: "One Word of Advice."	**16–17**
5	Grade 8, Ready Reading Lesson 8	• Complete Independent Practice: "from 'The Canoe Breaker.'"	**18–20**

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Grade 8 Reading Activities in Section 1 (Cont.)

Lesson	Resource	Instructions	Page(s)
6	Grade 8 Ready Assessment Practice	• Read "The Battle Picnic." • Complete questions 6–11.	**21–24**
7	Grade 8 Ready Assessment Practice	• Read "The Gift of the Flute." • Complete questions 6–11.	**25–28**
8	Grade 8 Ready Assessment Practice	• Read "Article 1" and "Article 2." • Complete questions 35–37.	**29–30**
9	Tools for Instruction	• **Parent/Guardian**: Read the instructions and guide the student through the activity. Use this with a text the student read in a previous lesson.	**31–33**

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Grade 8 Reading Activities in Section 2

Lesson	Resource	Instructions	Page(s)
1	Grade 8 Ready Language Handbook Lesson 10	• Read the Introduction. • Complete Guided Practice. • Complete Independent Practice.	**34–35**
2	Grade 8 Ready Language Handbook Lesson 14	• Read the Introduction. • Complete Guided Practice. • Complete Independent Practice.	**36–37**

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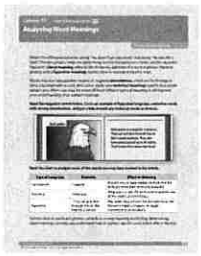
Grade 8 Reading Activities in Section 2 (Cont.)

Lesson	Resource	Instructions	Page(s)
3	Grade 8 Ready Language Handbook Lesson 19	• Read the Introduction. • Complete Guided Practice. • Complete Independent Practice.	**38–39**
4	Grade 8, Ready Reading Lesson 10 	• Read the Introduction. • Complete Modeled and Guided Instruction: "The Mollusk Family."	**40–42**
5	Grade 8, Ready Reading Lesson 10	• Complete Guided Practice: "Armadillo Attributes."	**43–44**

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Grade 8 Reading Activities in Section 2 (Cont.)

Lesson	Resource	Instructions	Page(s)
6	Grade 8, Ready Reading Lesson 10 	• Complete Independent Practice: "Animal Regeneration."	**45–47**
7	Grade 8 Ready Assessment Practice 	• Read "The Glowing Beagle." • Complete questions 1–5.	**48–51**
8	Grade 8 Ready Assessment Practice 	• Read "Cars Without Gasoline Are Here." • Complete questions 1–5.	**52–55**
9	Grade 8 Ready Assessment Practice 	• Read "Code Breaking and Computers in Bletchley Park." • Complete questions 22–26.	**56–60**

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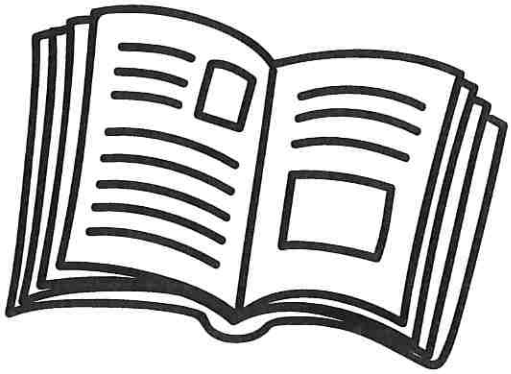
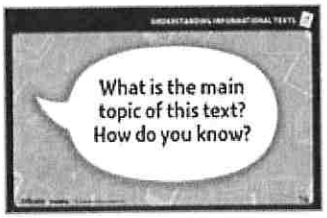
Independent Reading!



See pages 61 and 62 of this packet.



Use the questions/ prompts on the Discourse Card resource to start a conversation about something the student has read. You may talk about a text the student read in one of the lessons above, or anything else the student is reading.

Encourage daily reading. And remember, reading isn't just about the books on the shelves—it's about anything around you with letters! Turn on the closed captioning feature on your TV or read catalogs that come in the mail. The backs of cereal boxes work, too, as do directions to board games!

Running out of stuff to read? **Grab some sticky notes, and label household objects, or make up new, silly names for things!** Communicating with sticky notes, instead of talking, is fun, too—start with a half hour and see if you can go all afternoon. Reading is everywhere!

Don't worry about right/wrong answers when you talk about text—the important thing is that you and your student share a reading experience and have fun!

Here are some websites that offer fun, free, high-quality material for kids:

www.starfall.com

www.storyplace.org

www.uniteforliteracy.com

www.storynory.com

www.freekidsbooks.org

en.childrenslibrary.org

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Lesson 7

Active and Passive Voice

Introduction Sentences can be stated in the active voice or the passive voice.

- In the **active voice**, the subject of the sentence clearly *performs* the action.

subject **action**
[Maddy] won the All-Around Student Achievement Contest.

- In the **passive voice**, the subject *receives* the action expressed by the verb. The verb consists of a form of the helping verb *be* plus the past participle of the main verb.

subject **helping verb** **past participle**
The [All-Around Student Achievement Contest] was won by Maddy.

- In the passive-voice sentence example, the subject of the sentence changed, but the overall meaning did not. Maddy performed the action of winning, but she was not the subject. The contest, which was the direct object of the action in the first sentence, is the subject of the second sentence.

Guided Practice **Underline the simple subject in each sentence. Then write *A* for *active* or *P* for *passive* to identify the voice of each sentence.**

Hint

In the passive voice, the person who performs the action isn't always identified.

Example:
The award will be presented on Friday.

The sentence doesn't tell *who* will present the award. *Award* is the simple subject, but it doesn't perform the action.

1. Maddy is considered one of the best writers in school. _____
2. She writes amazing articles for the school newspaper. _____
3. Her report on ways to reduce waste in the cafeteria was chosen as Article of the Year. _____
4. This year's spring play was also written by Maddy. _____
5. The eighth grader even excels in math and science. _____
6. Last year, she received a chance to go to Science Camp in Washington, DC. _____
7. Camp applications were distributed to all students. _____
8. Many students took advantage of the opportunity and applied. _____

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Independent Practice

For numbers 1 and 2, which is the best way to change the voice in each sentence from active to passive without changing the meaning?

1 The committee chose three students to attend Science Camp.

A Science Camp was chosen for three students to attend.

B Three students were chosen by the committee to attend Science Camp.

C Science Camp was chosen for three students by the committee.

D Three students who attended Science Camp were chosen by the committee.

2 The Science Camp sent the students a letter of acceptance.

A The Science Camp was sent a letter of acceptance for the students.

B A letter of acceptance to the students was received from the Science Camp.

C A letter of acceptance was received by the Science Camp for the students.

D The students were sent a letter of acceptance by the Science Camp.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/4

For numbers 3 and 4, which is the best way to change the voice in each sentence from passive to active without changing the meaning?

3 Music Camp was applied to by more students than to Drama Camp this year.

A More students applied to Music Camp than to Drama Camp this year.

B More students will apply to Music Camp than to Drama Camp this year.

C More students applied to Drama Camp than to Music Camp this year.

D Music Camp had more students apply to it than to Drama Camp this year.

4 Maddy, a smart and friendly girl, is liked by everyone.

A Maddy, a smart and friendly girl, will be liked by everyone.

B Maddy, who is a smart and friendly girl, likes everyone.

C Everyone likes Maddy, a smart and friendly girl.

D Everyone is liked by Maddy, a smart and friendly girl.

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Lesson 13

Using Context Clues

Introduction Sometimes as you read, you may come to a word or a phrase that you don't understand. Often, you can determine the meaning of an unfamiliar word from its context, the words and sentences around it.

- Different kinds of context clues help readers figure out the meanings of words.

Context Clue	Signal Words	Example
Definition	*is, or, which is, means*	The land pulls in opposite directions along a fault, which is a crack in the earth's crust.
Example	*for example, for instance, such as*	Geoscientists, such as geologists and seismologists, study earthquakes.
Comparison	*like, similar, also, as well*	Like a large earthquake, smaller seismic events may also be destructive.
Contrast	*but, or, yet, in spite of, however, whereas, although*	In spite of the chaos caused by an earthquake, order is eventually restored.

- A word's position and function in a sentence can also be a clue to its meaning. What is the meaning of *geometrogomy* in this sentence?

> Scientists measure the geometrogomy of earthquakes.

Geometrogomy isn't a real word! But if it were, you could figure out something about its meaning from its use in the sentence. Since it comes after the word *the*, you know that *geometrogomy* is a noun. And because of its use in the sentence, you also know that it is probably an observable "thing"—something scientists can measure.

Guided Practice **Underline the context clue that can help you figure out the meaning of each underlined word or phrase. Write the meaning on a separate piece of paper.**

Hint

A context clue is often in the same sentence as an unfamiliar word. The clue may also be in a sentence that comes before or after the sentence that includes the difficult word.

Before they strike land, tornadoes can often be detected by Doppler radar, an electronic system that measures wind speeds. A tornado begins when a wind system forms a huge vortex. This formation is similar to water swirling toward a drain. This condition may trigger multiple tornadoes, which may occur simultaneously or one after the other. Whereas many regions are fairly safe from tornadoes, others are susceptible to them. Communities in tornado-prone areas try to mitigate their risk. For instance, they establish public warning systems.

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Independent Practice

For numbers 1–4, use context clues to answer the questions about each paragraph.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/4

The wind velocity, or speed of motion, in a violent tornado can reach 300 miles per hour. The effects of such a storm can be catastrophic, killing people and destroying wildlife. Within as little as a few seconds, a tornado can devastate a town in its path.

1 What does the word velocity mean in the paragraph?

A position

B change in direction

C swiftness

D size of something

2 What does the word catastrophic mean in the paragraph?

A dynamic

B productive

C tragic

D plentiful

When weather forecasters predict a tornado, it is advisable for people threatened by the storm to find safe shelter. If the storm destroys property, emergency workers will do their best to accommodate storm victims. For example, they will set up shelters for those who lost homes.

3 What does the word accommodate mean?

A to provide with something needed

B to soothe and comfort

C to give necessary information

D to investigate in order to report on

4 What words from the paragraph helped you figure out the meaning of accommodate?

A "When weather forecasters predict a tornado"

B "people threatened by the storm"

C "emergency workers will do their best"

D "set up shelters for those who lost homes"

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Lesson 8 Part 1: Introduction

Determining Theme

Theme: *Teamwork*

You may read fiction for pleasure or entertainment. But did you know that most stories also provide lessons about life? These lessons are expressed through the **themes**, or messages, at the heart of what the author writes. Even your childhood stories have themes. For example, the story "Pinocchio" may have taught you the important lesson about honesty.

To identify a theme, connect ideas conveyed through the story's setting, plot, and characters.

Study the image and caption below. Think about the message being conveyed.

A blind runner and his guide approach the finish line during a paralympic event in Malaysia.

Now, suppose the people in the picture are characters in a story. Consider what they are doing. Circle any details in the picture and caption that suggest a message or life lesson.

Read the chart below to see how analyzing details can help you determine a theme.

Character Details	Setting Details	Action Details	Theme
• one sighted runner, acting as a guide • one blind runner who wants to be in a race	a track and field event for people with disabilities	the two runners are approaching the finish line	No matter what obstacles they face, people can accomplish amazing things through teamwork.

Whether you read for pleasure, entertainment, or a school assignment, you can learn valuable lessons from stories. Thinking carefully about a story's characters, setting, and plot—and how they work together—will help you figure out, or infer, the story's theme.

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Read the beginning of a story about a boy named Holden and his grandfather.

Genre: **Realistic Fiction**

Holden and Pops *by Evan Gerlachen*

"When you're at your grandfather's after school, be sure to do something other than sit by yourself playing video games, Holden."

"I know, Mom, but what else is there to do?" whined Holden, washing cereal bowls.

"Have you ever tried to show him one of your games? At least you'd be doing something together," Mom suggested.

"Oh, Pops wouldn't be interested," Holden shrugged as they headed out to the car. "Plus he'd never catch on—you know how he is about big, scary technology."

As Holden got out of the car, Mom tried once more. "You know, Pops might surprise you. Keep your options open. You might even ask him about 'big, scary technology' some time." Holden puzzled over her words on the way into school.

(continued)

Explore how to answer this question: *"What do the details in this part of the story suggest about how people sometimes judge others?"*

In most stories, authors do not state a theme directly. To figure out an author's message, you need to look for key details and see how they develop over the course of the text.

Identify key details about each character's attitudes and opinions. Then complete the chart below.

Character	Comments About Pops	Attitude Toward Pops
Holden	Says Pops wouldn't be interested in games and thinks technology is scary	
Mom	Suggests that Pops might be interested in video games and know something about technology	Seems to feel Pops is more interesting than Holden thinks

With a partner, read aloud and act out the story's beginning paragraphs. Then take turns explaining a theme, or lesson, that the author may be starting to develop in this part of the story.

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Continue reading about Holden and Pops. Use the Close Reading and the Hint to help you answer the question.

Close Reading

On page 70, Holden doesn't want to spend time with Pops. On this page, **circle** words that tell how Holden's feelings change. Noticing how a character changes can help you understand a story's theme.

(continued from page 70)

That afternoon, Holden sat hunkered over his video game controller making vintage airplanes swoop across the screen.

"Whatcha doin', Son?" Pops asked.

"Just a game," Holden answered distractedly. Then, remembering Mom's advice, he made himself ask, "Wanna see?"

Pops settled next to Holden and immediately exclaimed, "Say, is that plane a Tomahawk? You know, she can go up to 20,000 feet to evade that enemy fighter."

Holden pivoted to gape in shock. Pops shrugged and said, "Didn't I ever tell you about the Tomahawk I flew in '41?"

Hint

Which choice helps explain why Holden's attitude toward Pops changes?

Circle the correct answer.

Which statement best expresses the theme of the story?

A Strong family bonds can develop only through shared interests.

B People from different generations have little in common.

C Children should always listen to advice from their parents.

D Assuming things about people may stop us from really knowing them.

Show Your Thinking

Look at the answer that you chose. Explain how specific text details helped you choose that answer.

With a partner, list and discuss additional life lessons that this story teaches. Use text details about characters, setting, and plot to support your discussion.

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Read the story. Use the Study Buddy and the Close Reading to guide your reading.

Being aware of a character's feelings and how they change may help me figure out the theme of this story. So I'm going to underline words at the beginning and end of the story that reveal Angie's feelings.

Close Reading

Like many characters, Angie changes from the beginning to the end of the story. **Circle** text at the end of the story that reveals how she is different.

Look at the text you've underlined and circled. **Draw an *X*** next to the point in the story where it's clear that Angie has changed.

Genre: **Realistic Fiction**

One Word of Advice

by Charles Mills

1 Angie was worn out preparing for the school career fair, which was her brainchild and her responsibility. She'd spent hours researching companies, contacting executives, and making sure the school had the technological capability to handle state-of-the-art presentations. With three days to go, she whisked into the media center and greeted her friend with, "Karim, I've been multitasking like crazy, and I still can't imagine how I'll get everything done."

2 Karim leaned over and said, "Delegate. Plenty of friends have offered their help, and you need to take them up on it."

3 Angie winced and clutched her clipboard more tightly. Deep down she was certain she was the only person who could get everything right. But Karim grabbed Angie's clipboard from her and flipped through the pages. "So. What seems most overwhelming to you?"

4 Angie groaned and sighed. Then she responded, "I'm not really sure how to evaluate the server's capabilities or the sound system's amplitude, and I don't know when I'm going to put together the introductory video."

5 Karim nodded, pulled a few pages out of the stack, and penciled names on each one. Then he handed them to Angie, and said, "I know people. Now delegate."

6 On the day of the fair, Angie looked as if she were having the time of her life when Karim saw her.

7 "Oh, Karim, did you see Danny's introductory video? Wasn't it fantastic? I could never have come up with that myself," she gushed. Angie realized that she needed to give credit where credit was due.

8 "From now on, call me Angie the Delegator; the best thing I ever did was hand that clipboard to you!"

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Hints

Which sentence matches the author's description of Angie's actions and attitudes?

Which sentence describes Angie's attitude at the end of the story?

Which details best support the important theme of the story?

Use the Hints on this page to help you answer the questions.

1 At the beginning of the story, what is Angie's attitude?

A She is frustrated by the lack of help she gets from her friends.

B She trusts only Karim for reliable help and advice.

C She thinks she's the only one competent to organize the event.

D She is glad to be part of a team working on a project.

2 Which of the following sentences best describes an important theme about responsibility as described in "One Word of Advice"?

A A strong leader bravely faces all challenges.

B Good leaders trust others to do good work.

C Seeking help is the last resort of a real leader.

D People would rather give advice than lend a hand.

3 Select two pieces of evidence from "One Word of Advice" that support the correct answer to question 2. Check the boxes of your two choices.

- ☐ "which was her brain child and her responsibility"
- ☐ "'I've been multitasking like crazy'"
- ☐ "the only person who could get everything right"
- ☐ "'I could never have come up with that myself'"
- ☐ "'how to evaluate the server's capability or the sound system's amplitude'"
- ☐ "'the best thing I ever did was hand that clipboard to you'"

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Read the story. Then answer the questions that follow.

from "The Canoe Breaker"

by Margaret Bemister

1 Once in a certain tribe there was a young man who had no name. For it was the law in that tribe that every youth had to do some deed that would give to him his name. This young man had tried in many ways to do something that would make the chief tell him that he was a great warrior. Several times he had tried to kill a bear, but had failed. He had gone forth in battle, hoping to kill some powerful enemy, but no one had fallen under his tomahawk. He had gone on long hunting trips, hoping to bring home the skin of some wild animal, but had always returned empty-handed. So his brave, young heart felt very sad, for the young men of the tribe laughed at him for not having won a name for himself.

2 One summer day, the tribe left their camp on the lake shore and went back among the hills on a hunting trip. After they had gone some distance, the young man left the others and wandered off by himself, hoping that this time he would kill some animal, and so be no longer scorned by his companions. He tramped for many hours through the forest and over the hills, without catching sight of anything. At length, he climbed one hill which was higher than the others, and from here he could see the small creek which flowed through the hills down to the lake. As he was looking at it, he thought he saw some dark objects along the shore of the creek. They seemed about the size of canoes. He scanned the hills anxiously, and at length could see a band of Indians making their way along the trail made by the hunters in the morning.

3 At once the young man knew there was great danger ahead, for these Indians, the Shuswaps, were the enemies of his tribe and now were following their trail, and when they found them, they would kill them. Quickly the young man made his way down the hill, and through the forest to the spot where the hunters had camped for their evening meal. Running up to them, he cried, "Return at once to your lodges. Our enemies are now on our trail. They are in the forest on the other side of this hill. I shall return and delay them while you reach your lodges in safety."

4 Then, without waiting for a reply, he turned and ran back in the direction from which he had come. By short cuts through the hills, he made his way to the creek and found, as he expected, that the Indians had left their canoes tied at its mouth. Seizing his tomahawk, he began to break the canoes, and soon had a hole made in all of them except one. Leaving the creek, he mounted the hill and from there could see the Shuswaps. He began to wave his arms and call wildly to attract their chief. At last they noticed him and began to make their way towards him. The young man was delighted, for now he knew that his tribe could escape in safety, while their enemies were returning towards the creek. Soon the Shuswaps neared the top of the hill, and he knew he must think of some plan to delay them here. Suddenly he dropped to the ground and lay there as though insensible. With a run the Shuswaps gained the summit and surrounded him. He lay face downwards with his arms stretched out. They turned him over on his back and peered into his face. Not a muscle moved; not even his eyelids quivered. Then the chief bent over him and felt his heart. "He [is not dead], he said, "but the Great Spirit has called his spirit to go on a long journey. . . . Let us place his body under the pine-trees, there to await the return of the spirit."

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5 The Indians lifted the body of the young man, carried it to a clump of pine-trees and laid it down. Then they walked some yards away and held a council.

6 As soon as they were a safe distance away, the young man jumped up. He ran down the hill, and reaching the canoes, jumped into the unbroken one and began to paddle down the creek.

7 The Shuswaps turned and saw him. With fierce cries, they began to race down the hillside, and when they arrived at the spot where they had left their canoes, and saw what had happened, they filled the air with their angry yells. The young man was now out on the lake in the canoe, and they were unable to follow him, as all the other canoes were wrecked. They ran angrily along the lake shore, thinking he would land on their side, but instead, he made his way across the lake to the other side.

8 When the young man reached the shore, he again seized his tomahawk, and this time broke the canoe with which he had saved his life. The defeated Shuswaps, standing on the shore, saw him do this, and again they filled the air with their angry yells. There was nothing for them to do but to return to their camp, while the young man made his way along the lake shore to the village of his tribe. When he reached there, he found that he was no longer a man without a name. His brave deed had won for him the name of Kasamoldin—the canoe breaker—and ever afterwards in his tribe, and to others, he was known by this name.

Answer the questions. Mark your answers to questions 1–3 on the Answer Form to the right.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/3

1 A central theme of this story is that great deeds arise from seeing how to best use our unique strengths and abilities. Which sentence from the story **best** illustrates this theme?

A "He had gone forth in battle, hoping to kill some powerful enemy, but no one had fallen under his tomahawk."

B "Seizing his tomahawk, he began to break the canoes, and soon had a hole made in all of them except one."

C "The Indians lifted the body of the young man, carried it to a clump of pine-trees and laid it down."

D "There was nothing for them to do but to return to their camp, while the young man made his way along the lake shore to the village of his tribe."

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2 In what way does the plot contribute to the theme?

A The young man must decide on a name that reveals his special skills.

B The chief of the Shuswaps appreciates the young man for what he is.

C The young man doesn't give up until he proves he is a great warrior.

D The young man finally achieves success in a nontraditional way.

3 Which of the young man's character traits **best** helps to convey the theme?

A the courage he shows in a dangerous situation

B his physical strength in breaking the canoes

C his determination to earn a name for himself

D his fear when confronted by the Shuswaps

4 Explain how the author develops the theme over the course of "The Canoe Breaker." In your answer, include at least **two** details from different parts of the story.

✓ **Self Check** ***Go back and see what you can check off on the Self Check on page 52.***

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Read the passage. Then answer the questions that follow.

The Battle Picnic

by Jonas Sellers

1 [Scene: a well-furnished drawing room in a fancy Washington D.C. home, July 16, 1861.]

2 MANFRED [Excitedly.] Well, the war with the Confederates has finally begun! We are determined to march to Richmond, and we will certainly overcome those rebels before the month has ended. Our victory will be swift, and the rebels will learn that they should not have unleashed Pandora's box with their traitorous ways.

3 JENNY [Distressed.] I believed that the war had already started in April, when the Confederate soldiers fired boldly on Fort Sumter. Surely that was an easy victory for them, and thankfully no one was killed on either side. But with all the volunteers President Lincoln gathered, why would the Confederate forces try to attack us now? I have heard officials say that our display of strength would frighten the Confederates into submission. [Pausing briefly in thought.] I am anxious about beginning a war; surely, many people will be harmed by such as serious act.

4 MANFRED [With a knowing smile.] I believe, sister, that you are less worried about war in general than about the safety of your own dear brother. Do not waste a moment worrying on my account; we will reward those Southern soldiers with a hearty beating, bring the black sheep back into the Union, and be at restful, even boring, peace again before you notice I am gone. By fighting, we will show our strength and our well-deserved confidence because we are battling on the proper side.

5 JENNY When must you leave?

6 MANFRED I came to say farewell, dear sister, as we march as soon as we are gathered. [Manfred walks over to the window and looks out.] Look at all the fine and fancy carriages filled with townspeople, determined to travel the road with our troops. What a stirring show of public support!

7 JENNY [Joining him at the window.] What can they be thinking of, to so merrily follow troops into battle?

8 MANFRED They are thinking that the battle will offer rewarding entertainment. They are thinking they will see our troops easily march to victory, just as I am thinking.

9 [Scene: July 21, 1861, along the Bull Run River, near Manassas Junction; there is a mass of confusion, with sightseers grabbing baskets and jumping into carriages; soldiers running toward the road heading back to Washington, and many soldiers dead and dying on the battlefield.]

10 JENNY [Totally distraught, staring toward the field.] Father, where is Manfred? Can you see Manfred anywhere on the battlefield?

11 MR. BENJAMIN [Demandingly.] Manfred will have to take care of himself. Sit down and get settled now, quickly as you can. The road is already filled to overflowing with panicky people.

12 JENNY Father, this is the most horrifying experience of my life. Why did we come? Why did so many people come, to picnic at a battle?

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13 MR. BENJAMIN [Squarely facing Jenny.] Look at the growing hoards of Confederate soldiers, advancing so quickly. Our troops are fleeing off the field like bats from hell, hurrying back toward Washington, dropping their goods and guns so that they can run even faster.

14 JENNY I do not think they are cowards, Father. Who would stand at such as show of force?

15 MR. BENJAMIN We must go. We can talk later. Before long, the Confederates will be chasing us back to Washington, and who could imagine what might happen if they were to apprehend us?

16 JENNY I knew we should not have come!

17 MR. BENJAMIN Yes, I see that now.

18 JENNY [Solemnly.] I hope that Manfred makes it home safely. I hope . . . but I am not at all certain.

---

6 This question has two parts. First, answer part A. Then, answer part B.

Part A

What is one central theme of "The Battle Picnic"?

A It is unrealistic to believe that wars are not deadly.

B Believing you can win is more important than actually winning.

C One's attitude toward an event will affect the outcome of that event.

D It is important to stay calm during times of crisis.

Part B

Select **three** pieces of evidence that support the answer to part A.

A "I believed that the war had already started in April, when the Confederate soldiers fired boldly on Fort Sumter."

B "I came to say farewell, dear sister, as we march as soon as we are gathered."

C "What can they be thinking of, to so merrily follow troops into battle?"

D "Manfred will have to take care of himself. Sit down and get settled now, quickly as you can. "

E " . . . there is a mass of confusion, with sightseers grabbing baskets and jumping into carriages; soldiers running toward the road heading back to Washington, . . . "

F "Father, this is the most horrifying experience of my life. Why did we come? Why did so many people come, to picnic at a battle?"

G "We must go. We can talk later."

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7 Which details from "The Battle Picnic" **best** support the inference that the charcters do not fully understand their situation? Select all that apply.

A Almost everyone is excited about a picnic on the battlefield.

B The Union soldiers are preparing to march on the Confederate capital of Richmond.

C Manfred says he and the other Union soldiers will overcome the Confederates before the month has ended.

D People decide to leave the battle region as quickly as possible once the Confederates take control.

E The people fleeing the battle are afraid they will be attacked by the advancing Confederate soldiers.

8 Read these sentences from "The Battle Picnic."

> Do not waste a moment worrying on my account; we will reward those Southern soldiers with a hearty beating, bring the black sheep back into the Union, and be at restful, even boring, peace again before you notice I am gone. By fighting, we will show our strength and our well-deserved confidence because we are battling on the proper side.

What do you learn about Manfred's character by what he says?

A He believes battle is more exciting than daily life.

B He cares for his sister so much that he does not want to frighten her.

C He does not want to fight but he feels he must do so for his country.

D He does not care that his sister is concerned for his safety.

9 When Manfred states in "The Battle Picnic" that he is battling on the "proper side," what does the word "proper" suggest?

A Manfred is certain that his side will win.

B Manfred believes he is the only person able to behave in a correct manner.

C Manfred views the war as necessary.

D Manfred believes his side is supported by the forces of justice.

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10 What is the effect of Manfred's comment in "The Battle Picnic" that he will be back before Jenny notices he is gone?

A It creates a break in the tension of the passage because the audience knows that Manfred is using humor in his response to Jenny.

B It creates a sense of dread since the audience knows that Manfred's prediction of a quick and easy victory is incorrect.

C It causes the audience to share Jenny's sense of fear because the audience can tell Manfred is lying on purpose.

D It causes the audience to share Jenny's anger because the audience knows that Jenny has begged Manfred not to go to war.

11 At the beginning of the play, Manfred says, "Our victory will be swift, and the rebels will learn that they should not have unleashed Pandora's box with their traitorous ways." Read this telling of the Greek myth "Pandora's Box."

Pandora's Box

Long ago, the god Zeus was angry with two brothers named Epimetheus and Prometheus. Zeus, who was the most powerful of all the gods, had a plan to get even. He ordered another god, Hephaestos, to make a very beautiful woman out of clay. This woman, Pandora, was sent to Earth by Zeus to marry Epimetheus. As a wedding gift, Zeus gave Pandora a box but made her promise never to open it.

Pandora was very curious by nature, and after resisting for as long as she could, she finally opened the box. Out flew all the horrors and evils of the world—hate, disease, misery, poverty, envy, and more—which Zeus had hidden away in the box. Frightened by all the evil rushing out, Pandora quickly closed the lid, not realizing that there was one thing still trapped inside. That thing was hope.

What does Manfred suggest through his reference to Pandora's box? Use details from both "The Battle Picnic" and "Pandora's Box" in your answer.

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Read the passage. Then answer the questions that follow.

The Gift of the Flute

a Brule Sioux legend
retold by Isabella Stroud

1 Long ago, in the land of the Sioux, there was a time before the People had flutes. They had drums made of wood and animal hide, and rattles made of gourd; but they had no flutes, for they had never seen or heard one.

2 One day, a young hunter left his village to follow the fresh tracks of an elk. He carried with him a new wooden bow and a deerskin quiver holding arrows carved of wood, with fine feathers and flint stone arrowheads as sharp as glass. Into the mountains he followed the tracks of the elk, who remained always just out of sight, so that the hunter never caught a glimpse of him. The elk's tracks led deep into a forest—where, as night fell, both they and the elk disappeared.

3 As darkness filled the woods, the moon did not rise, and the hunter was forced to admit that until daybreak he was lost. He ate a little of the wasna—dried meat, mixed with berries and fat—that he carried in his deerskin pouch, and followed the sound of water to a cold stream, from which he drank. Then he wrapped himself in his fur robe and tried to sleep. But the night sounds of the forest were ones of animals calling, and owls hooting, and trees groaning, and instead of sleeping the hunter lay wakefully listening. The more he listened, the more he heard, until he realized that he was hearing a sound he had never heard before. It was a sound of wind—though not only of wind—and it was strangely lovely, yet dry and mournful, like the whistle of a ghost. And it was somewhat frightening. With a shiver, the hunter gathered his robe closer about him and took a long, long time to fall asleep.

4 When the hunter awoke with the sun, he looked up and saw wagnuka, the redheaded woodpecker, on a branch of the tree under which he had slept. The bird flitted to another tree, and to another, each time looking back as if to say, "Follow!" Again the hunter heard the lovely, strange sound of the night before, and he took up his bow and quiver and followed the woodpecker from tree to tree through the forest, until the bird came to a great cedar. There it paused on one hollow, slender branch, and began hammering with its beak at holes it had pecked in the wood. When the wind entered the holes the woodpecker had carved, the branch whistled with the lovely, strange sound. "Kola—friend," said the hunter to the woodpecker, "permit me to take this branch back to my people!"

5 So the hunter returned to his village with no elk meat, but instead with the first flute: a gift of the tree, of the wind, of the bird, and of one who had learned how to listen.

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6 This question has two parts. First, answer part A. Then, answer part B.

Part A

Which of the following sentences **best** states a central theme of the story?

A Taking time to understand nature can lead to rewarding friendships with plants and animals.

B It is generally better to settle for something unimportant than to leave empty-handed.

C If people remain motivated and focused, they can accomplish any goal that they set out to.

D If people are not too focused on what they think they want, they can find unexpected surprises.

Part B

Which sentence from the story **best** supports the answer to part A?

A "Into the mountains he followed the tracks of the elk, who remained always just out of sight, so that the hunter never caught a glimpse of him."

B "The more he listened, the more he heard, until he realized that he was hearing a sound he had never heard before."

C "When the hunter awoke with the sun, he looked up and saw wagnuka, the redheaded woodpecker, on a branch of the tree under which he had slept."

D "Again the hunter heard the lovely, strange sound of the night before, and he took up his bow and quiver and followed the woodpecker from tree to tree through the forest, until the bird came to a great cedar."

E "So the hunter returned to his village with no elk meat, but instead with the first flute: a gift of the tree, of the wind, of the bird, and of one who had learned how to listen."

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7 Which sentence from the story **best** explains why the hunter has to stay in the woods overnight?

A "One day, a young hunter left his village to follow the fresh tracks of an elk."

B "Into the mountains he followed the tracks of the elk, who remained always just out of sight, so that the hunter never caught a glimpse of him."

C "As darkness filled the woods, the moon did not rise, and the hunter was forced to admit that until daybreak he was lost."

D "But the night sounds of the forest were ones of animals calling, and owls hooting, and trees groaning, and instead of sleeping the hunter lay wakefully listening."

8 Based on evidence from the text, which words below **best** describe the hunter? Select all that apply.

A curious

B cold-hearted

C respectful

D foolhardy

E careful

F cheerful

9 The author begins the fourth paragraph with the words "When the hunter awoke with the sun." How does this choice of words affect the tone of the story?

A The words further develop the frightening tone because the hunter is too scared to notice the sun.

B The words create a surprising tone because the reader expected the hunter to sleep into the afternoon.

C The words create a light tone to contrast with the mysterious tone of the previous paragraph.

D The words create a humorous tone because the hunter is now amused by his fear.

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10 Which of these **best** summarizes the plot of this story?

A A Sioux hunter follows an elk into a forest. The elk stays too far ahead of him, so the hunter loses sight of the elk. The hunter decides to stay the night in the forest and look for the elk in the morning. When he wakes up, the hunter cannot find the elk. The hunter walks home and finds a flute on the way. He plays it for his people.

B A Sioux hunter follows an elk into a forest, and then night falls. Realizing it's too dark to get home, he lies down and listens to the sounds of the forest. He hears an unusual sound, and in the morning, he follows it to find a woodpecker who makes a flute. With permission from the woodpecker, the hunter takes the gift to his people.

C A Sioux hunter foolishly follows an elk into the forest. He lies down to fall asleep but is kept awake all night by the sounds of animals and trees. He also hears an unusual sound which frightens him because he is a coward. When he wakes up in the morning, he sees a woodpecker putting holes in some trees. This gives him an idea to make a flute.

D A Sioux hunter follows an elk into a forest until it gets dark. Then, he stays the night in the forest but is too worried about finding the elk to get any sleep. He hears the wind, the trees, and the animals of the forest. All the noises are very loud and frighten the hunter. He is given a flute on the way home.

11 Below are three inferences about the passage.

Inference	The people of the story placed a high value on music.
	The hunter is in tune with the nature surrounding him.
	For the hunter, the flute's sound carries deep emotion.

Circle one of the inferences. Then cite two lines from the passage that help support this inference.

Line 1: _____

_____

_____

Line 2: _____

_____

_____

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A student is writing a report about Christopher Columbus. Read the following paragraphs from two of the student's sources. Then answer the questions that follow.

Article 1

Christopher Columbus was one of the most brilliant navigators in history. In 1492, he "sailed the ocean blue," heading west from Spain and into the unknown. On October 12, he sighted land in the Caribbean Sea. He didn't know it at the time, but he had discovered a part of the world Europeans did not know existed. He created a small settlement and then, on a second voyage in 1494, founded a Spanish colony. Four years later, he sailed south, exploring the northern coast of South America. Most importantly, Columbus found a reliable sailing route from Europe to America. He did what no man before him had done, and so changed the world forever.

Article 2

Christopher Columbus changed the world—for the worse. The consequence of his adventures was the deaths of millions of men, women, and children living in the Americas. How did this happen? Before Columbus, Europe and the Americas had long been separated. There had been no contact of any kind for hundreds of thousands of years. Then Columbus and his followers arrived. They brought with them new people, new plants and animals, and new diseases. This so-called Columbian Exchange led to 95 percent of all Native Americans living in Central and South America dying of disease. And those who did not die of disease were made slaves by men like Columbus. Columbus knew how to sail, but his skills brought only disaster.

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35 Which is the best summary of Article 1?

A Christopher Columbus was a great navigator both for discovering America and finding a sailing route from Europe.

B Christopher Columbus created a small settlement in the Caribbean and sailed around the northern coast of South America.

C Christopher Columbus changed the world by making several voyages and establishing a Spanish colony.

D Christopher Columbus was the first man to discover a way of sailing easily from Europe to the Americas.

E Christopher Columbus was important because, in sailing to America, he discovered an unknown part of the world.

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36 Which statement from Article 2 could the student quote to explain the meaning of "Columbian Exchange"?

A "Before Columbus, Europe and the Americas had long been separated."

B "There had been no contact of any kind for hundreds of thousands of years."

C "They brought with them new people, new plants and animals, and new diseases."

D "And those who did not die of disease were made slaves by men like Columbus."

37 Article 1 is organized sequentially, and Article 2 has a cause-effect organization. How can the student explain why those structures are appropriate for the arguments the authors are making?

STOP

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Tools for Instruction

Determine Theme

Fictional texts usually convey a theme—an insight into life developed through characters, events, and setting. In more mature works, theme tends to go beyond a simple, concrete lesson to a relatively complex and more abstract understanding about human values. Close reading will help students analyze how an author conveys theme over the course of a text; however, weakness in any of the higher-level skills involved in this process—making inferences, summarizing, and analyzing character, for example—will pose a greater challenge. Help students understand that statements of theme are often universal messages they can apply to other texts or to their own experiences. Then teach them how to trace the development of theme in a text, and provide questions that guide them to use textual evidence, rather than their own opinions, to support a statement of theme.

Three Ways to Teach

Establish What Theme Is and Is Not 20–30 minutes

To teach students how to determine and analyze theme, begin by clarifying what theme is and what it is not.

- Display a main idea sentence and a statement of theme based on a recent class text. The following example is based on *Dragonwings,* by Laurence Yep.

> As Moon Shadow makes a new home in America, friends become like family.
>
> Family extends beyond bloodlines.

- Use questions such as these to help students distinguish important characteristics about theme statements.

> *Which sentence includes key details from the story?* (the first one)
> *What important thing did Moon Shadow learn about friends?* (they can be like family)
> *Which sentence could be applied to other texts and our own lives?* (the second one)

- Identify the second sentence as a statement of theme, and help students distinguish how the sentences are different. Then have students briefly work in small groups to define *statement of theme* based on the class discussion. Guide them to understand that a statement of theme is a message about life that is developed through a work's characters, events, and setting.
- Repeat the previous exercise with new examples to reinforce what a statement of theme is and is not. As you identify statements of theme, add them to a chart like the following to serve as a reference.

Text	Statement of Theme	Not a Statement of Theme
Dragonwings by Lawrence Yep	Family extends beyond bloodlines.	As Moon Shadow makes a new home in America, friends become like family.
"Eleven" by Sandra Cisneros (from *Woman Hollering Creek and Other Stories*)	The pain of humiliation can be hard to heal.	Mrs. Price makes Rachel wear the ugly sweater.
A Wrinkle in Time by Madeleine L'Engle	There is great power in love.	Meg realizes that IT does not have the ability to love.

- Emphasize that theme is a statement, not a topic, and that statements of theme do not include specific details from the text. Additionally, statements of theme are subjective and can be stated in different ways.

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Trace the Development of Theme 20–30 minutes

To help students determine theme, provide them with question prompts they can use to help them analyze plot components, make inferences, and draw relevant connections to their own lives.

- Say, *Authors convey themes through details about characters, events, and setting.* To demonstrate this point, model identifying a detail in the text students are currently reading to explore the development of theme. See the following example.

Who are the main characters? What do they do that helps me understand the theme? At the beginning of this short story, Juan says his neighbor Mr. Foley is always busy in his garden. Juan says Mr. Foley tends to his flowers like children, carefully pulling even the smallest of weeds. I am going to pay attention to this detail about how Mr. Foley cares for his garden. I think the author might want me to learn something from that.

- Then have students work in small groups to answer the following questions. Explain that thinking about their answers will help them trace the development of theme in the text.

Identify Plot Components
Who are the main characters?
Where and when does the story take place?
What problem did a character want to solve?
What did the character do to solve the problem?
What happened as a result of the character's actions?
Was the problem resolved?

Make Inferences
Why does the character say/do _____?
What does the character learn when _____?
What does the author want readers to know about _____?

Relate to Real-Life Situations
Would you have resolved the problem differently? Why not/How so?
What did a character learn that applies to your own life?
In what situations would it be easy to apply that theme to real life?
In what situations would it be difficult to apply that theme to real life?

- Bring students back together to discuss their answers. Review how the author conveyed the theme over the course of the text.
- Point out that texts often convey more than one theme. Some may be minor themes, while others will emerge over the course of a text as major themes.

Support English Learners Students' understanding of particular themes may be influenced by their cultural background. Integrate culturally relevant literature into class readings to provide a familiar base from which to explore theme and to broaden all students' cultural awareness.

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Respond to a Statement of Theme 30–45 minutes

Connect to Writing To help students meaningfully engage with statements of theme, have them take a position of agreement or disagreement with a theme from their reading. Display several statements of theme from one or more recent texts. Have students choose one theme and decide whether they agree or disagree with it. Then have them write a brief essay defending their position. Provide guidelines such as these to help students develop a strong response.

Take a clear stand: Do you agree or disagree?
Support your view with evidence from your experiences and observations.
Evidence may also come from what you have learned from other readings.
Identify key words in the statement. Repeating these in your writing can help you stay on topic.

Check for Understanding

If you observe...	Then try...
difficulty recognizing the underlying meaning in a selection	reviewing metaphor. Explain that sometimes the events in a text are meant to be symbolic of bigger ideas. Revisit some of Aesop's fables and work with students to determine how the characters and their actions are really metaphors for bigger ideas.
confusion about how to form a statement of theme	scaffolding with choices for possible themes. Work with students to point to evidence in the text that leads readers to one or the other. Help students articulate why the incorrect choices are not the best choices.

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Lesson 10
Punctuation to Indicate a Pause or Break

Introduction Sometimes in your writing, you will want to signal a pause. The pause may be in the middle of a sentence or at the end of it. You can use commas, dashes, or ellipses to cue different types of pauses.

Punctuation	When to Use	Examples
Commas	to set off nonessential information	Professional sports, **such as football and basketball**, can be more fun to watch live than on TV. Yesterday's game was thrilling, **especially at the end**.
Dashes	to indicate a change in thought or an abrupt break, or to emphasize set-off text	Some people think baseball is boring—**nine innings of players standing around**. The batter swung and—**with the crack of his bat**—knocked the ball out of the park.
Ellipses	to indicate an unfinished action or the process of thinking	With two seconds left on the clock, the player dribbled down the court . . . slam dunk!

Guided Practice **Add the type of punctuation shown in parentheses to correctly signal the pause in each sentence. Use a caret (^) to add dashes and ellipses.**

Hint

When you use commas or dashes to signal a pause in the middle of a sentence, be sure to use the same punctuation before and after the pause.

Example:
Camella—that girl over there—plays hockey.

NOT

Camella, that girl over there—plays hockey.

1. Did you see the game between the Hornets and the Grizzlies the one that went into overtime? (comma)
2. Suddenly the referee blew his whistle stopping the game for a penalty. (ellipsis)
3. A professional athlete runs the risk of serious injury a disaster that could even end a career. (dash)
4. Our softball team has a game next Thursday not Friday. (comma)
5. Curtis a newcomer to our team usually scores the most runs. (dashes)
6. At 6:00 A.M. a time when most people are asleep Curtis and his brother are out practicing. (commas)
7. My mom says I can go to the game if I accomplish one thing an A on my algebra test. (dash)
8. Stepping up to the plate he keenly focused his eyes on the pitcher. (ellipsis)

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Independent Practice

For numbers 1–5, choose the best way to punctuate the pause in each sentence.

Answer Form

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Number Correct ___/5

1

A The ball slowly rolled around the rim and finally, dropped through the hoop.

B The ball slowly rolled, around the rim, and finally dropped through the hoop.

C The ball slowly rolled . . . around the rim and finally dropped through the hoop.

D The ball slowly rolled around the rim . . . and finally dropped through the hoop.

2

A That tennis ball is flying toward you—watch out!

B That tennis ball is—flying toward you watch out!

C That tennis ball is flying toward you, watch out!

D That tennis ball is—flying toward you—watch out!

3

A The score after six innings—if she remembered correctly was 4 to 1.

B The score after six innings if she remembered correctly, was 4 to 1.

C The score after six innings . . . if she remembered correctly was 4 to 1.

D The score after six innings, if she remembered correctly, was 4 to 1.

4

A Let's get something to eat, maybe popcorn or nachos—at halftime.

B Let's get something to eat—maybe popcorn or nachos—at halftime.

C Let's get something to eat maybe popcorn or nachos, at halftime.

D Let's get something to eat—maybe popcorn or nachos, at halftime.

5

A Competing in the Olympics, what an amazing experience, that would be.

B Competing in the Olympics . . . what an amazing experience, that would be.

C Competing in the Olympics . . . what an amazing experience that would be.

D Competing in the Olympics—what an amazing experience—that would be.

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Lesson 14
Greek and Latin Word Parts

Introduction Many words in English have Greek and Latin roots and affixes.

- A **root** is a word part that contains the main meaning of the word. In the word *secede*, the root *cede* means "move" or "go." *Secede* means "to move apart, or to separate."

Root	Meaning	Root	Meaning
cede, ceed	"go, move"	*pon, pos*	"put, place"
cur	"run"	*ven, vent*	"come"
mit, miss	"send"	*ject*	"throw"

- An **affix** is a word part added to a root. **Prefixes** are affixes that come before the root, and **suffixes** are affixes that come after it.

Prefix	Meaning	Suffix	Meaning
inter-	"between"	*-ion*	"act or process of"
pro-	"forward; in favor of"	*-or*	"state, quality, or action"
pre-	"before"	*-ent*	"someone who does an action; occurring in a certain way"

- You can use the meanings of roots and affixes to figure out the meaning of many English words.

Guided Practice **Read the passage. Circle the root in each underlined word. On a separate piece of paper, write the meanings of the word parts and define the word.**

Hint

The meaning of the root does not usually fit exactly with the definition of the word. Think of affixes and roots as clues that you can use along with the context to figure out the meaning of an unknown word.

Our car was proceeding along the highway when we heard the forecast. The weather had been mixed all day, and now we knew that the intermittent rains were the precursor to a big storm. The station resumed its programming, but soon the announcer interjected another warning. My brother, who was driving, was a proponent of going home, but my sister Lexy wanted to continue. We needed an intervention, so I used my cell phone to call my mom.

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Independent Practice

For numbers 1–4, read each sentence. Then answer the question.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ
4 Ⓐ Ⓑ Ⓒ Ⓓ

Number Correct ___/4

1 My mom told us that the trajectory of the storm had changed and the river might overflow.

The prefix *tra-* means "across," the root *ject* means "throw," and the suffix *-ory* means "a place where." What is the meaning of trajectory as used in the sentence?

A the time when something important begins

B the type

C the path something takes as it moves over

D the size and shape

2 Lexy could be tenacious, but my mother's news put an end to all discussion.

The root *ten* means "hold," and the suffix *-ious* means "characterized by." What is the meaning of tenacious as used in the sentence?

A stubborn

B talkative

C cranky

D bossy

3 We subsequently turned the car around and returned home.

The prefix *sub-* means "under or after," and the root *sequ* means "follow." What is the meaning of subsequently as used in the sentence?

A slowly but surely

B immediately after

C completely

D eventually

4 After the huge storm, everyone wondered how long it would take the floodwaters to recede.

The prefix *re-* means "back," and the root *cede* means "go." What is the meaning of recede as used in the sentence?

A flow over

B rise higher

C remain stable

D withdraw from

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Lesson 19
Denotation and Connotation

Introduction Words can have two kinds of meanings that convey very different ideas or images. A word's **denotation** is its basic meaning, or dictionary definition. A word's **connotation** is the feeling or impression that people associate with the word.

- A word can have a **positive**, **negative**, or **neutral** connotation. When you write, think about the connotations of the words you choose and the effect they will have on your readers.

Positive Connotation	Neutral Connotation	Negative Connotation
Several people lingered in the theater after auditions.	Several people stayed in the theater after auditions.	Several people loitered in the theater after auditions.
My aunt picked me up in her compact two-door car.	My aunt picked me up in her small two-door car.	My aunt picked me up in her cramped two-door car.

- To say that a car is ***small*** is a neutral statement about the car. A car that is ***compact***, however, can fit everything you need into just a small space. This word has a positive connotation. A ***cramped*** car, on the other hand, conjures images of tightly squeezed passengers and belongings. The connotation is negative.

Guided Practice **Read each sentence. Each underlined word has a neutral or a positive connotation. Write a word that has a negative connotation to replace each underlined word.**

Hint

Words that have the same, or a similar, denotation are synonyms. You can use a thesaurus to find the synonyms for each underlined word. Then choose and write the synonym that has a negative connotation.

1. It was adventurous of me to try out for the role of villain. _____
2. I'm quiet and shy, and the character is powerful. _____
3. My best friend was surprised that I was so firm in my decision. _____
4. I nervously held the script as I read my first lines. _____
5. My right leg shook as I faced the hero. _____
6. When offered the part, I deliberated for a while. _____
7. But then I decided that I had spent too much time being shy. _____
8. Sometimes, I wonder what kind of silliness I'll try next. _____

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Independent Practice

For numbers 1–3, which word has the same denotation as the underlined word but has a more negative connotation?

1 The director was unpredictable in his reactions to the actors and scenes.

A changeable

B volatile

C whimsical

D variable

2 The actors felt that the director's comments were sometimes clever.

A perceptive

B insightful

C keen

D shrewd

3 The director's feedback excited the actors.

A agitated

B inspired

C invigorated

D energized

Answer Form

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Number Correct ___/5

For numbers 4 and 5, which word has the same denotation as the underlined word but has a more positive connotation?

4 The director's great arrogance made it difficult for him to compromise in his way of doing things.

A conceit

B smugness

C confidence

D haughtiness

5 At the end of the rehearsals, the actors admitted that this director brought out the best in them.

A declared

B confessed

C gossiped

D vented

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Lesson 10 Part 1: Introduction

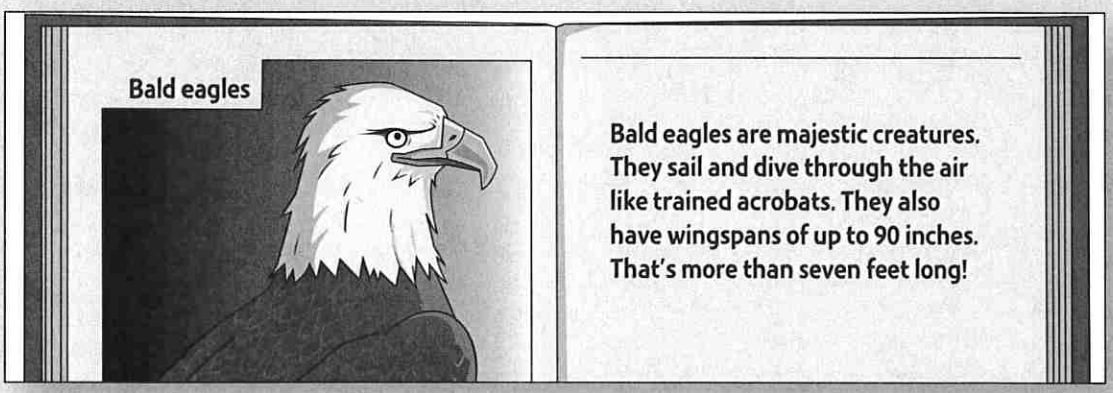
Analyzing Word Meanings

Theme: *Animal Survival*

What's the difference between saying "He doesn't eat very much" and saying "He eats like a bird"? The two phrases mean the same thing, but the first sentence is literal, and the second is figurative. **Literal meaning** refers to the dictionary definition of a word or phrase. Words or phrases with a **figurative meaning** express ideas in unusual or creative ways.

Words may also have positive, neutral, or negative **connotations,** which are the feelings or ideas associated with a word. And, some words have **technical meanings** specific to a certain subject area. When you read, be aware of these different types of meaning. It will improve your understanding of an author's message.

Read the magazine article below. Circle an example of figurative language, underline words with strong connotations, and put a box around any technical words or phrases.



Read the chart to analyze some of the words you may have marked in the article.

Type of Language	Example	Effect on Meaning
Connotative	"majestic"	*Majestic* encourages readers to think that the birds are more than ordinarily beautiful.
Technical	"wingspan"	*Wingspan* is a specific term used to explain one of the eagle's characteristics.
Figurative	"They sail and dive through the air like trained acrobats."	The simile *They sail and dive through the air like trained acrobats* compares an eagle's movement to an acrobat's.

Authors choose words and phrases carefully to convey meaning and feeling. Determining word meanings can help you understand how an author's specific word choice affects the text.

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Read the beginning of the scientific account about mollusks.

Genre: **Scientific Account**

The Mollusk Family

By Deshawn Miller

Did you ever imagine that a tiny snail and a giant octopus might be part of the same family tree? Most people don't realize that snails, mussels, squid, and even octopods belong to the same category of creatures known as mollusks. These amazing creatures are invertebrates, which means they do not have spines.

Mollusks share three basic body parts: a foot, a body, and a mantle. The foot is a fleshy part of the mollusk's body, made up mostly of muscle tissue. In a snail, the foot is the part of the mollusk that meets the ground and gently rolls the body forward. From this slow, measured motion comes the phrase "a snail's pace." A mollusk's soft body is like a fragile bag that holds the heart, the guts, and various internal organs. The mantle, which is often a shell or a tough, sturdy covering, functions like a suit of armor to protect the body.

(continued)

Explore how to answer this question: *"How do the word choices in the scientific account help you understand the author's intended meaning?"*

Reread the account. Circle an example of figurative language, underline words with strong connotations, and put a box around any technical words or phrases.

In the account, find an example of each type of language named in the first column. Add it to the chart. Then, in the last column, explain the effect the word or phrase has on meaning.

Type of Language	Example	Effect on Meaning
Figurative		
Connotative		
Technical		

With a partner, discuss your completed charts. Then identify one more example for each type of language.

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Continue reading the account. Use the Close Reading and the Hint to help you answer the question.

Close Reading

Circle two phrases in the first paragraph that help you understand the technical term *defense mechanisms*.

(continued from page 96)

Because many mollusks creep along slowly, they need defense mechanisms. Mollusks with shells simply retreat into their body armor to protect themselves from predators. But the Blue-Ringed Octopus, a mollusk found in the South Pacific, defends itself with a bite so fierce it is almost always fatal to humans.

Overall, mollusks are peaceful inhabitants of our planet. Whether they live on land or in the sea, they are not aggressive. Our taste for cooked mussels, clams, and oysters, in fact, makes us far more dangerous to mollusks than they are to us.

Hint

Think about the connotations, or feelings, that the words suggest. How do those feelings differ?

Circle the correct answer.

Which statement best explains why the author has used the words *retreat, fierce,* and *fatal* in the first paragraph above?

A to warn readers that mollusks are often aggressive and dangerous

B to emphasize the contrast between different mollusk defenses

C to explain the mystery behind a mollusks' defense system

D to call attention to the unusual shells grown by the mollusk family

Show Your Thinking

Look at the answer you chose above. Explain how the connotations of the words helped you to understand the ideas about mollusk defense mechanisms that the author wants to convey.

With a partner, discuss how the use of figurative, connotative, and technical language in the account gives you a clearer picture of the characteristics of the mollusk family.

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Read the scientific account. Use the Study Buddy and Close Reading to guide your reading.

As I read, I'm going to look for any connotative, figurative, or technical language the author uses to describe the attributes of armadillos.

Close Reading

Underline examples of figurative language in the first and fourth paragraphs.

Circle words with strong connotations used to describe the armadillo.

Genre: **Scientific Account**

Armadillo Attributes

By Karen Olson

1 The word *armadillo* comes from a Spanish word meaning "little armored one." The armadillo earned its name from the bony carapace that shields the armadillo's body like hinged plates of armor. This protective covering has helped this homely mammal survive for about 55 million years.

2 Armadillos are related to sloths and anteaters. They may also be descendants of ancient dinosaurs. Some scientists believe modern armadillos are related to an extinct mammal called the glyptodont (GLIP-toh-dont). Like armadillos, glyptodonts originated in South America.

3 Today, more than 20 species of armadillos live in Central and South America. The nine-banded armadillo is the only species in the United States. It is now found in Texas, Oklahoma, Arkansas, Missouri, Louisiana, and parts of Florida.

4 Armadillos have many strange yet fascinating traits. In order to swim, they can swallow air to inflate their stomachs, becoming as buoyant as a balloon floating on the water. When threatened, armadillos may react defensively by jumping three to four feet into the air. Some are able to curl up into tight balls.

5 Armadillos have terrible eyesight, so they use their foolproof sense of smell to find food. They probe grasses, decaying logs, or sandy soil with their pointy snouts. Once they locate beetles, ants, or other insects they like to eat, they eagerly dig them out with sharp claws and trap them with narrow, sticky tongues.

6 Armadillos are the only mammals with protective shells. You might assume that these shells and other traits make armadillos immune from danger; however, predators such as dogs, wolves, and coyotes hunt these peaceful animals. Sadly, speeding cars and trucks can also injure or kill them. Despite these ever-present threats, armadillos continue to survive in a variety of habitats and climates.

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Hints

Find this word in paragraph 6.

Look for context clues in paragraph 6 that might help you understand the meaning of "immune."

Look back at the descriptive words you circled. Which words have a positive connotation? Which words have a negative connotation?

Use the Hints on this page to help you answer the questions.

1 What does the word "immune" mean as it is used in the passage?

A defensive

B unaffected

C threatened

D unaware

2 Which of the phrases from the passage best helps the reader understand the meaning of "immune"?

A "may react defensively"

B "these peaceful animals"

C "can also injure or kill them"

D "in a variety of habitats and climates"

3 Explain why the author uses words like *homely, strange, fascinating, terrible, foolproof,* and *peaceful* to describe armadillos. Write a paragraph about what these word choices reveal about how the author would like readers to feel about armadillos. Use at least three specific details from the text in your response.

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Read the scientific account. Then answer the questions that follow.

Animal Regeneration

by Aleya Brown

1 Regeneration is the ability of an organism to regrow a lost body part. All creatures have the power to regenerate lost body parts to some degree. If a human scrapes a knee or breaks a bone, for example, tissue is regenerated to heal the wound. Even a lost fingernail will regenerate over time. If the finger is severed, however, the limits of regeneration have been reached; humans cannot regrow limbs or organs. In contrast, if an earthworm is cut in half, the end of the worm with a head can grow a new tail. If the end of the worm with the tail survives, it too may grow a new tail. Unfortunately, it starves to death eventually because it cannot feed itself without a head or mouth.

2 Which creatures have strong regenerative powers? Lower animals, such as worms, lizards, spiders, and starfish, have some of the greatest regenerative powers. Crayfish, for example, have a remarkable safety device at the base of each claw and leg called a "breaking joint." When a predator grabs a limb or claw, the appendage breaks away so the crayfish can escape. Over time, as the crayfish molts, or sheds its soft shell, the broken limb or pincer grows larger and larger until it has been completely regenerated.

3 Some animals are able to survive in large part because of their regenerative powers. A type of flatworm called planaria lives under rocks in clear creeks and streams. The flatworm has no real defense mechanisms to protect it from predators, but it can be cut into as many as 32 pieces, and each piece may form a new worm, complete with a head, eyes, and internal organs. In the case of the planaria, an event that could be fatal is turned into an awesome act of procreation.

4 Many more animals display noteworthy regenerative powers. Sharks replace lost teeth throughout their lifetimes. A single shark may grow as many as 24,000 teeth in its lifetime, ensuring a long career at the top of the food chain. Much like planaria, sea cucumbers, which have bodies that grow up to three feet long, can be cut into pieces and survive. Each piece may grow into a new sea cucumber. Spiders, like crayfish, can regrow legs. Many lizards also have "breakaway" tails that snap off when caught by predators. They then grow new ones, which lack the original spine. Starfish can lose arms and grow new ones. Sometimes an entirely new starfish can grow from a single lost arm.

5 Interestingly enough, the scales of a fish tell stories about regeneration. Much like the rings inside a tree trunk, fish scales reveal details about an organism's past. Each scale lies in a pocket of skin and grows along with the fish. Scientists read the markings on a scale to determine the age of the fish, seasons of famine or drought, and other important information. It is often necessary to look at many scales to get a complete story, however, because scales are often lost and regenerated. These new scales lack the markings that happen over time. They are like a blank page in the history of the fish.

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6 Scientists are extremely interested in regeneration because of the possible implications for healing humans. Some scientists think it is possible that higher animals retain the ability to regenerate body parts, but that the reaction triggering the body to regenerate has been lost. By studying lower animals, such as worms, spiders, and sponges, scientists hope to discover what triggers regeneration. The dream is that this knowledge could one day be used to help humans regrow internal organs and limbs. Currently, human regeneration may sound like something out of a science-fiction movie. The implications of such a discovery, however, would be so far-reaching that they are hard to fathom. For now, the miracle of regeneration is intriguing enough to keep scientists working for years to come.

Answer the questions. Mark your answers to questions 1–5 on the Answer Form to the right.

Answer Form

1	Ⓐ	Ⓑ	Ⓒ	Ⓓ
2	Ⓐ	Ⓑ	Ⓒ	Ⓓ
3	Ⓐ	Ⓑ	Ⓒ	Ⓓ
4	Ⓐ	Ⓑ	Ⓒ	Ⓓ
5	Ⓐ	Ⓑ	Ⓒ	Ⓓ

Number Correct ___/5

1 What is the meaning of "procreation" as it is used in paragraph 3 of the passage?

A survival

B repetition

C cooperation

D reproduction

2 Read this sentence from the passage.

> Crayfish, for example, have a remarkable safety device at the base of each claw and leg called a "breaking joint."

Which of the following best matches the author's connotative meaning of the word "remarkable" as it is used in the sentence?

A unusual

B significant

C extraordinary

D noticeable

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3 As used in paragraphs 2, 3, and 4 of the passage, the word *powers* is **closest** in meaning to

A influence

B authority

C forcefulness

D abilities

4 Which of the phrases from the passage **best** helps the reader understand the meaning of the word "appendage"?

A "have a remarkable safety device"

B "grabs a limb or claw"

C "sheds its soft shell"

D "grows larger and larger"

5 Read this sentence from the passage.

> The dream is that this knowledge could one day be used to help humans regrow internal organs and limbs.

Which word **best** matches the meaning of "dream" as it is used in this sentence?

A hope

B fantasy

C plan

D illusion

✓ Self Check *Go back and see what you can check off on the Self Check on page 94.*

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Reading

Read the passage. Then answer the questions that follow.

The Glowing Beagle

by Karen Brinkmann

1 Dogs have provided many services for people over the years. Working and herding dogs pull sleds and shepherd animals. Service dogs guide and protect people with special needs. Police dogs assist in tracking down and apprehending criminals. Assistance dogs perform necessary tasks for people. And of course, dogs are probably best known for their faithful companionship to individuals and families.

2 But dogs may soon be able to add another talent to their long list of abilities: the potential to help researchers cure diseases because of the dogs' ability to glow. Yes, you read that correctly: scientists in Korea have designed and bred a dog that glows under ultraviolet light. Let's take a look at this unprecedented scientific creation in order to understand why it was accomplished as well as how it could help doctors study and eradicate diseases.

3 For many years, scientists have studied bioluminescent sea creatures such as jellyfish. *Bioluminescent* means a creature can produce and emit its own light. After years of observing and experimenting with these types of creatures, scientists discovered a protein called *green-fluorescent protein,* which is responsible for giving the jellyfish and other creatures the ability to glow. They determined a way to isolate the protein. Then, they transferred it into the cells of a puppy before the puppy was even born. The result was a delightful dog named Tegan who is like any other beagle except that she appears to glow when placed under an ultraviolet light.

4 You may be wondering how in the world a glowing beagle pup could possibly help researchers find a cure for diseases such as Alzheimer's and Parkinson's. The answer to that question lies not in the fact that the dog glows but that scientists have created a method to transfer genes. Because the gene transfer process has been successful, scientists are hopeful that other gene transfers will also be successful. And these gene transfers could lead to a better understanding, if not a cure, for many different kinds of diseases.

5 Human beings and dogs share the ability to contract 268 genetic diseases. If scientists can successfully conduct research on a dog that has a disease that a human can also develop, the scientists may find clues to curing that disease by observing the dog. Dogs share some of the same physiological and anatomical body parts that people do, so studies of dogs translate well to studies of humans. Plus, dogs are social creatures and respond well to commands. They are better subjects to study than laboratory rats or mice.

6 Though transferring fluorescent genes to a dog does not harm a dog in any way, there are some critics of the process. Some animal rights groups discourage any testing on animals. Many suggest alternatives to animal testing, including testing humans instead. However, though many studies have been conducted using human volunteers, the type of gene testing that scientists have done on dogs cannot be conducted on humans.

Go On

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7 Another drawback of the program is the expense. Scientific research is typically costly, but genetic testing requires equipment and technology that come at a very high price. Additionally, testing on dogs would require that researchers find caregivers for the dogs. Small creatures such as mice and rats can live happily in small cages, but dogs of course cannot. Researchers who want to dedicate their lives to performing gene transfers on pups would need to find a way to house the dogs in a humane way.

8 Still, scientists are optimistic. They see great potential in these developments and hope that the future of scientific research on genes is bright, not only for humans, but for their best friends, the dogs.

---

1 This question has two parts. First, answer part A. Then, answer part B.

Part A

What is one central idea of the article?

A Dogs are known for their loyal and devoted companionship to humans.

B Bioluminescent sea creatures may help researchers cure diseases such as Parkinson's.

C It is safer and easier to conduct research on dogs than on humans.

D Glowing beagles could help doctors effectively treat human diseases.

Part B

Which sentence from "The Glowing Beagle" **best** supports the answer to part A?

A "For many years, scientists have studied bioluminescent sea creatures such as jellyfish."

B "If scientists can successfully conduct research on a dog that has a disease that a human can also develop, the scientists may find clues to curing that disease by observing the dog."

C "However, though many studies have been conducted using human volunteers, the type of gene testing that scientists have done on dogs cannot be conducted on humans."

D "They see great potential in these developments and hope that the future of scientific research on genes is bright, not only for humans, but for their best friends, the dogs."

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2 Look at the first sentence of the passage.

Dogs have provided many services for people over the years.

What relationship does this sentence have with the rest of the first paragraph?

A It introduces a problem. The rest of the paragraph lists possible solutions.

B It states an observed effect. The rest of the paragraph examines causes.

C It provides an opinion. The rest of the paragraph provides reasons.

D It presents an idea. The rest of the paragraph gives examples.

3 Which of the following gives the **best** summary of the ideas in "The Glowing Beagle"?

A Some animals, such as jellyfish, can produce their own light. By transferring the light-producing gene to dogs, scientists have found a way to make dogs glow when placed under ultraviolet light. This could lead to important discoveries.

B The fascinating study of bioluminescent sea creatures has led to new research for curing diseases. However, scientists now cruelly perform tests, such as gene transfers, on live animals.

C By successfully transferring genes from light-producing sea creatures to dogs, scientists have found a way to study and possibly cure diseases in people. Though there are several drawbacks, scientists are hopeful that the challenges can be overcome.

D Scientists have discovered a cure for Alzheimer's disease. By transferring genes from bioluminescent sea creatures to dogs, researchers discovered where disease-producing genes can be found. They found ways to prevent these genes from becoming active.

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4 The author believes the gene transfer process is a positive discovery, but she also wants to acknowledge that there are people who oppose it. Which sentence from the passage **best** supports this statement?

A "And of course, dogs are probably best known for their faithful companionship to individuals and families."

B "The result was a delightful dog named Tegan who is like any other beagle except that she appears to glow when placed under an ultraviolet light."

C "Though transferring fluorescent genes to a dog does not harm a dog in any way, there are some critics of the process."

D "Small creatures such as mice and rats can live happily in small cages, but dogs of course cannot."

E "They see great potential in these developments and hope that the future of scientific research on genes is bright, not only for humans, but for their best friends, the dogs."

5 Below are three claims that one could make based on the article "The Glowing Beagle."

	Claims
	Gene transfers are an important breakthrough that could greatly benefit humans.
	Because of their similarity to humans, dogs are some of the best research subjects.
	Genetic testing is too costly and controversial to hold much promise.

Draw an X by the claim that is supported by the **most** relevant and sufficient evicence within "The Glowing Beagle." Then write down two sentences from the article that **best** provide evidence to support the claim selected in part A.

First sentence: _____

_____

Second sentence: _____

_____

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Reading

Read the passage. Then answer the questions that follow.

Cars Without Gasoline Are Here

by Caroline Rialto

1 People often feel as if the use of a gasoline engine has been integral to the automobile for as long as cars have been on the road. Justifiably, this makes people resist change. They feel that if the gasoline engine disappears, automobiles will never be as fast, safe, or comfortable as they are now, much like people must have felt as the car replaced the horse-drawn carriage.

2 But in fact, the first automobiles were really locomotives modified with tires. They were powered mostly by steam engines. Some early cars ran on strange fuels like gunpowder and coal gas. And some early cars were even powered by simple batteries and electric motors.

3 So the history of the early automobile is a history of changing technology, and of trying things and seeing if they work. Today, technology is changing because political and environmental concerns are forcing manufacturers away from the gasoline engine. The Earth's survival depends on our response to energy issues today. Plus, the price of gas is rising, which means new technologies must be invented to utilize other forms of energy. Because of these factors, we are experiencing a return to that glorious era of experimentation. In the same way as early automobile inventors, we're trying things and seeing if they work.

4 Biodiesel is a chemical very much like the diesel fuel that trucks and some cars use. But instead of being made from crude oil, it is made from renewable sources such as vegetable oil or animal fats. Biodiesel can provide much better fuel efficiency than gasoline. It can be made anywhere. Plus, many cars that now use diesel can be converted to run on biodiesel, so biodiesel could be very cost-effective.

5 Ethanol is another fuel-based alternative to gasoline power. Bioethanol, made from many common crops grown in the United States, could be a main fuel for the future of transportation. Ethanol is already added to fuels to reduce the amount of gasoline our cars consume.

6 Another set of alternative technologies uses natural gas or locally made biogas to power cars. Though natural gas is itself a fossil fuel, it burns very cleanly, so it does not pollute as much as gasoline. Biogas, made from decomposing organic matter, is a more environmentally conscious choice that has the same advantages.

7 Hybrid technology allows another route to gasoline-free driving. A hybrid car uses a small conventional engine, but gets added power through one or more electric motors linked to a set of batteries. The batteries are charged by excess power from the engine and from energy recaptured from braking. The electric motor supplements the conventional engine during peak loads, often providing full power at low speeds. The conventional engine takes over at higher speeds, often around 30 miles per hour. The most successful commercial hybrids today use a gasoline engine, but the technology could easily be used with biodiesel, bioethanol, or biogas to provide a fossil-fuel-free transportation technology.

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8 So far we've been looking at vehicles that represent small improvements. But some new technologies are more boldly changing the face of motoring. The fully electric car does away with the conventional motor altogether, using only electric motors and battery packs. However, the limited state of battery technology today means that such vehicles rarely have real-life ranges of more than 100 miles. They can also take many hours to charge up. But there is another option. The plug-in hybrid is very much like normal hybrid technology, but it adds the capacity to be charged from a wall plug like an electric car. That way, drivers can charge the cars overnight and have them ready in the morning. Such vehicles generally use the electric motor almost exclusively until the battery pack is exhausted. This means that the car may use little fuel or no fuel at all during shorter trips.

9 Batteries are heavy. And, as we've seen, they have short range and long charging times. If we want to avoid pollution completely, there are two revolutionary fuel technologies also being deployed. For short trips inside of cities, vehicles powered off of compressed air could be valuable. Such a vehicle would emit no pollutants. It could be pumped up at stations throughout the city and would provide ample power for urban environments. For longer trips, hydrogen could be used as a fuel. Hydrogen can be safely stored in a compressed tank or incorporated into cutting-edge materials. It can be combined with oxygen from the air to produce energy that can be used to power a car. The only emission from a hydrogen-powered vehicle would be pure water. Plus, hydrogen is the most abundant natural element in the universe, so there is plenty of it around.

10 Future road cars will combine many of these technologies to provide maximum efficiency. But one thing is certain: Cars will surely get better for the consumer.

---

1 This question has two parts. First, answer part A. Then, answer part B.

Part A

Which meaning of the word "hybrid" **best** defines the use of the word in the passage?

A the offspring of two different biological beings

B a word that contains elements of two or more languages

C a custom born out of the interaction of two or more cultures

D something that draws on multiple sources of power

Part B

Which of the phrases from the passage **best** helps the reader understand the meaning of "hybrid"?

A "replaced the horse-drawn carriage"

B "supplements the conventional engine"

C "use the electric motor"

D "combined with oxygen"

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2 Which of the following sentences from "Cars Without Gasoline Are Here" suggests that the development of "green" technology is being influenced by forces outside the auto industry?

A "So the history of the early automobile is a history of changing technology, and of trying things and seeing if they work."

B "Today, technology is changing because political and environmental concerns are forcing manufacturers away from the gasoline engine."

C "Ethanol is already added to fuels to reduce the amount of gasoline our cars consume."

D "Future road cars will combine many of these technologies to provide maximum efficiency."

3 One of the author's main claims in "Cars Without Gasoline Are Here" is that the limited range of the electric car can be overcome. Which statement from the passage **best** supports this statement?

A "The Earth's survival depends on our response to energy issues today."

B "The fully electric car does away with the conventional motor altogether, using only electric motors and battery packs."

C "The plug-in hybrid is very much like normal hybrid technology, but it adds the capacity to be charged from a wall plug like an electric car."

D "Such a vehicle would emit no pollutants."

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4 The author of "Cars Without Gasoline Are Here" claims that new technologies are changing the way modern automobiles are fueled. Which **three** details are irrelevant to this claim?

A Some early cars ran on gunpowder and coal gas.

B The survival of Earth hinges on our response to the energy crisis.

C Biogas powers cars and does not pollute as much as gasoline.

D The fully electric car is powered only by electric motors and battery packs.

E Hydrogen can be combined with oxygen from the air to power a car.

F Hydrogen is the most plentiful element in the universe.

5 How does the author make distinctions between the different types of automobiles she discusses in the article? Use **two** details from the passage to support your response.

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Read the passage. Then answer the questions that follow.

Code Breaking and Computers in Bletchley Park

by Thomas Bender

1 If you didn't know the history of Bletchley Park, it would be easy to walk by this sprawling yet unassuming mansion in England without giving it a second look. Today, it is the location of both the National Codes Centre and the National Museum of Computing. However, during the Second World War, it was a top-secret location where undercover codebreakers reported for duty. The codebreakers quietly but determinedly helped the Allies (the countries that joined together against German forces) to win the war. The work done at Bletchley Park was significant both because it allowed the Allies to gather information from behind enemy lines, and because it was where the first computer was developed.

Communication During War Time

2 The Germans went to great lengths to protect sensitive military information during World War II. One of the ways they did this was by using codes to communicate. Sending important military and intelligence messages by code was meant to keep them secret from the enemy. For instance, the following string of letters uses a substitution code: GISSN. In this "word," G is used in place of H, I in place of E, S in place of L, and N in place of O. Once a person has this information, it is easy to see that these letters spell "hello." This is a simplified example, but it shows the idea of how using a code worked.

3 During the war, a person who received an encoded message would be able to comprehend its meaning because he or she would have the key necessary to interpret it. However, an average person would merely see what looked like a random string of numbers, letters, or symbols. It wouldn't make any sense at all.

4 The Germans thought that the communication system they had created was foolproof and that their code would be impossible for an outsider to decipher. Those who worked at Bletchley Park and other key players ultimately proved them wrong.

The Players in the Code Game

5 The names of certain individuals—especially the mathematician Alan Turing—are practically synonymous with Bletchley Park. But, the drama of figuring out the various intelligence codes used during the Second World War actually involved a cast of thousands.

6 These individuals can be divided into four main groups: the informers, the interceptors, the decoders, and the reporters. The first group consisted of insiders in Poland. They not only broke an early version of the German Enigma code, but they also succeeded in recreating a machine used to read it. They shared what they knew with Britain. Without this vital information, it's quite possible nobody would know the name of Bletchley Park today. The interceptors covertly eavesdropped on Germany's radio messages, sending them along to the team at Bletchley. Here, the codebreakers made sense of the communications. The final group used the decoded messages to compile intelligence reports focusing on the activities of the German Navy, Army, and Air Force.

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Enigma: Cracking the Code

7 Enigma was a very clever code that involved using a machine by the same name. German officials would rotate the wheels of the machine into a certain position and then type their message. The recipient of the message could unscramble it using the same machine only because they knew the position of its wheels. Billions of code variations could be produced using this deceptively simple-looking contraption. The Germans also changed the code regularly to prevent anyone who might be trying to crack it from making progress.

8 The mathematicians Alan Turing and Gordon Welchman created a device called the Bombe to convert German messages into a form that could be easily understood. The machine worked by using the process of elimination principle. By ruling out potential code variations, the correct one could eventually be pinpointed.

9 The Bombe creators knew that messages often had commonly used words and phrases. They also knew that no letter would ever stand for itself; the letter A, for instance, would always represent another letter. This knowledge allowed them to reduce the billions of possibilities down to a more manageable number.

Keeping Up: Deciphering Later Codes and the First Computer

10 After the team at Bletchley Park figured out the Enigma code, the Germans moved on to an even more sophisticated method of encryption that they honed and perfected. The British called this new code Fish. By 1944, cracking the code by hand was no longer possible. It became necessary to invent a machine that could process more digital information in a much shorter time than a human codebreaker was capable of processing.

11 The ultimate solution to figuring out Fish was a machine called Colossus. It is often described as the ancestor of the modern computer, but comparing it to an Internet-wired laptop is a little like equating a house cat to a tiger. They are related, but the differences are at least as numerous as the similarities.

12 Colossus was absolutely massive, and it operated thanks to well over 1,000 vacuum tubes. Still, its capabilities were impressive, at least for the time. Using it, the Bletchley Park team could complete mathematical calculations that would have taken weeks to do by hand in a matter of hours. This allowed them to do the extensive work necessary to crack the mind-boggling German code. Colossus also laid the groundwork for the development of the faster, smaller, and more user-friendly computers people use today.

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22 This question has two parts. First, answer part A. Then, answer part B.

Part A

How does the author acknowledge the viewpoint of people who might not agree that Colossus was the first computer?

A He admits that Colossus was extremely different from modern computers.

B He agrees that Colossus was more like a calculator than a laptop.

C He points out that Colossus wasn't able to process digital information very efficiently.

D He recognizes that today's computers would exist even if Colossus had never been built.

Part B

Which sentence from the passage **best** supports the answer to part A?

A "It became necessary to invent a machine that could process more digital information in a much shorter time than a human codebreaker was capable of processing."

B "The ultimate solution to figuring out Fish was a machine called Colossus."

C "It is often described as the ancestor of the modern computer, but comparing it to an Internet-wired laptop is a little like equating a house cat to a tiger."

D "Colossus also laid the groundwork for the development of the faster, smaller, and more user-friendly computers people use today."

23 Which describes an important similarity between codemakers and codebreakers?

A Both groups depend on perfect secrecy to accomplish their missions.

B Historically, both groups have relied on machines to do their work.

C Both groups need the code, but not necessarily the key, to do their jobs.

D In order to succeed, both groups must constantly improve their technology.

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24 Read the following sentence from the passage.

> But, the drama of figuring out the various intelligence codes used during the Second World War actually involved a cast of thousands.

What does the word "drama" suggest about the events at Bletchley Park during World War II?

A They didn't seem real at the time.

B They were full of emotion and excitement.

C They involved numerous conflicts between the decoders.

D They would later be turned into a stage play.

E They were made stressful by people who overreacted.

F They were more complicated than they needed to be.

25 Read the last paragraph of the passage. Which sentence **most clearly** develops the idea that a technology's effect is relative to its era?

A "Colossus was absolutely massive, and it operated thanks to well over 1,000 vacuum tubes."

B "Still, its capabilities were impressive, at least for the time."

C "Using it, the Bletchley Park team could complete mathematical calculations that would have taken weeks to do by hand in a matter of hours."

D "This allowed them to do the extensive work necessary to crack the mind-boggling German code."

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26 Read the inference about the passage at the top of the chart below. Then select **two** sentences from the passage that **best** support the inference and write them in the blanks.

Inference: Speed was an essential element of codebreaking.	
Support	

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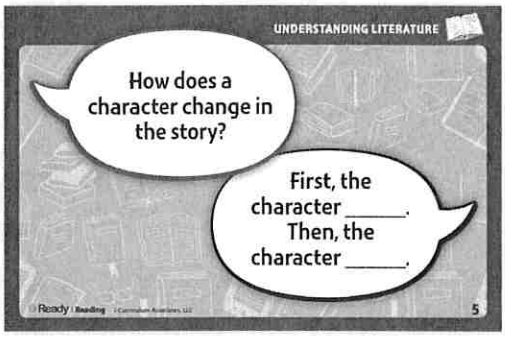
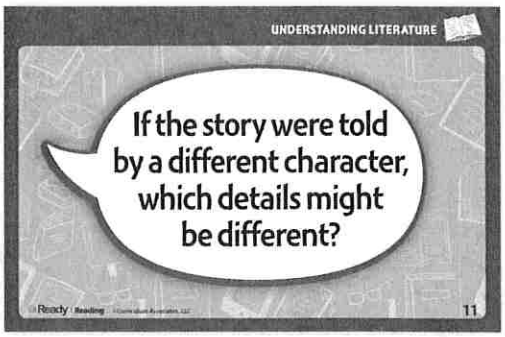
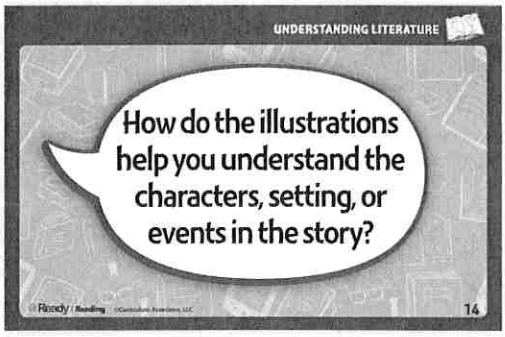
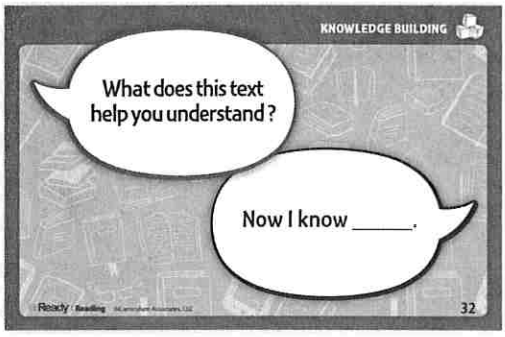
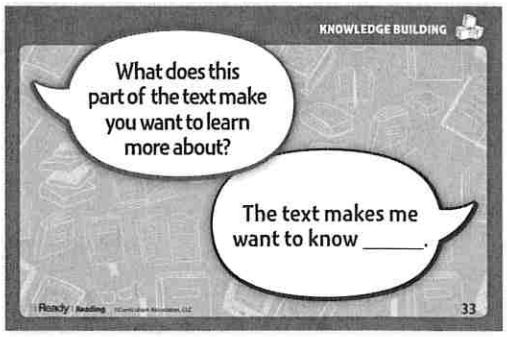
Reading Discourse Cards

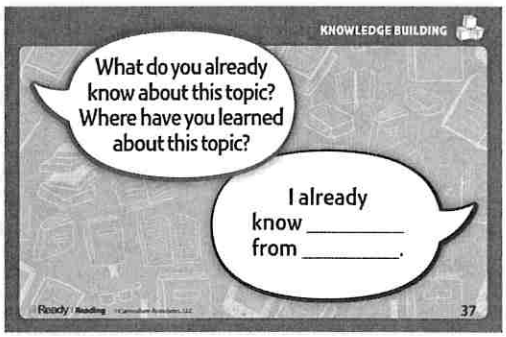


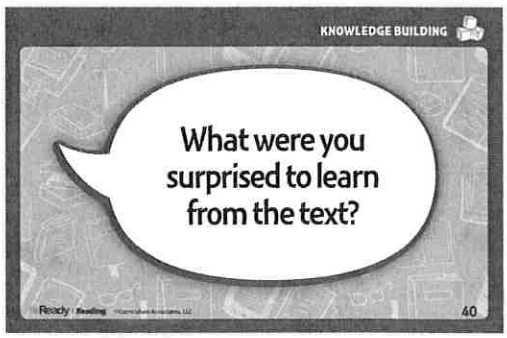


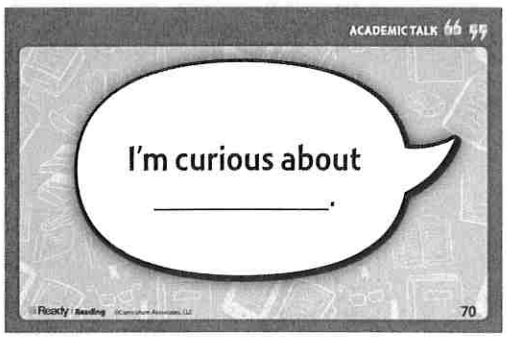


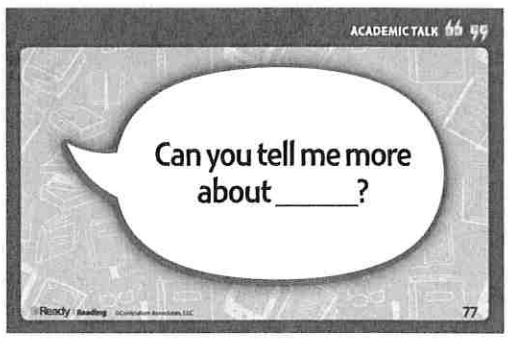












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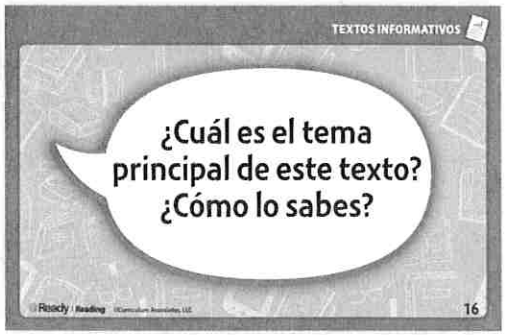
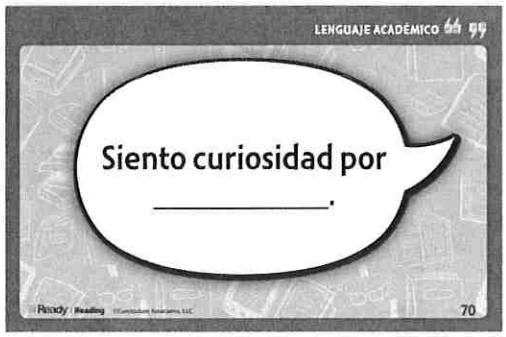
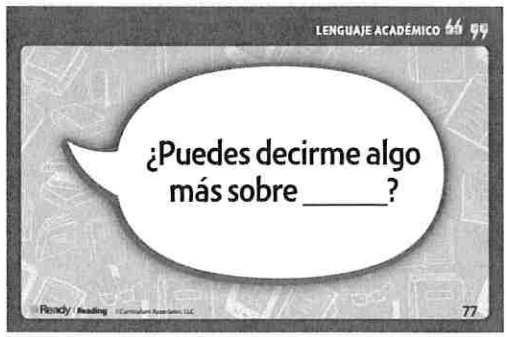
Tarjetas de discusión







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FIRSTLINE SCHOOLS
EDUCATION FOR LIFE

DISTANCE LEARNING FOR FIRSTLINE STUDENTS

PACKET #3

Start Date: Tuesday, April 14, 2020

GRADE:

K 1 2 3 4 5 6 7 (8)

CONTENT INCLUDED:

ELA (MATH) SCIENCE SOCIAL STUDIES

	8th Grade Math: Algebra Readiness			
	Date	**Lesson**	**Objective**	**Assignment**
Week 1	Tuesday, April 14	Solving-One Variable Equations: Lesson 1	Write equivalent expressions using properties of operations and verify equivalence using substitution.	■ Complete **Problems** for Review Lesson ■ Complete **Problem Set**
	Wednesday, April 15	Solving-One Variable Equations: Lesson 2	Define a solution to an equation. Solve and check solutions to 1 and 2 step equations.	
	Thursday, April 16	Solving-One Variable Equations: Lesson 3	Justify each step in solving a multi-step equation with variables on one side of the equation.	
	Friday, April 17	Solving-One Variable Equations: Lesson 4	Write and solve multi-step equations to represent situations, with variables on one side of the equation.	
Week 2	Monday, April 20	Solving-One Variable Equations: Lesson 6	Solve equations with variables on both sides of the equal sign.	
	Tuesday, April 21	Solving-One Variable Equations: Lesson 7	Write and solve multi-step equations to represent situations, including variables on both sides of the equation.	
	Wednesday, April 22	Solving-One Variable Equations: Lesson 8	Understand that equations can have no solutions, infinite solutions, or a unique solution; classify equations by their solution.	
	Thursday, April 23	Solving-One Variable Equations: Lesson 9	Solve and reason with equations with three types of solutions.	
	Friday, April 24		Flex Day	
Week 3	Monday, April 27	Linear Relationships: Lesson 6	Define slope and determine slope from graphs.	
	Tuesday, April 28	Linear Relationships: Lesson 8	Graph linear equations using slope-intercept form y=mx+b.	
	Wednesday, April 29	Linear Relationships: Lesson 9	Write equations into slope-intercept form in order to graph. Graph vertical and horizontal lines.	

	Thursday, April 30	Linear Relationships: Lesson 10	Write linear equations from graphs in the coordinate plane.	■ Complete **Problems** for Review Lesson ■ Complete **Problem Set**
	Friday, May 1	System of Linear Equations: Lesson 1	Define a system of linear equations and its solution.	
Week 4	Monday, May 4	System of Linear Equations: Lesson 2	Solve systems of equations by graphing.	
	Tuesday, May 5	System of Linear Equations: Lesson 3	Classify systems of linear equations as having a unique solution, no solutions, or infinite solutions.	
	Wednesday, May 6	System of Linear Equations: Lesson 4	Solve real-world and mathematical problems by graphing systems of linear equations.	
	Thursday, May 7	System of Linear Equations: Lesson 5	Solve systems of linear equations using substitution when one equation is already solved for a variable.	
	Friday, May 8		Flex Day	
Week 5	Monday, May 11	System of Linear Equations: Lesson 6	Solve systems of linear equations using substitution by first solving an equation for a variable.	
	Tuesday, May 12	System of Linear Equations: Lesson 7	Solve the two systems below using substitution. Compare and contrast the two solutions.	
	Wednesday, May 13	System of Linear Equations: Lesson 8	Solve systems of linear equations using elimination (linear combinations) when there is already a zero pair.	
	Thursday, May 14	System of Linear Equations: Lesson 9	Solve systems of linear equations using elimination (linear combinations) by first creating a zero pair.	
	Friday, May 15	System of Linear Equations: Lesson 10	Solve real-world and mathematical problems using systems and any method of solution.	

SOLVING ONE-VARIABLE EQUATIONS: Lesson 1

OBJECTIVE:

Write equivalent expressions using properties of operations and verify equivalence using substitution.

Problem 1

1. Find the sum of the two expressions.

   Expression A: $12a - 5b - 8$

   Expression B: $-b + 3a - 4$

2. Write the expression below as a sum of two terms.

   $\frac{1}{2}(6x + 18)$

3. Write the expression below as a product of two factors.

   $24m - 6$

Problem 2

For each expression, write an equivalent simplified expression. Then verify that the expressions are equivalent by substituting a value in for x and evaluating.

Original Expression	Simplified Expression	Equivalent?
$2 + 3(x + 4)$		
$2 + 3(x - 4)$		
$2 - 3(x + 4)$		
$2 - 3(x - 4)$		

Problem 3

Write an expression for the sequence of operations. Then simplify each expression.

- Add 3 to x, subtract the result from 1, then double what you have.
- Add 3 to x, double what you have, then subtract 1 from the result.

Name:_____ **Date:**_____

Problem 1

For the following problems, simplify completely. Circle your answer.

a. $3m + 6 + 6m$	b. $7j + 9 - 3j$	c. $8x - 9x + x$
d. $9y - 6 + 2y - 2$	e. $-12g + 8 - 8g - 3$	f. $5m - 4c + m - 13m$

Problem 2

Which of the following is the simplified version of the expression below?

$$y - 3x + 5 + 7x + 3y$$

A. $4y - 4x + 5$

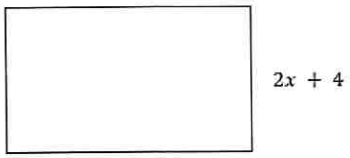
B. $4y - 3x + 7x + 5$

C. $3y + 4x + 5$

D. $4y + 4x + 5$

Problem 3

Write a simplified expression that could be used to calculate the perimeter of the rectangle below:



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Problem 4

Which of the following shows the simplified version of the expression below?

$$2x - 3(x + 8)$$

A. $5x - 24$

B. $5x - 8$

C. $-x - 24$

D. $-x + 24$

Problem 5

Which of the following expressions, when simplified, would result in the following expression?

$$5x + y - 4$$

A. $3x - 4 + 2x$

B. $4x - y + 2y + x - 4$

C. $2x + 5 - 3x - 9$

D. $5y + x - 4$

Problem 6

Simplify: $\frac{1}{2}x + 3(\frac{3}{4}x - 5)$

Problem 7

Simplify: $-\frac{1}{4}y + 2\frac{1}{4}y + 2 - y$

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Problem 8

Simplify: $6x - 2(5x - 1) - \frac{1}{2}x + 2$

Problem 9

Which of the following is the simplified version of the expression below?

$$4 - 2(3x + 5)$$

A. $-6 - 6x$

B. $6 - 6x$

C. $6x + 10$

D. $4 - 6x - 10$

Problem 10

Are the two expressions equivalent? Justify your answer.

$5y - (2y + 10)$ and $(2y + 10) - 5y$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 2

OBJECTIVE:

Define a solution to an equation. Solve and check solutions to 1 and 2 step equations.

Problem 1

Given the equation $4 + 15x = 49$,

a. Is $x = 2$ a solution to the equation?

b. Is $x = 3$ a solution to the equation?

Determine your answers without solving the equation.

Problem 2

Determine if $-\frac{1}{2}$ is a solution to the equation $-2x + 8 + 6x = -4(x - 1)$.

Problem 3

Solve each equation. Then check your solution to confirm it is correct.

a. $\frac{4}{3} - m = \frac{5}{3}$

b. $-(11 - p) = -20$

c. $6.8 = -5.4 + 2n$

a.	b.	c.
Check:	**Check:**	**Check:**

Name:_____ **Date:**_____

Problem 1

Is $x = 10$ a solution to the following equation? Show work to justify your answer.

$$-7x + 50 = x - 10$$

Problem 2

Is $x = -5$ a solution to the following equation? Show work to justify your answer.

$$x - 6 = 3x + 4$$

Problem 3

For which of the equations below is the value of $x = 5$?

A. $2x + 3 = 9$

B. $3x + 5 = 15$

C. $-2x + 1 = 9$

D. $3x - 20 = -5$

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Problem 4

Use the given equation to answer the questions that follow.

Saba did not solve the equation correctly:

$2x - 8 = 4$
-8 -8
$2x = -4$
÷2 ÷2
$x = -2$

a. Why is Saba's work incorrect?

b. How could Saba have checked to see if -2 was correct?

c. Solve the following equation. Keep in mind Saba's mistake.

$$3x + 7 = 13$$

Problem 5

What is the value of y in the equation below?

$$3y - 12 = -15$$

A. 1

B. -1

C. 5

D. -5

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Problem 6

Solve the linear equations below. Show that your solutions are correct by substituting your solutions into the original equations.

a. $-x + \frac{6}{15} = \frac{4}{5}$

b. $3 - (3 - 2x) = 18$

Problem 7

For which value of x would the equation below be true?

$$-7 + 3x = 9$$

A. $\frac{16}{3}$

B. $\frac{2}{3}$

C. $\frac{3}{16}$

D. $-\frac{16}{3}$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 3

OBJECTIVE:

Justify each step in solving a multi-step equation with variables on one side of the equation.

Problem 1

Two students, Pablo and Karla, are solving an equation. The equation and their work is shown below.

$$15 - 3(x - 2) + 6x = 3(13)$$

Pablo's Work	Karla's Work
$15 - 3x + 6 + 6x = 3(13)$	$15 - 3x + 6 + 6x = 39$
$15 + 6 - 3x + 6x = 3(13)$	$-3x + 6x + 15 + 6 = 39$
$21 + 3x = 3(13)$	$3x + 21 = 39$
$3(7 + x) = 3(13)$	$3x = 18$
$7 + x = 13$	$x = 6$
$x = 6$	

a. Explain what Pablo and Karla did in each step of their work.
b. Are Pablo and Karla correct?

Problem 2

Two more students, Christian and Esther, are solving the same equation. They take a different approach to solving the equation, but they each make an error in the first two lines of their work, shown below.

$$15 - 3(x - 2) + 6x = 3(13)$$

Christian's Work	Esther's Work
$12(x - 2) + 6x = 39$	$15 - 3x - 6 + 6x = 39$
$12x - 24 + 6x = 39$	$15 - 6 - 3x + 6x = 39$

Explain the error that each student made.

Problem 3

Solve the equations.

a. $-\left(\frac{1}{2}-15\right)+\frac{5}{2}x=-2$

b. $\frac{11}{3}=\frac{5}{3}+3\left(\frac{x}{3}+\frac{2}{9}\right)$

c. $2(3m+6)-4(1-2m)=-20$

a.

b.

c.

Name: _____ **Date:** _____

Problem 1

Explain what happens between each line of work that leads to an equivalent equation.

a.

$2x + 30 - 5x = 3$

$2x - 5x + 30 = 3$ _____

$-3x + 30 = 3$ _____

$-3x = -27$ _____

$x = 9$ _____

b.

$3(2y + 5) = -21$

$6y + 15 = -21$ _____

$6y = -36$ _____

$y = -6$ _____

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Problem 2

A student solved the equation below incorrectly.

$$5(x-3)-4(x+1)=23$$

$$5x-15-4x+1=23$$

$$x-14=23$$

$$x=37$$

a. Identify and describe the error.

b. Solve the equation and check your solution.

Problem 3

Solve the following equations. Justify each step you take in solving the equation.

a. $11=-3(2y-2)-7$

b. $\frac{1}{3}(9-3x)=-4$

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Problem 4

Solve and check each equation.

a. $-(12+4x)=-40$

b. $-27=7(1+m)-5m$

c. $3-7(n+3)+n=-36$

d. $-\frac{1}{3}x+\frac{2}{3}(12+x)=-5$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 4

OBJECTIVE:

Write and solve multi-step equations to represent situations, with variables on one side of the equation.

Problem 1

The length of a rectangle is 3 cm less than twice the width of the rectangle. If the perimeter is 75 cm, what are the dimensions of the rectangle?

Problem 2

After collecting coins for a month, you count them to see how much money you have. You determine that you have 12 fewer quarters than you have nickels, and you have twice as many dimes as you have quarters. Altogether, the dimes, nickels, and quarters add up to $10.60. How many of each coin do you have?

Problem 3

Todd and Jason are brothers. Todd says, "I am twice as old as Jason was two years ago." The sum of the brother's ages is 38. How old is each brother?

Name:_____ **Date:**_____

Problem 1

A piece of paper has a length that is 5 less than twice its width. The perimeter of the piece of paper is 26 inches. What are the dimensions of the paper?

Problem 2

Mr. Killian is buying tickets for a school field trip. He buys 80 student tickets, and 15 adult tickets. The cost of a ticket for a student is $8 less than the cost of an adult ticket. He pays an additional charge of $14.75 in taxes and fees. If his total bill comes to $405, which equation can Mr. Killian use to determine the cost of an adult ticket, x?

A. $95x - 8 + 14.75 = 405$

B. $95(x - 8) + 14.75 = 405$

C. $15x + 80(x - 8) + 14.75 = 405$

D. $2(x - 8) + 80x + 14.75 = 405$

Problem 3

Jermiah is raising money for tickets to go to the school dance. To do this, he is buying a large number of candy bars to sell. Bulk candy bars cost $55 for a box, but this is on sale for 10% off the original price. He also has a coupon for $7 off the total cost before the percent discount is taken. If he has $300 to spend, which of the following equations will help him determine how many boxes of candy, x, he can buy?

A. $55x - 0.9(7) = 300$

B. $55(0.9x - 7) = 300$

C. $0.9(55x) - 7 = 300$

D. $0.9(55x - 7) = 300$

Problem 4

One angle of a triangle is 90 degrees. The second angle is fifteen less than twice the size of the third angle. What are the measures of the angles on the triangle?

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Problem 5

The base angles of an isosceles triangle are equal in measure. The third angle in the triangle is 18 degrees less than the measure of one of the base angles. What are the measures of the angles on the triangle?

Problem 6

The sum of 3 consecutive integers is 726. What are the integers?

Problem 7

The sum of 4 consecutive even integers is 388. What are the integers?

Problem 8

A customer brings a bag of pennies and dimes into the bank. The bank teller determines that the bag contains $6.17 worth of coins, and there are 5 more pennies than 8 times the number of dimes.

How many pennies and how many dimes are in the bag?

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Problem 9

Solve:

a. $0.4 - 0.5(x + 10) = 2.4$

b. $\frac{2y - 5}{3} = \left(\frac{1}{6}\right)5$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 6

OBJECTIVE:

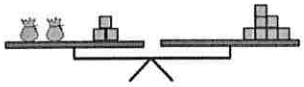
Solve equations with variables on both sides of the equal sign.

Problem 1

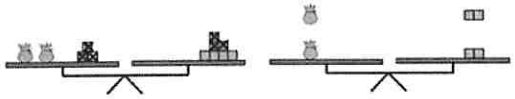
In elementary school, students often draw pictures of the arithmetic they do. For instance, they might draw the following picture for the problem $2 + 3$

In this picture, each square represents a tile. We can do the same thing for algebraic expressions, but we need to be careful about how we represent the unknown. If we assume that an unknown number of tiles, x, are contained in a bag, we could draw the following picture for $2x + 3$

When we have an equation to solve, we assume that the two sides of the equation are equal. We can represent this by showing them level on a balance. For example, the equation $2x + 3 = 7$could be shown as:



When we solve equations, we can add, subtract, multiply or divide both sides of the equation by the same thing in order to maintain the equality. This can be shown in pictures by keeping the balance level. For example, we could solve the equation $2x + 3 = 7$using pictures by first removing (subtracting) 3 from each side, and then splitting (dividing) the remaining blocks into two equal groups:



From this picture, we can see that, in order to keep the balance level, each bag must contain 2 tiles, which means that $x = 2$

a. Solve $5x + 1 = 2x + 7$in two ways: symbolically, the way you usually do with equations, and also with pictures of a balance. Show how each step you take symbolically is shown in the pictures.
b. Solve the equation $4x = x + 1$using pictures and symbols. Discuss any issues that arise.
c. What issues arise when you try to solve the equation $2 = 2x - 4$using pictures? Do the same issues arise when you solve this equation symbolically?

Problem 2

The equation below is solved incorrectly three different ways.

For each solution, find and explain the error(s) that occurred. Then find the correct solution for x.

$$12 - 4y = 7y + 10$$

Incorrect Solution #1	Incorrect Solution #2	Incorrect Solution #3
$22 = 3y$ $7\frac{1}{3} = y$	$4y = 7y - 2$ $-3y = -2$ $y = \frac{2}{3}$	$4y = 7y + 22$ $-3y = 22$ $y = -7\frac{1}{3}$

Problem 3

What value for x would make the following equation true?

$$20 - (3x - 9) - 2 = -(-11x + 1)$$

Name:_____ **Date:**_____

Problem 1

Solve for the value of x in the equation below. Show your work.

$$-3x + 7 = 4x + 21$$

A. 2

B. -2

C 7

D. 14

Problem 2

What is the value of y in the equation below?

$$4y - 9 + 2y = y + 46$$

Problem 3

Solve the following equations.

a. $2y + 10 = 6(y - 1)$	b. $3(x - 5) = x + 1$
a. $y = 1$	a. $x = 16$
b. $y = 2$	b. $x = 8$
c. $y = 3$	c. $x = 6$
d. $y = 4$	d. $x = 3$

Problem 4

Solve: $2(3x - 1) = 3x + 15 + x + 11$

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Problem 5

Solve: $3(4-x)=13+3x$

Problem 6

The equation below is solved incorrectly.

$$1+6(m-3)=\frac{2}{3}(21-18m)$$

$$1+6m-18=14-12m$$

$$6m-17=14-12m$$

$$-6m=-3$$

$$m=\frac{1}{2}$$

a. Identify and describe the error.

b. Solve the equation to find the correct solution.

Problem 7

What is the value of x in the equation below?

$$-2(3x+10)=4+3(x-7)$$

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Problem 8

Solve. $\frac{1}{4}(12x + 16) = 8 - 2(3x + 1)$

Problem 9

Solve the equation below and check your answer using substitution.

$$7x - 2(x + 4) = -3(x - 4) + 44$$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 7

OBJECTIVE:

Write and solve multi-step equations to represent situations, including variables on both sides of the equation.

Problem 1

You have a coupon worth $18 off the purchase of a scientific calculator. At the same time, the calculator is offered with a discount of 15%, but no further discounts may be applied. For what tag price on the calculator do you pay the same amount for each discount?

Problem 2

You and your brother go to the same store to buy fruit. You purchase a large watermelon for $7.71 and 2.4 pounds of red grapes. Your brother buys a platter of pre-cut fruit for $9.95 and 1.6 pounds of red grapes. The two of you spend the same amount of money. How much do the grapes cost per pound?

Problem 3

Solve the equations for the variable.

a. $-4.2x + 6 - 8.3x = \frac{1}{2}(-9x + 4)$

b. $\frac{5 - x}{8} = \frac{\frac{1}{4}x - 5}{3}$

Name:_____ **Date:**_____

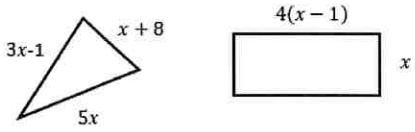
Problem 1

Solve for the value of x that would make the equation true.

$$\frac{1}{3}(6x + 9) - 5 = -(3x - 1)$$

Problem 2

The triangle and the rectangle shown below have equal perimeters. Find the measures of the side lengths of the triangle. (Figures not drawn to scale.)



Problem 3

At a bakery, two workers earn the same amount of money in one afternoon, working the same number of hours. Rheehan is a manager and makes $16 an hour. He also receives $4 in tips. John makes $11 an hour and receives $29 in tips. How many hours did each worker work at the bakery that afternoon?

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Problem 4

For a science project, Sammy observed a chipmunk and a squirrel stashing acorns in holes. The chipmunk hid 3 acorns in each of the holes it dug. The squirrel hid 4 acorns in each of the holes it dug. They each hid the same number of acorns, although the squirrel needed 4 fewer holes. How many acorns did the chipmunk hide?

Problem 5

Solve: $\frac{3-x}{4} = \frac{5x+1}{3}$

Problem 6

Describe what is being done in each step while solving the equation.

$$2(-3x+4) = 5x+2$$

$$-6x+8 = 5x+2$$

$$8 = 11x+2$$

$$6 = 11x$$

$$x = \frac{6}{11}$$

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Problem 7

Clare was solving an equation, but when she checked her answer she saw her solution was incorrect. She knows she made a mistake, but she can't find it. Where is Clare's mistake and what is the solution to the equation?

$$12(5+2y) = 4y - (5-9y)$$

$$72 + 24y = 4y - 5 - 9y$$

$$72 + 24y = -5y - 5$$

$$24y = -5y - 77$$

$$29y = -77$$

$$y = \frac{-77}{29}$$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 8

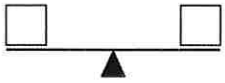
OBJECTIVE:

Understand that equations can have no solutions, infinite solutions, or a unique solution; classify equations by their solution.

Problem 1

These scales are all currently balanced. You must choose a number to fill into the boxes in each problem that will keep them balanced. In each individual box you may only use one number.

1.



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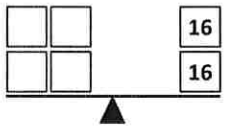

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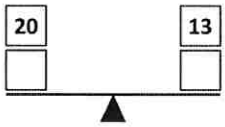

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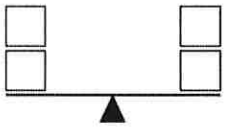
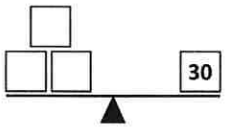
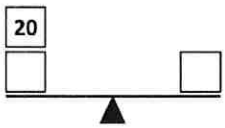


5.



6.



Problem 2

Sort the equations below into the three categories.

a. $3x = 0$

b. $3x = 2x$

c. $3x = 2x + x$

d. $2x + 1 = 2x + 2$

e. $3x - 1 = 2x - 1$

f. $x + 2 = 2 + x$

g. $x + 2 = x - 2$

h. $2x - 3 = 3 - 2x$

Infinite Solutions	Unique Solution	No Solution

Problem 3

Solve the equations below and explain what each solution means.

a. $5x - 2\left(\frac{1}{2} + x\right) + 8 = -\frac{1}{4}(16 - 12x)$

b. $1.6(x + 4) - 3(0.2x + 1) = 2x - \frac{1}{2}(18.6)$

c. $\frac{\frac{1}{2}x + 4}{-1} = \frac{-x - 8}{2}$

Name:_____ **Date:**_____

Problem 1

Maria simplifies an equation and makes the inference that it has no solutions. Which equation would cause her to make that inference?

A. $x = 1$

B. $0 = 0$

C. $2 = 9$

D. $x = 0$

Problem 2

Joshua simplifies an equation and makes the inference that it has infinite solutions. Which equation would cause him to make that inference?

A. $x = 1$

B. $0 = 0$

C. $2 = 9$

D. $x = 0$

Problem 3

Sarah simplifies an equation and sees that it has one solution. Which of the following equations could she be seeing?

A. $3 = 10$

B. $x = 0$

C. $-9 = -9$

D. $6 = -6$

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Problem 4

Use the equations in the table below to answer the questions that follow.

a. Which of the equations below has infinite solutions? No solutions? One solution? Label each equation and explain your reasoning.

Equation I	Equation II	Equation III
$3x + 1 = 2x + 5$	$2x + 3 = 2x - 5$	$5 + x = x + 5$

b. Which equation had infinite solutions? Choose three random values for x and substitute them into the equation to prove that any solution would work.

Problem 5

Sort the following equations into the table at the bottom. Show your work.

- $6 - x = x - 6$
- $x + 4 = 4 + x$
- $x + 7 = x - 2$
- $4x - 1 = 3x$
- $\frac{x}{4} = x$
- $3x + 2 = 3(x + 2)$

Infinite solutions	No solutions	One unique solution

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Problem 6

Write an equation with no solutions that contains the term $5x$.

Problem 7

Write an equation with infinite solutions that contains the term -7.

Problem 8

Fill in the blanks so that the equation has no solutions.

$$-3x + 1 = \square x + \square$$

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SOLVING ONE-VARIABLE EQUATIONS: Lesson 9

OBJECTIVE:

Solve and reason with equations with three types of solutions.

Problem 1

The equation below has a unique solution.

$$2(3x - 4) - (x - 7) = -6(x + 1) + 7x$$

a. Change the equation so that it has no solution.
b. Change the original equation so that it has infinite solutions.

Problem 2

The equation below is incomplete.

$$\frac{1}{3}(2x+18 - 3) + x = ____ x + ____$$

Complete the equation, by filling in the blanks, to create an equation with:

a. A unique solution
b. No solution
c. Infinite solutions

Problem 3

Without solving them, say whether these equations have a positive solution, a negative solution, a zero solution, or no solution.

a. $3x = 5$

b. $5z + 7 = 3$

c. $7 - 5w = 3$

d. $4a = 9a$

e. $y = y + 1$

Name:_____ **Date:**_____

Problem 1

Consider the following equations.

I. $-2(x-3) = -2x - 6$

II. $x - 2x + 3 - x - 3$

III. $4(x-3) = 2x - 8$

Which of the equations has **no solutions**?

a. I only
b. II only
c. II and III only
d. None

Problem 2

Which values of J and K result in an equation with no solutions?

$$Jx - 25 = Kx + 55$$

Select **all** that apply.

A. $J = 25$ and $K = -55$

B. $J = 55$ and $K = -25$

C. $J = 25$ and $K = 25$

D. $J = -55$ and $K = -55$

Problem 3

Solve the equation below for x.

$$4x + 5 - 7(x+1) = x - 4x + 1 - 3$$

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Problem 4

Mai says that the equation $2x + 2 = x + 1$ has no solution because the left hand side is double the right hand side. Do you agree with Mai? Explain your reasoning.

Problem 5

Write an expression on the right side of the equation to create an equation with infinite solutions.

$3 - 7(x + 1) =$_____

Problem 6

Write an expression on the right side of the equation to create an equation with no solutions.

$3 - 7(x + 1) =$ _____

Problem 7

Solve each equation below.

a. $3(1 + y) - 5 = 3y - 2$

b. $6x - 3 = 2(5 - 2x) + 10x$

c. $\frac{1}{3}m + 9 = \frac{2}{3}(m + 9)$

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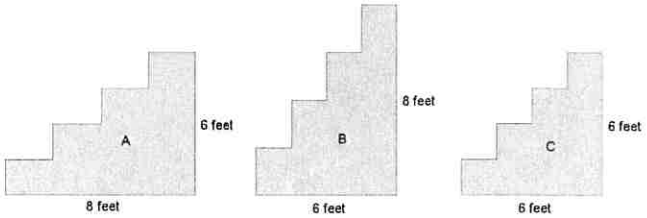
LINEAR RELATIONSHIPS: Lesson 6

OBJECTIVE:

Define slope and determine slope from graphs.

Problem 1

Three staircases are shown below. Which staircase is the steepest? Without doing any calculations, order the staircases from least steep to most steep.



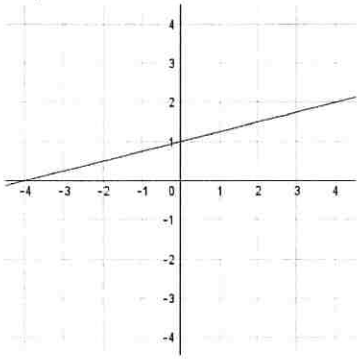
Slope is a measure of steepness. The greater the slope, the greater the steepness. Use the measurements provided in the diagram to justify the order of steepness you determined earlier.

Another staircase climbs 8 feet over a distance of 10 feet. Where does this staircase fall in the order of steepness?

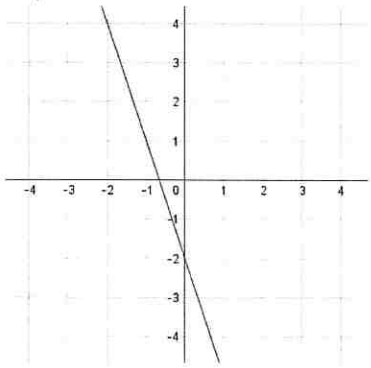
Problem 2

Find the slope of the line in each graph below.

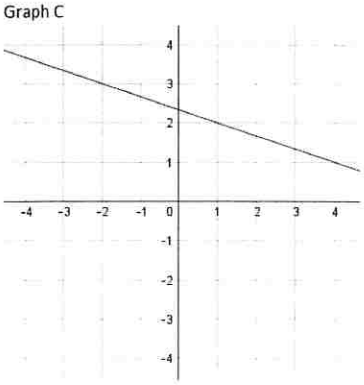
Graph A



Graph B

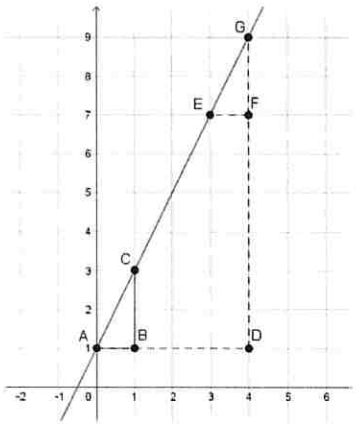


Graph C



Problem 3

A line is drawn through the points A, C, E, and G as shown in the graph below.



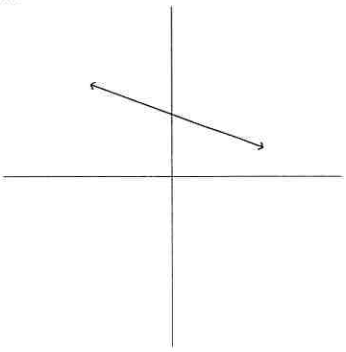
a. What transformation takes triangle ABC to triangle EFG? Are the triangles congruent, similar, or neither? Explain.
b. What transformation takes triangle ABC to triangle ADG? Are the triangles congruent, similar, or neither? Explain.
c. If two triangles are similar, then what do you know about their corresponding side lengths?
d. Will the slope of the line between any two points on the line always be the same? Explain your reasoning using similar triangles.

Name:_____ **Date:**_____

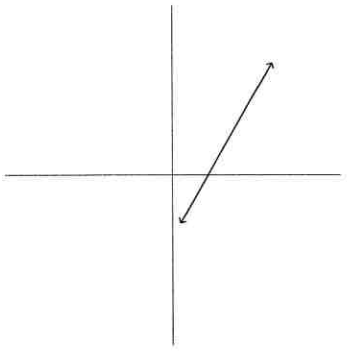
Problem 1

Use the graphs below to answer the questions that follow.

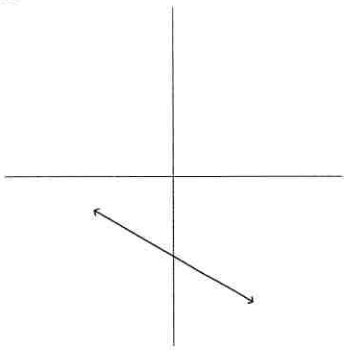
A.



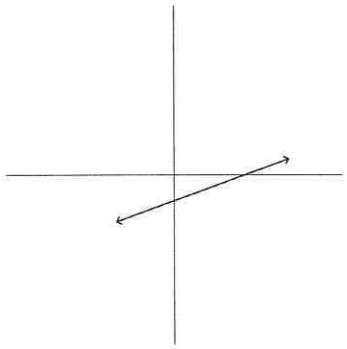
B.



C.



D.



a. Which graphs have a negative slope?

b. Which graphs have a positive slope?

c. Which graphs have a slope you would describe as steep?

d. Which graphs have a slope you would describe as shallow?

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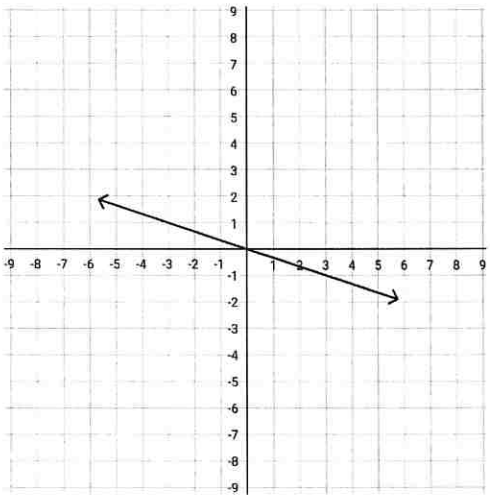
Problem 2

Michael and Eve find the slope of the graph below.



Michael says the slope is $\frac{1}{-3}$, Eve says the slope is $\frac{-1}{3}$. Who is correct? Explain your reasoning.

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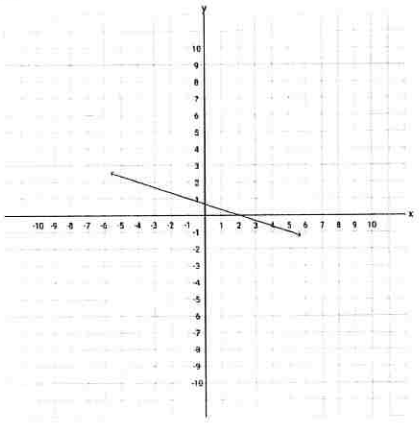
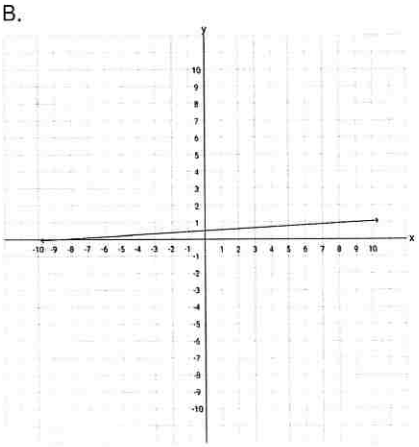
Problem 3

Find the slope of each graph below.

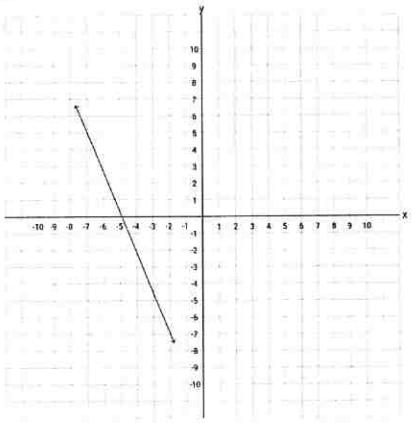
A.



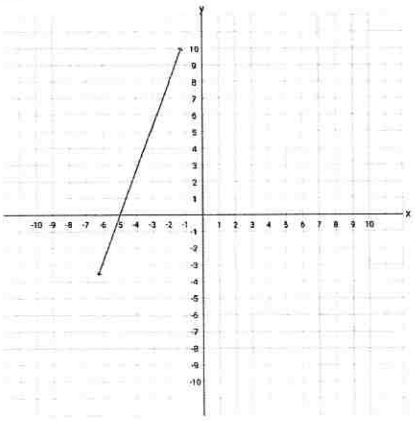
B.



C.



D.



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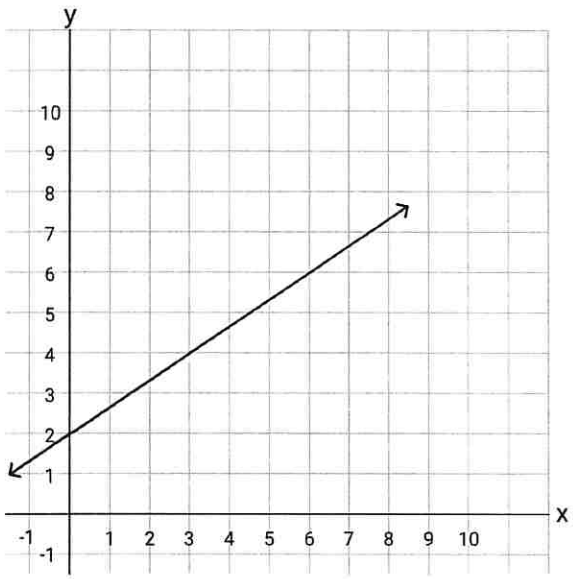
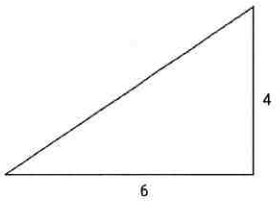
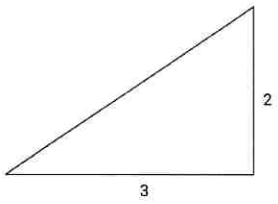
Problem 4

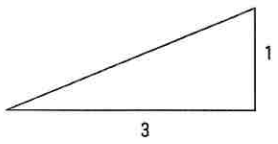
A line is shown below.

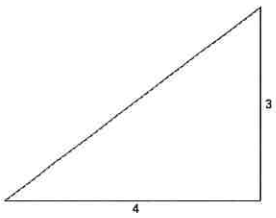


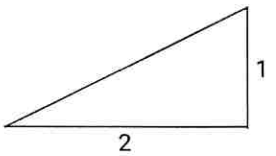
Which triangles' diagonals could be place on the line so their lengths would match up? Select **all** that apply. (Note these are not necessarily drawn to scale)











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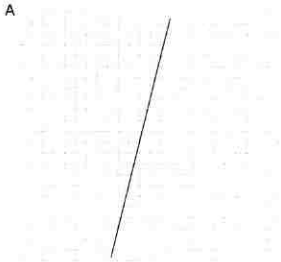
Problem 5

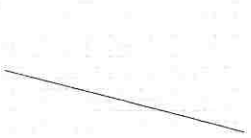
Each square on a grid represents 1 unit on each side. Match the numbers with the slopes of the lines.

A



B

C

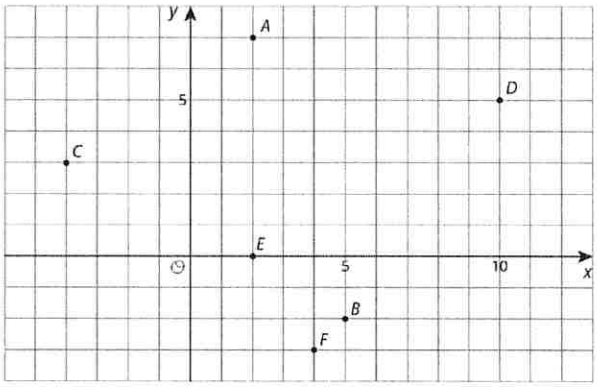


1. $-\frac{1}{4}$
2. $\frac{1}{4}$
3. 4

Problem 6

Draw a line with the given slope through the given point. What other point lies on that line?

a. Point A, slope $= -3$
b. Point A, slope $= -\frac{1}{4}$
c. Point C, slope $= -\frac{1}{2}$
d. Point E, slope $= -\frac{2}{3}$



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LINEAR RELATIONSHIPS: Lesson 8

OBJECTIVE:

Graph linear equations using slope-intercept form y=mx+b.

Problem 1

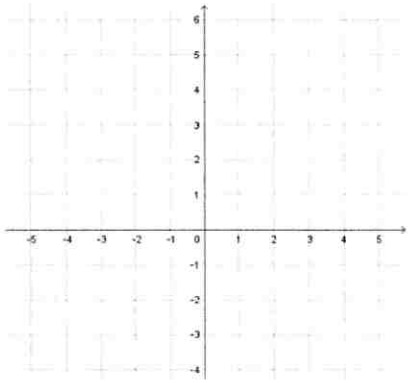
Two linear equations are shown below. Complete the table of values for each one and graph the lines in the same coordinate plane. Then answer the questions that follow.

$y = 2x$

x	y
−2	
−1	
0	
1	
2	

$y = 2x + 3$

x	y
−2	
−1	
0	
1	
2	



a. $y = 2x$ is a proportional relationship represented by a line through the origin (0, 0). In $y = 2x + 3$, what impact does the "+3" have on the table of values? What impact does it have on the lines in the graph? What transformation is this?
b. What is the y-intercept of each line? Where do you see this in the equations?
c. What is the slope of each line? Where do you see this in the equations?
d. Describe the graph of the line $y = 2x - 3$.

Problem 2

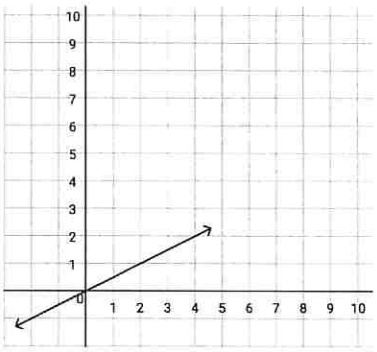
For each linear equation below, identify the slope and y-intercept and use them to graph the line.

a. $y = \frac{1}{3}x - 2$
b. $y = -3x + 4$
c. $y = -x$

Name:_____ **Date:**_____

Problem 1

Nikhil graphed the equation $y = \frac{1}{2}x$ in the coordinate plane, as shown below.



a. To graph the equation $y = \frac{1}{2}x + 4$, Nikhil translated his graph 4 units to the right. Did Nikhil graph $y = \frac{1}{2}x + 4$ correctly? Explain.

b. Graph the line represented by $y = \frac{1}{2}x + 4$ in the coordinate plane.

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Problem 2

Three equations are shown below.

Equation A: $y = \frac{3}{4}x$

Equation B: $y = \frac{3}{4}x + 6$

Equation C: $y = \frac{3}{4}x - 2$

a. Describe how the equations are similar.

b. Describe how the equations are different.

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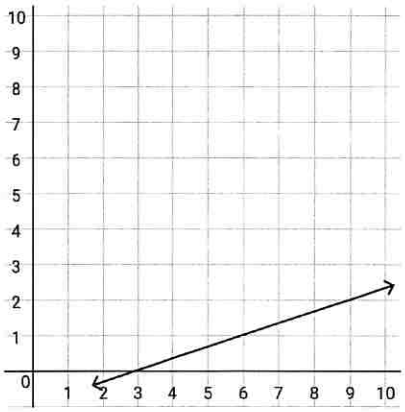
Problem 3

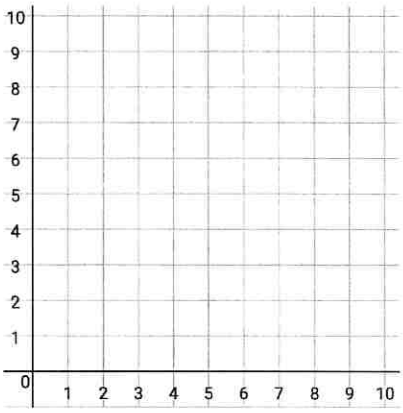
Each of the following graphs has an error. For each graph explain the error and correctly graph the equation.

$y = 3x + 3$

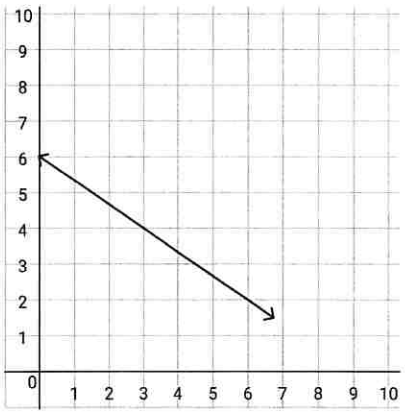


Error:

Correct graph:

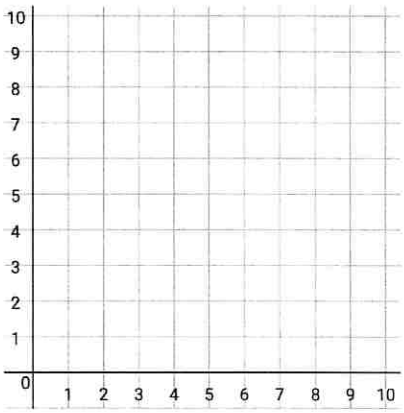


$y = 1.5x + 6$



Error:

Correct graph:



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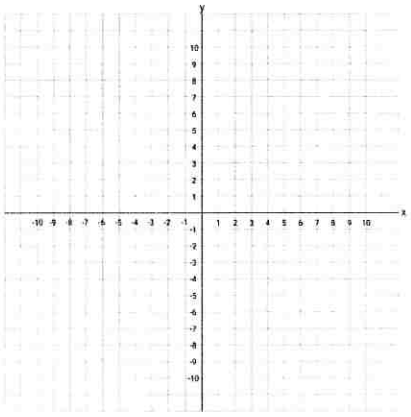
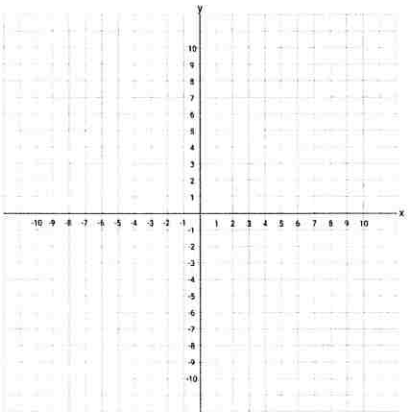
Problem 4

Identify the slope and y-intercept of each equation. Then graph the equation.

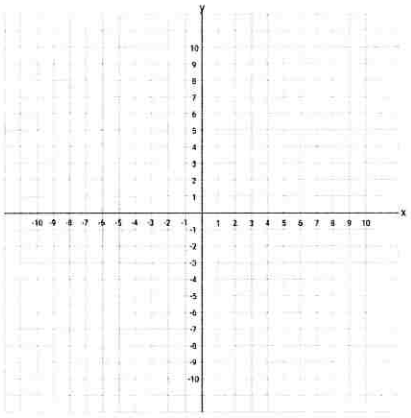
$y = -3x + 2$
y-intercept:
slope:



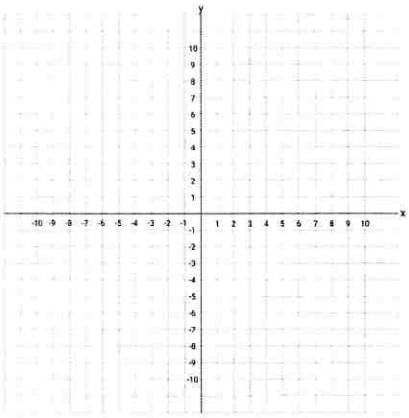
$y = 4x - 7$
y-intercept:
slope:



$y = \frac{2}{5}x - 3$
y-intercept:
slope:



$y = -\frac{1}{3}x - 2$
y-intercept:
slope:



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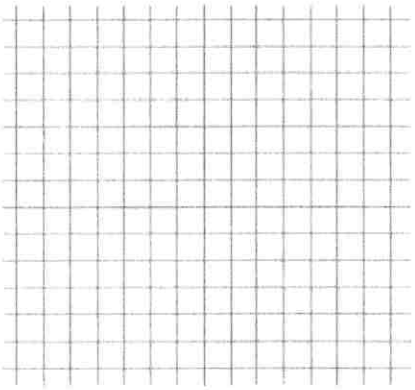
LINEAR RELATIONSHIPS: Lesson 9

OBJECTIVE:

Write equations into slope-intercept form in order to graph. Graph vertical and horizontal lines.

Problem 1

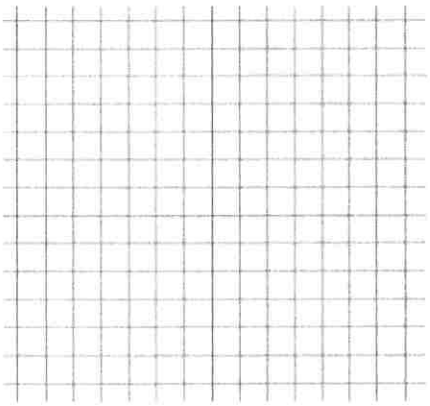
Given the equation $2x + 3y = 9$, determine the slope and y-intercept, and then graph the line that represents the equation.



Problem 2

Write the equation below into slope-intercept form and then graph the line that represents the equation.

$$-4x - 2y = -5$$



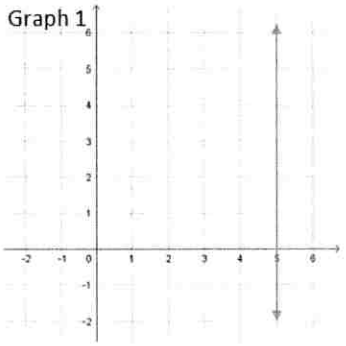
Problem 3

Match each equation to a graph. Be prepared to explain your reasoning.

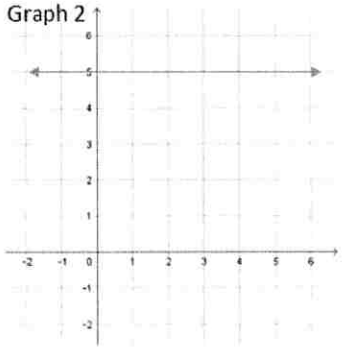
Equation A: $y = 5$

Equation B: $x = 5$

Graph 1



Graph 2

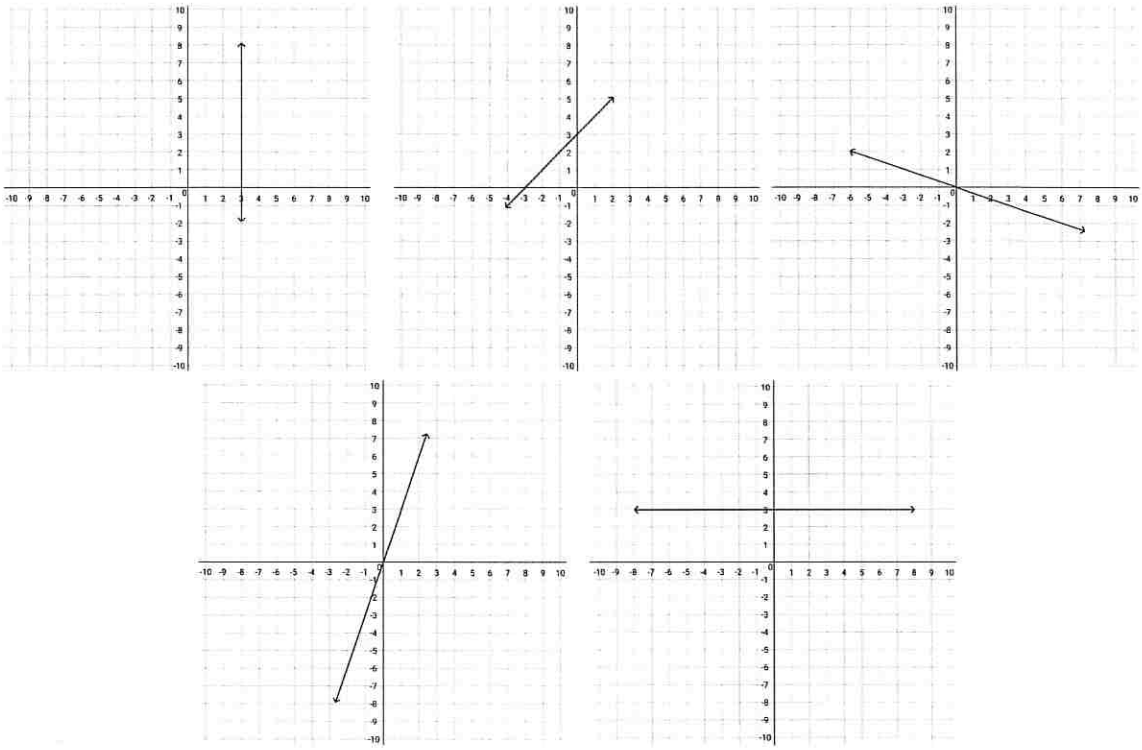


Name: _____ **Date:** _____

Problem 1

Match each equation to its graph.

a. $y = 3x$
b. $y = 3 + x$
c. $y = -\frac{1}{3}x$
d. $y = 3$
e. $x = 3$



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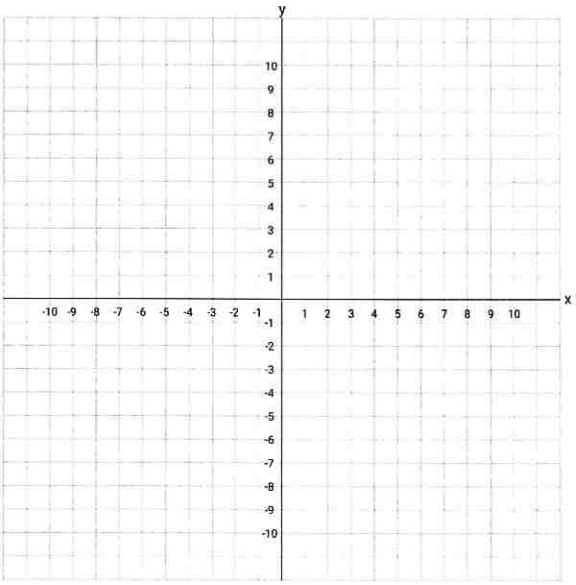
Problem 2

Brad graphed the equation $y = -1$ by going to the value -1 on the y-axis and drawing a vertical line.

Did Brad draw the graph for $y = -1$ correctly? Explain your reasoning. Draw the graph for $y = -1$.



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Problem 3

Convert each equation in standard form into slope-intercept form. Identify the slope and y-intercept of each equation.

a. $y - 2x + 7 = 8$

b. $-0.4x - y = 1.8$

c. $\frac{10}{3}x + y - 12 = 15$

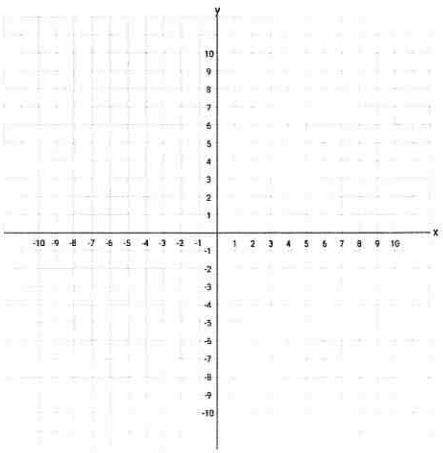
d. $2y - 5x + 10 = 0$

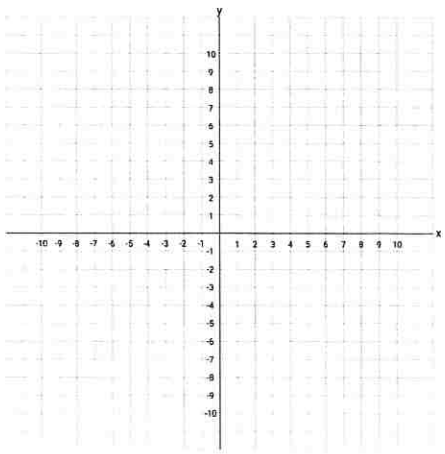
Problem 4

Graph the equations below.

a. $-\frac{3}{4}x - y + 6 = 0$

b. $0.5y + 1.25x = 4$





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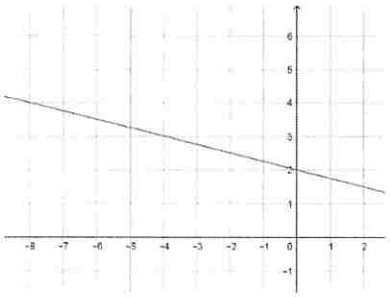
LINEAR RELATIONSHIPS: Lesson 10

OBJECTIVE:

Write linear equations from graphs in the coordinate plane.

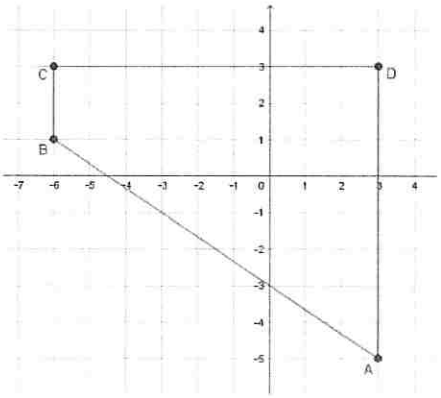
Problem 1

What is the equation of the line represented in the graph below?



Problem 2

Four lines were used to define the edges of the trapezoid shown below.



Write an equation for each line described below:

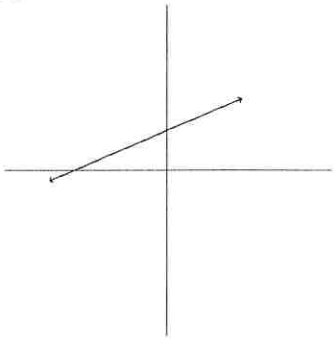
a. Line that passes through points A and B
b. Line that passes through points B and C
c. Line that passes through points C and D
d. Line that passes through points D and A

Name:_____ **Date:**_____

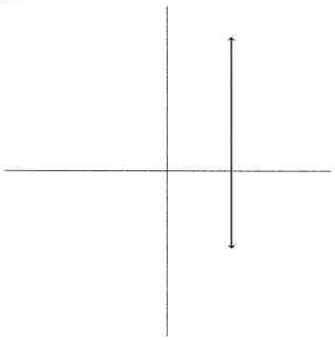
Problem 1

Use the graphs below to answer the questions that follow.

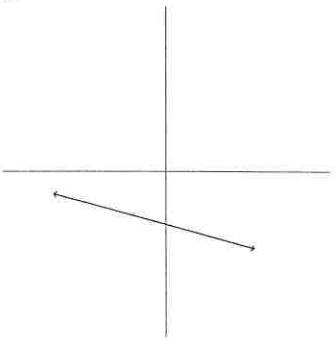
A.



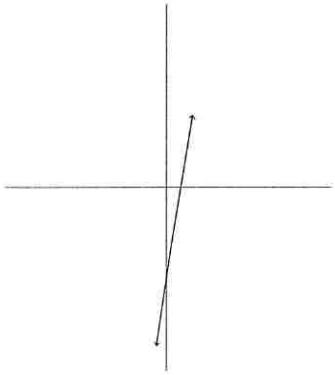
B.



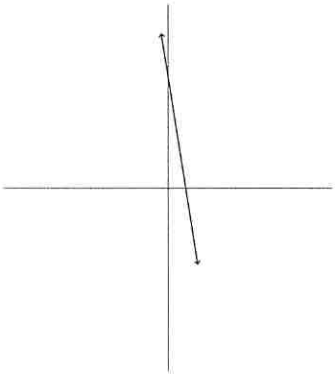
C.



D.



E.



a. Which graph(s) have a positive slope?

b. Which graph(s) have a positive y-intercept?

c. Which graph(s) have a slope whose absolute value is greater than 1?

d. Which graph(s) have a negative slope and a positive y-intercept?

e. Which graphs have no y-intercept?

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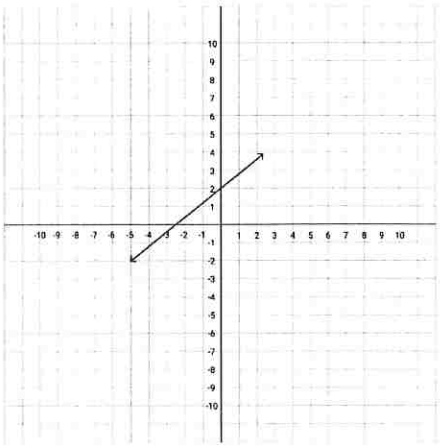
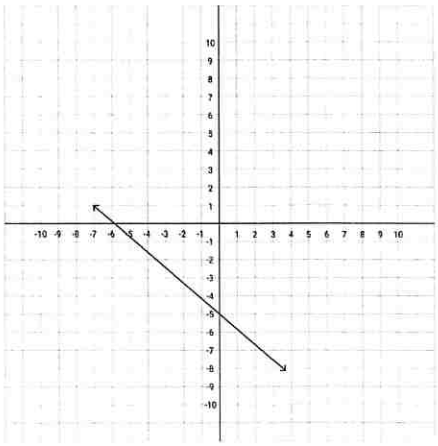
Problem 2

Write an equation for each graph below.





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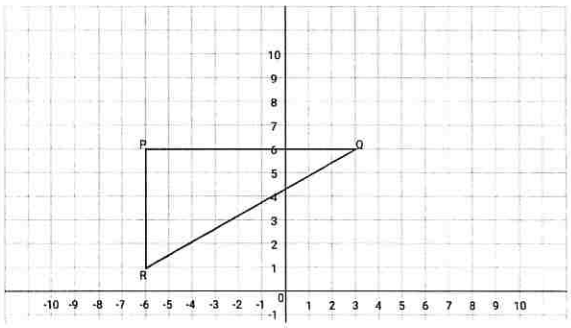
Problem 3

A triangle is shown in the coordinate plane. Write an equation to represent each line described below.



Line PQ:

Line: PR:

Line QR:

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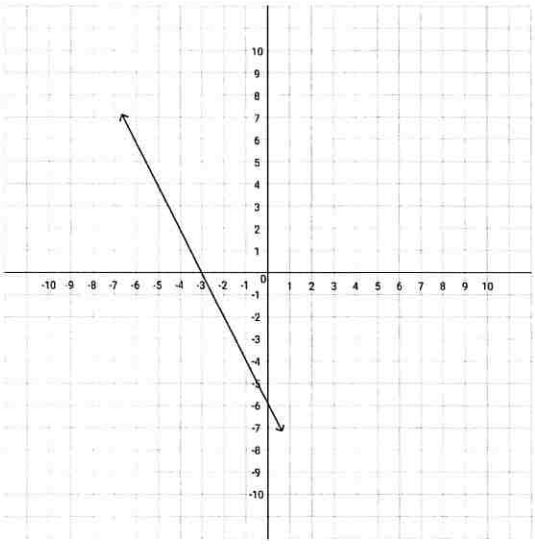
Problem 4

Benny writes the equation $y = -2x - 3$ to describe the graph below.



Benny has made a mistake. Describe his mistake and write the correct equation.

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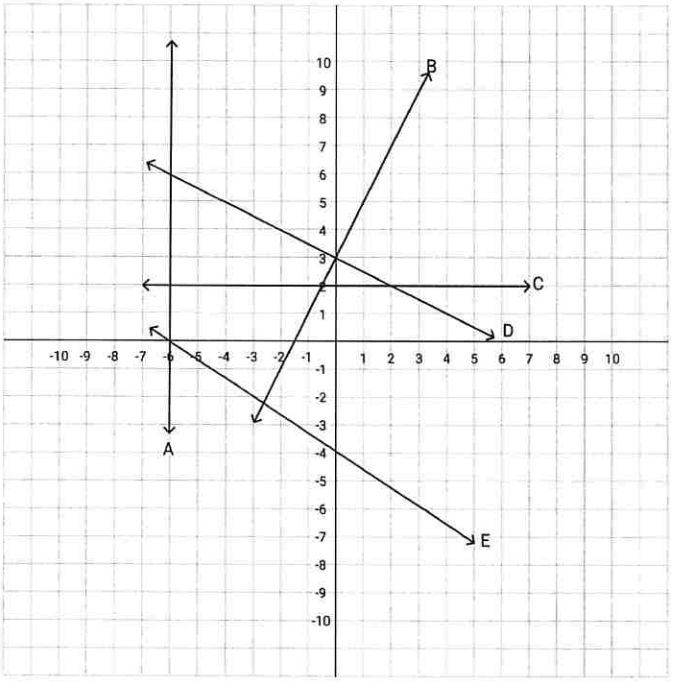
Problem 5

Write an equation for each of the lines in the graph below.



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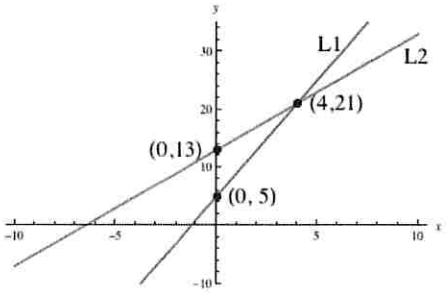
SYSTEM OF LINEAR EQUATIONS: Lesson 1

OBJECTIVE:

Define a system of linear equations and its solution.

Problem 1

Consider the graph below showing two lines, L1 and L2.

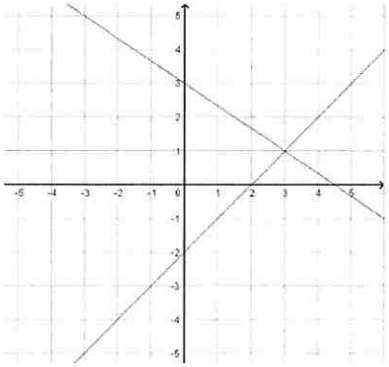


a. What is the equation for each line?
b. Find a point, other than the ones given in the graph, that is a solution to L1 but not L2.
c. Is the point (4, 21) a solution to L1? Is it a solution to L2? Justify your response using your equations from Part (a).

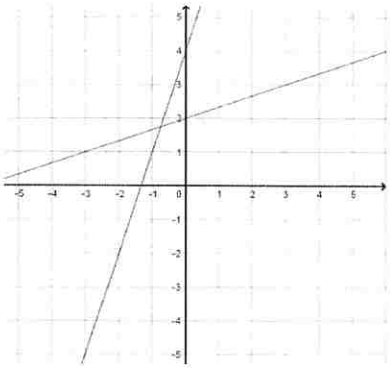
Problem 2

Estimate the solution to each system graphed below.

Graph A:



Graph B:

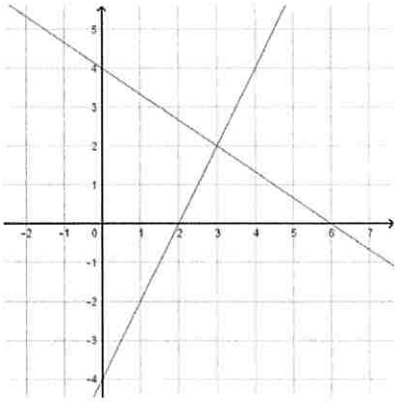


Problem 3

A system of linear equations and the corresponding graph are shown below.

$$y = 2x - 4$$

$$y = -\frac{2}{3}x + 4$$



Identify the solution to the system and then prove the solution algebraically.

Name:_____ **Date:**_____

Problem 1

What part of a graphed system of equations represents the solution?

A. The x-axis
B. The y-axis
C. The intersection of the two lines
D. The slope of the two lines
E. The y-intercepts of the two lines

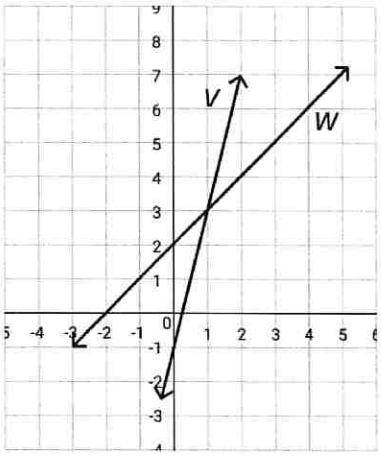
Problem 2

Explain your answer to question #1. Why does this represent the solution to a system of linear equations?

Problem 3

Use the graph to answer the following questions:

a. What are the equations of the graphed lines?



b. What is the solution to the system of equations?

c. Name a point that is a solution to line *v*, but not line *w*.

d. Name a point that is a solution to line *w*, but not line *v*.

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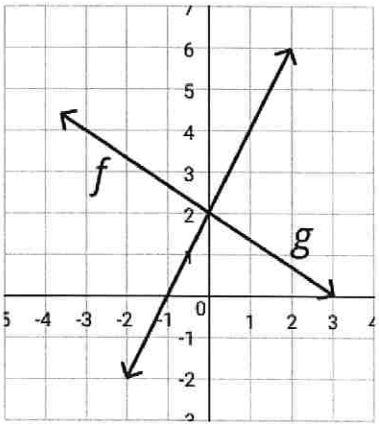
Problem 4

Use the graph to answer the following questions:

a. What are the equations of the graphed lines?

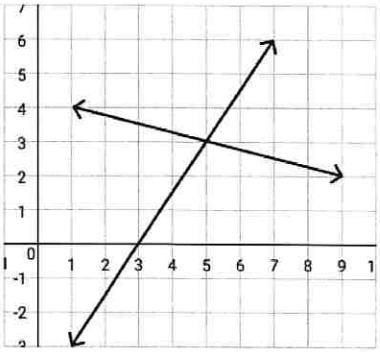


b. What is the solution to the system of equations?

c. Use algebra to prove that the ordered pair is a solution to the system of equations.

Problem 5

Alexis says the solution the system below is (3, 0) because it intersects with the x-axis at this point. Explain to Alexis why her reasoning is incorrect. Then estimate the solution to the system.



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SYSTEM OF LINEAR EQUATIONS: Lesson 2

OBJECTIVE:

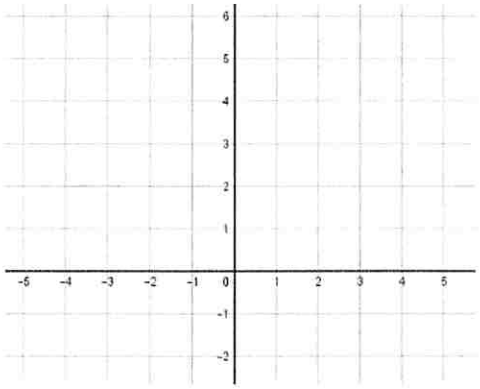
Solve systems of equations by graphing.

Problem 1

Graph the system of equations in the coordinate plane and identify the solution.

$y = 4$

$y = -x + 2$

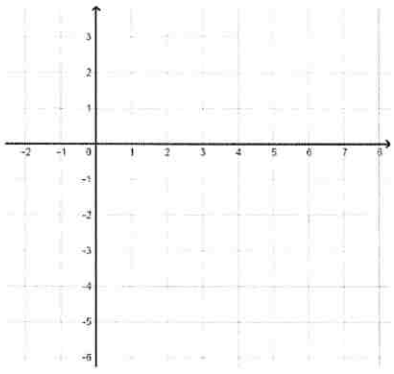


Problem 2

Graph the system of equations in the coordinate plane. Identify the solution to the system and verify it algebraically.

$2x - 3y = 18$

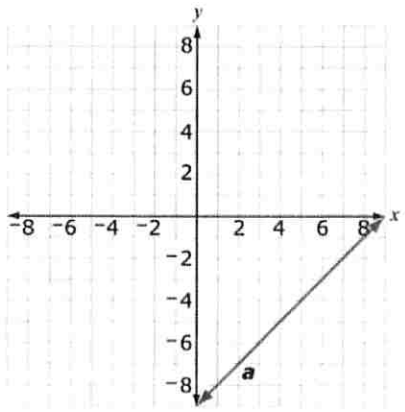
$2x + y = 2$



Problem 3

Line a is shown on the coordinate grid. Construct line b on the coordinate grid so that

- Line a and line b represent a system of linear equations with a solution of (7, -2).
- The slope of line b is greater than -1 and less than 0.
- The y-intercept of line b is positive.



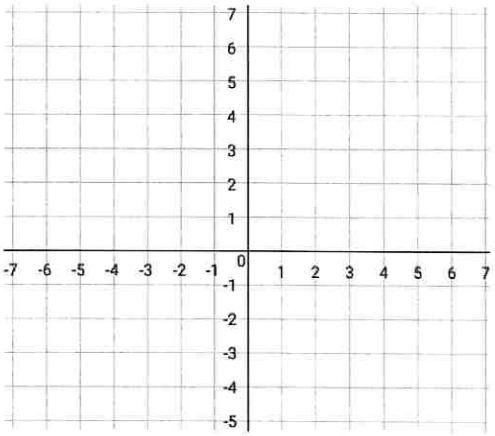
Name:_____ **Date:**_____

Problem 1

Graph the system of equations and find the solution.

$y = x - 3$

$y = -2x + 6$



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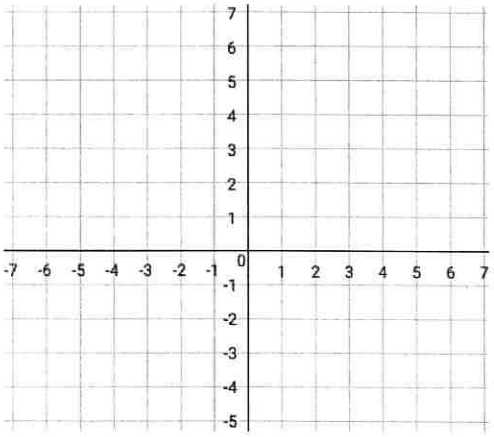
Problem 2

Graph the system of equations and find the solution.

$y = \frac{1}{2}x + 2$

$y = 2x - 1$

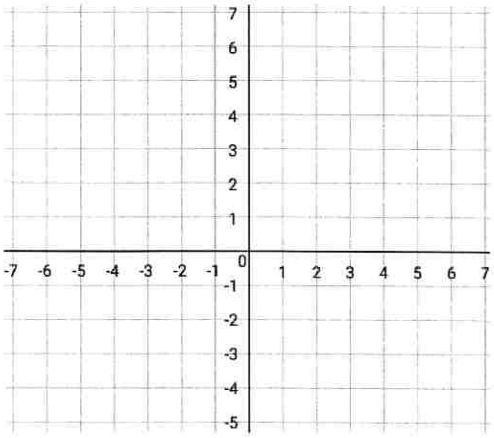


Problem 3

Graph the system of equations and find the solution. Verify your solution algebraically.

$y = 5x - 3$

$y = 2x$



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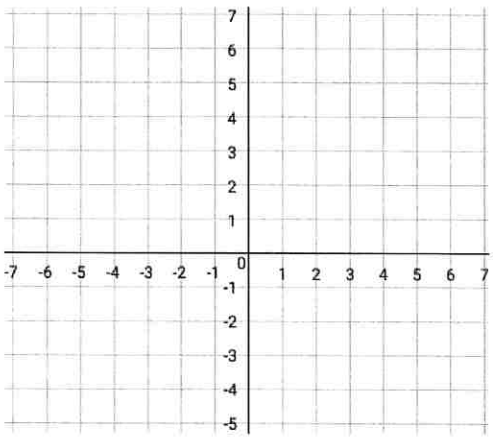
Problem 4

Graph the system of equations and find the solution.

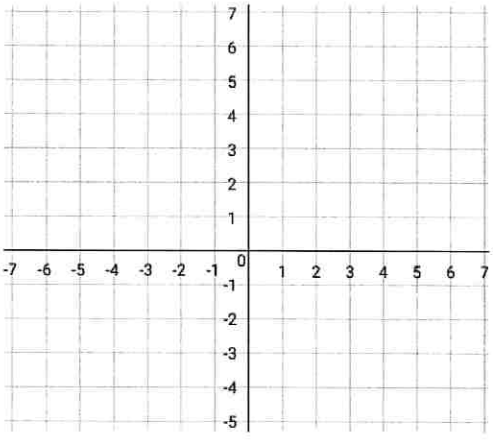
$2x + 4y = 8$

$x + \frac{1}{2}y = -\frac{1}{2}$



Problem 5

The point where the graphs of two equations intersect has y-coordinate 2. One equation is $y = 3x + 5$. Find the other equation if its graph has a slope of 1. A graph is provided for you if you need it.



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SYSTEM OF LINEAR EQUATIONS: Lesson 3

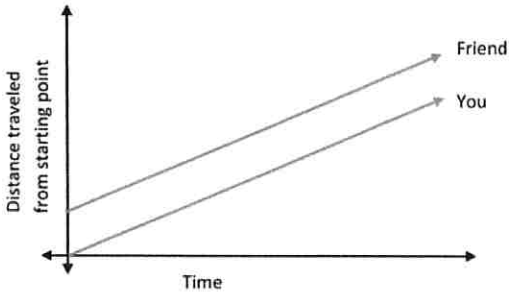
OBJECTIVE:

Classify systems of linear equations as having a unique solution, no solutions, or infinite solutions.

Problem 1

You and a friend are going for a run along a path. You both run at the same exact speed, but your friend starts 100 yards ahead of the starting point which is where you start.

The graph below is a sketch of your and your friend's distance traveled from the starting point over time. When will you and your friend be the same distance from the starting point? Explain your answer using the graph.

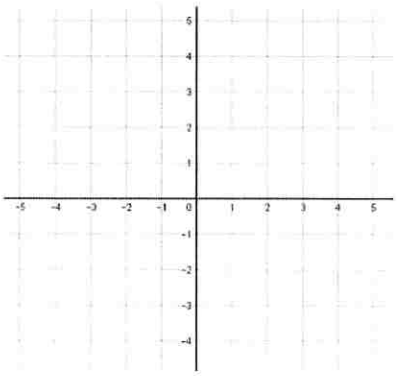


Problem 2

Graph the system of equations below and determine the solution to the system.

$$y = \frac{1}{3}(x - 6)$$

$$6y = 2x - 12$$



Problem 3

Consider the equation $y = \frac{2}{5}x + 1$. Write a second linear equation to create a system of equations that has:

a. Exactly one solution
b. No solutions
c. Infinite solutions

Name:_____ **Date:**_____

Problem 1

Given the system of equations below, answer the questions that follow.

$$y = 2x + 6$$

$$y = 2(x + 3)$$

a. Does the system have one unique, infinite, or no solutions? Explain how you know.

b. If you were to graph this system, what would it look like? How does the graph show the solutions you described in part a?

Problem 2

Is it possible for a system of linear equations to have exactly two solutions? Why or why not? Explain your thinking.

Problem 3

Which of the following statements ***must*** be true? Choose **all** the correct answers.

A. If two equations have the same slope, the system has no solution.
B. If two equations have the same slope, the system either has no solution or infinitely many solutions.
C. If two equations have different y-intercepts, the system either has no solution or infinitely many solutions.
D. If two equations have different slopes, there is one solution.
E. If two equations have the same value but are in different formats $y = mx + b$ vs. $ax + by = c$), then there is one solution.
F. If you have two linear equations, you always have enough information to determine how many solutions they will share.

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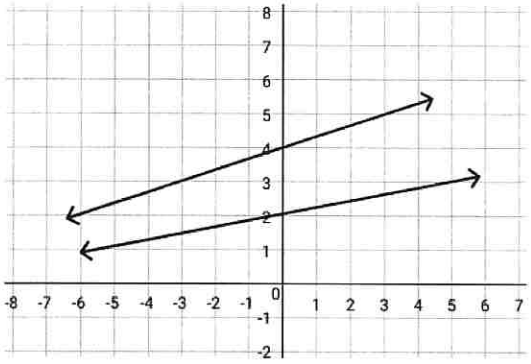
Problem 4

Which of the following equations would share no solutions with $y = 3x + 2$? Choose **all** that apply.

A. $y = 3x + 2$
B. $y = 2x + 3$
C. $y = 3x - 2$
D. $y = 4x + 2$
E. $-6x + 2y = 4$
F. $\frac{3}{2}x - \frac{1}{2}y = 1$

Problem 5

Leah graphed the lines below. She says that there is no solution to the system because there is no intersection on the graph. Do you agree or disagree with Leah? Explain your thinking.



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Problem 6

Sarina and Priscilla are running in a race. Sarina is running 6 miles per hour and is 1.5 miles away from the start line. Priscilla is also running 6 miles per hour, but she is 1.75 miles away from the start line. The race is 5 miles long.

a. Write an equation for each girl that describes their progress in the race.

b. Will Sarina ever catch up to Priscilla? Explain how you know?

Nora is also running the race. We can describe her progress in the race with the equation $y = 6.5x + 1.5$.

c. How far is Nora from the start line?

d. Do you think Nora will ever pass Sarina or Priscilla? Explain your reasoning.

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SYSTEM OF LINEAR EQUATIONS: Lesson 4

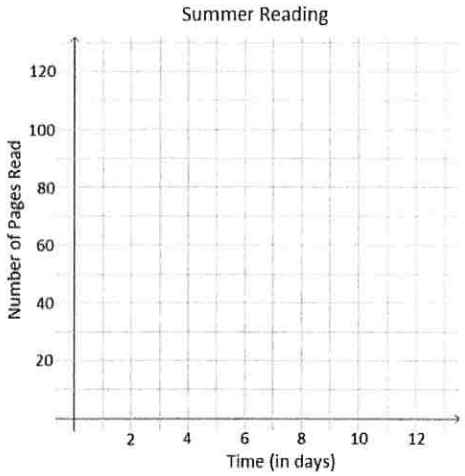
OBJECTIVE:

Solve real-world and mathematical problems by graphing systems of linear equations.

Problem 1

You and a friend are reading the same book over the summer. You have already read 35 pages of the book, and you read 15 pages each day. Your friend has only read 15 pages so far but reads 20 pages each day.

a. Write a system of linear equations to represent the situation and graph both lines on the coordinate plane below.



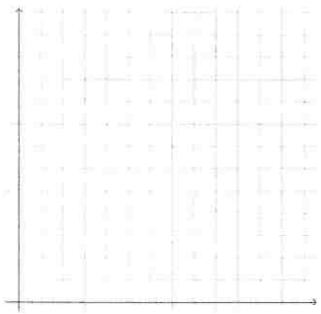
b. After how many days will you both be on the same page?

c. Who will have read more pages after 10 days? Explain how you got your answer.

Problem 2

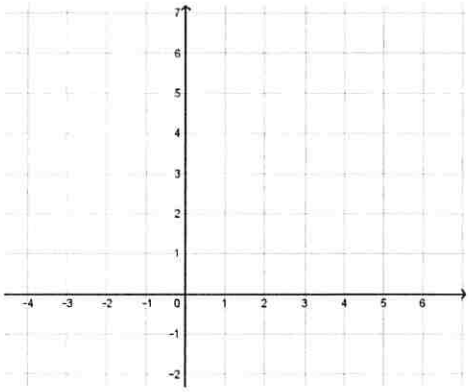
Genny babysits for two different families. One family pays her $6 each hour and a bonus of $20 at the end of the night. The other family pays her $3 every half hour and a bonus of $25 at the end of the night.

Write a system of equations that represents this situation and then graph the system. At what number of hours do the two families pay the same for babysitting services from Genny?



Problem 3

One line passes through points (0, 2) and (4, 6). Another line passes through points (-3, 2) and (1, 6). Will the two lines intersect? If so, where? Use the coordinate plane if needed.

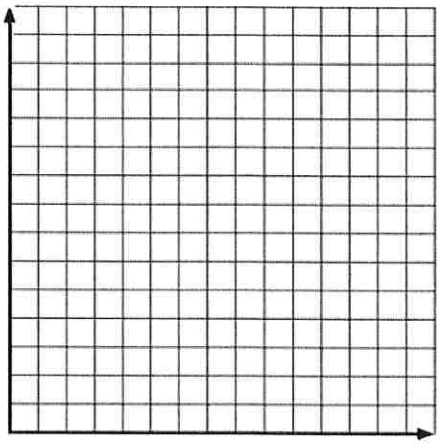


Name:_____ **Date:**_____

Problem 1

Captain Smitty and his band of pirates are sailing away from port in a straight line at a speed of 8 nautical miles per hour (another way you could say this is they were sailing at a speed of 8 knots). They are already 15 nautical miles from port. Admiral Janssen is chasing the pirate ship in his speedy sloop (a fast sailing ship) at 15 nautical miles per hour. His ship is just now leaving port.

a. How long will it take Admiral Janssen to catch Captain Smitty? Show your work on the graph. Write your answer in a complete sentence.



b. About how far will they be from port when they meet?

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Problem 2

Kimi and Jordan are each working during the summer to earn money in addition to their weekly allowance, and they are saving all their money. Kimi earns $9 an hour at her job and her allowance is $8 per week. Jordan earns $7.50 an hour and his allowance is $16 per week.

a. Complete the two tables shown below.

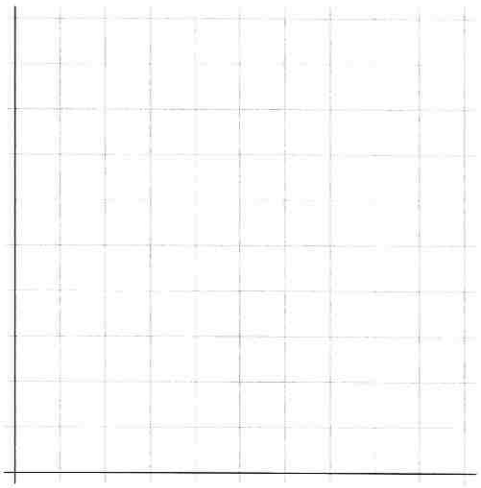
Number of hours worked in a week, h	0	1	2	3	4	5	6	7
Kimi's weekly total savings, K								

Number of hours worked in a week, h	0	1	2	3	4	5	6	7
Jordan's weekly total savings, J								

b. Write an equation that can be used to calculate the total of Kimi's allowance and job earnings at the end of one week given the number of hours she works.

c. Write an equation that can be used to calculate the total of Jordan's allowance and job earnings at the end of one week given the number of hours worked.

d. Sketch the graphs of your two equations on one pair of axes.



e. Jordan wonders who will save more money in a week if they both work the same number of hours. Write an answer for him.

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Problem 3

Line A passes through the points (2,2) and (6,5). Line B passes through the points (-5, 1) and (1, -3).

a. Do lines A and B cross? Show how you know.

b. If lines A and B cross, what is their intersection?

Problem 4

Line C passes through the points (1,1) and (-1, -1). Line D passes through the points (2,3) and (4,5). Do lines C and D cross? Show how you know.

Problem 5

Line E passes through the points (0,4) and (3, 8). Line F passes through the points (12, 20) and (-3, 0). Do lines E and F cross? Show how you know.

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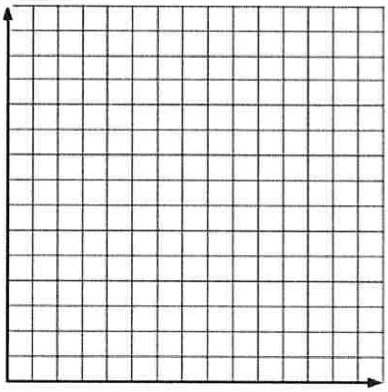
Problem 6

The local swim center is making a special offer. They usually charge $7 per day to swim at the pool. This month swimmers can pay an enrollment fee of $30 and then the daily pass will only be $4 per day.

a. Suppose you do not take the special offer. Write an equation that represents the amount of money you would spend based on how many days you go to the pool if the passes were bought at full price.

b. Write a second equation that represents the amount of money you would spend if you decided to take the special offer.

c. Graph your two equations from part (a) and (b).



d. After how many days of visiting the pool will the special offer be a better deal? How can you tell algebraically? How can you see this graphically?

e. You only have $60 to spend for the summer on visiting this pool. Which offer would you take? Explain.

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SYSTEM OF LINEAR EQUATIONS: Lesson 5

OBJECTIVE:

Solve systems of linear equations using substitution when one equation is already solved for a variable.

Problem 1

One equation is shown below:

$$3x + y = 11$$

a. If you are given that $y = -1$, can you find the value of x?
b. If you are given that $y = x - 1$, can you find the value of x?

Problem 2

Solve the system below using substitution. Write your final answer as a coordinate point.

$$2x - y = 16$$

$$y = 14x + 20$$

Problem 3

In each system below, circle the expression that you will substitute and draw an arrow to the appropriate variable and equation you will substitute it in for. There may be more than one approach for a system. You do not need to solve the systems.

$x = 2y + 4$

$4y - 8 = x$

$y = -x$

$5x + 5y = 10$

$-3x + 9 = 4y$

$x = y - 3$

$\frac{1}{2}x = 2y + 4$

$y = 4x - 1$

$y = 3x + 2$

$y = -3x + 1$

$x = y$

$\frac{4}{5}x - 6y = 15$

Name:_____ **Date:**_____

Problem 1

A system of equations includes these equations: $y = 5x - 7$ and $3x + \frac{1}{2}y = 20$. Which of these shows a correct first step to solving the system using substitution?

A. $3x + \frac{1}{2}(5x - 7) = 20$

B. $3x + \frac{1}{2}y = 5x - 7$

C. $3(5x - 7) + \frac{1}{2}y = 20$

D. $y = 5(3x + \frac{1}{2}y)$

Problem 2

Use the substitution method to find the solution to the system below. Write your answer as a coordinate point.

$y = 2x$

$-3x + y = -1$

Problem 3

Use the substitution method to find the solution to the system below. Write your answer as a coordinate point.

$4x + y = 7$

$y = -2x + 1$

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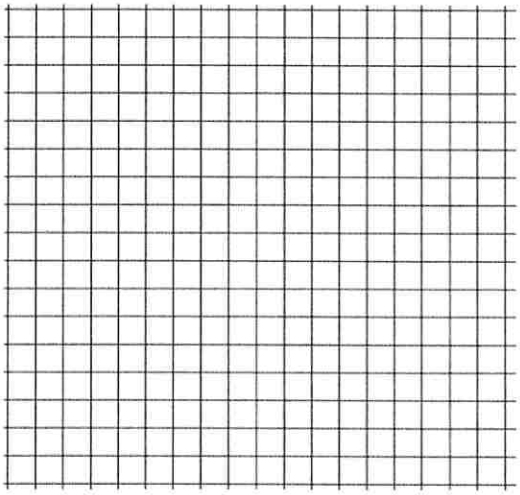
Problem 4

Confirm your answer to question #3 by graphing the system below.



Problem 5

Chad is solving the system of equations below.

$y = x + 3$

$y = -2x + 84$

He plans to solve the system by graphing because he notices that both equations are written in slope-intercept form $y = mx + b$.

Do you think Chad's plan is a good idea? Explain your reasoning.

Problem 6

What advantages does solving systems of equations algebraically have over solving them by graphing?

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Problem 7

What are two ways you could check your solution to a system of equations that you found by solving algebraically?

Problem 8

In class, students are solving the system below using the substitution method.

$2x = 4y - 10$

$y = 3x + 2$

Three students each show their first step in the solution.

Han	Isabelle	Jake
$y = 3(4y - 10) + 2$	$2x = 4(3x + 2) - 10$	$y = 3(3x + 2) + 2$

Two students started their work incorrectly. Identify the two students and describe what mistake they made.

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SYSTEM OF LINEAR EQUATIONS: Lesson 6

OBJECTIVE:

Solve systems of linear equations using substitution by first solving an equation for a variable.

Problem 1

Solve the system of linear equations using substitution. Name the steps you can use to solve any system using substitution.

$$x + 2y = 8$$
$$-3x + 2y = 16$$

Problem 2

Solve the two systems below using substitution. Compare and contrast the two solutions.

System A

$$5x + 20y = 15$$

$$x + 4y = 3$$

System B

$$y = 2(-x + 3)$$

$$2x + y = 4$$

Name:_____ **Date:**_____

Problem 1

Samantha is trying to solve the system below:

$$x - y = 12$$

$$2(x + 3y) = 8$$

She says she cannot use substitution as a method to solve the system because there is no expression to substitute in for a variable. In other words, neither equation is written as $y =$ or $x =$.

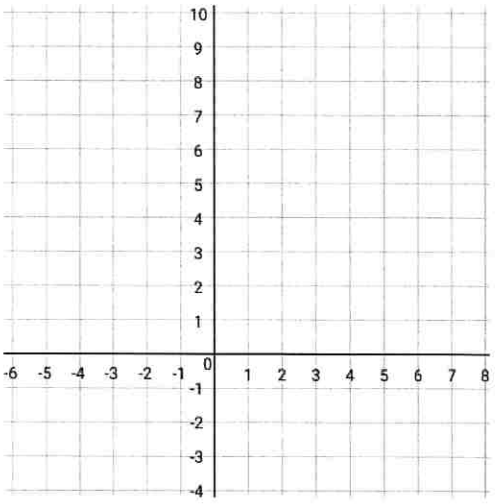
Explain to Samantha how she *can* use substitution to solve the system. (You do not need to solve.)

Problem 2

Solve the system of equations below algebraically. Show all your work. Graph to confirm your answers.

$x + y = 1$

$-6x - y = -1$



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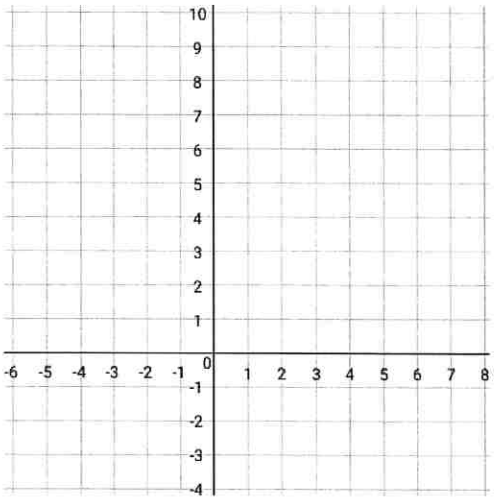
Problem 3

Solve the system of equations below algebraically. Show all your work. Graph to confirm your answers.

$-10x + 2y = 0$

$-x + y = 8$



Problem 4

Without solving, state if each system of equations below has a unique, infinite, or no solutions. For each one, explain your reasoning. For any system with a unique solution, use substitution to find the solution.

a. $y = x + 4$
$y - x = 6$

b. $x + y = 15$
$2x + 2y = 30$

c. $x + y = 4$
$2x + y = 8$

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Problem 5

Solve the system of equations below algebraically. Show your work.

$-4x + y = 10$

$\frac{1}{2}y = 2(x - 6)$

Problem 6

Solve the system of equations below algebraically. Show your work.

$x + y = 5$

$2y = -2x + 10$

Problem 7

Charli and Braxton are talking about how to solve the system of equations below:

$\frac{4}{5}x + \frac{2}{3}y = 10$

$6x + 2y = 18$

They agree that they should isolate one of the variables in second equation, but they're not sure which one to choose. Which path would be simpler: solving for x or y in the second equation? Support your reasoning by showing part of your work. You do not need to solve the whole problem.

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Problem 8

Write an example of a system of two equations in standard form with no solution. Without solving it, explain how you know that your system has no solution.

Problem 9

Write an example of a system of two equations in standard form with infinitely many solutions. Without solving it, explain how you know that your system has infinite solutions.

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SYSTEM OF LINEAR EQUATIONS: Lesson 8

OBJECTIVE:

Solve systems of linear equations using elimination (linear combinations) when there is already a zero pair.

Problem 1

Investigate if you can add equations to each other and still maintain balance and equality.

Example 1:

$2 + 5 = 7$

$1 + 9 = 10$

Does $(2 + 5) + (1 + 9) = 7 + 10$?

Example 2:

$-3 + 11 = 8$

$7 - 2 = 5$

Does $(-3 + 11) + (7 - 2) = 8 + 5$?

Example 3:

Based on your conclusion from Examples 1 and 2, write a single equation that accounts for both equations below.

$x + 3 = 8$

$x - 4 = 1$

Problem 2

Solve the system of equations below by using the elimination method. Write your answer as a coordinate point.

$6x - 5y = 21$

$2x + 5y = -5$

Problem 3

Solve the three systems using the elimination method. Compare and contrast each solution.

System A	System B	System C
$4y + 2x = 12$	$4y + 2x = 12$	$4y + 2x = 12$
$-4y - 2x = 12$	$-4y - 2x = -12$	$-4y + 2x = 12$

Name:_____ **Date:**_____

Problem 1

Which of these systems of equations already has a zero pair in it? You do not need to solve.

A. $3x + 2y = 10$
$3x - 4y = 20$

B. $3x + 2y = 10$
$4x - 2y = 20$

C. $3x + 2y = 10$
$\frac{1}{3}x + \frac{1}{2}y = 5$

D. $3x + 2y = 10$
$0x + 2y = 5$

Problem 2

Circle the zero pairs in each of the systems of equations below. You do not need to solve.

a. $\frac{1}{6}x - 3y = 9$
$6x + 3y = 9$

b. $10x - 7y = 100$
$-10x - 7y = 50$

c. $\frac{1}{2}x + \frac{2}{3}y = 50$
$-\frac{1}{2}x + 3y = 12$

d. $6.25x + (-11.3y) = 34$
$6.27x + 11.3y = 60$

Problem 3

Solve the system of equations below. Use the elimination/linear combination method. Check your answer by substituting the coordinate point into both equations.

$8x + 3y = 12$

$-8x - 2y = 0$

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Problem 4

Solve the system of equations below. Use the elimination/linear combination method.

$\frac{1}{2}x + \frac{3}{4}y = 2$

$-\frac{1}{2}x + 3y = 7$

Problem 5

Solve the system of equations below. Use the elimination/linear combination method.

$-2x + y = 1$

$2x - y = -1$

Problem 6

Solve the system of equations below. Use the elimination/linear combination method.

$-x - 9y = 5$

$3x + 9y = -5$

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SYSTEM OF LINEAR EQUATIONS: Lesson 9

OBJECTIVE:

Solve systems of linear equations using elimination (linear combinations) by first creating a zero pair.

Problem 1

Solve the system using the elimination method. What steps do you need to take before you solve?

$3x - 4y = -5$

$-5x + 2y = 6$

Problem 2

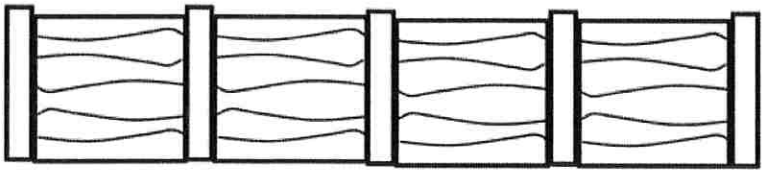
Solve the system using the elimination method. What steps do you need to take before you solve?

$2x + 3y = 4$

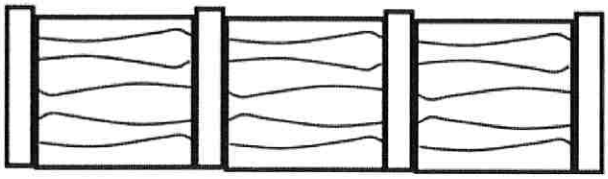
$3x + 4y = 8$

Problem 3

Jon buys fencing for his yard. He pays $122 for 5 fence posts and 4 fence panels. He pays $570 for 21 fence posts and 20 fence panels.



How much does he pay for 4 fence posts and 3 fence panels?



Name:_____ **Date:**_____

Problem 1

Consider the system of linear equations below.

Equation A: $2y = 2x - 6$

Equation B: $3y = x + 4$

Which of the following equations represents the same line as Equation B and makes a zero pair with Equation A?

A. $-3y = -x - 4$
B. $-3y = -2x - 4$
C. $6y = 2x + 8$
D. $-6y = -2x - 8$

Problem 2

Consider the systems of linear equations below.

Equation A: $2x + 6y = 10$

Equation B: $-3x - 4y = 40$

Which of the following steps could you take to make a zero pair for this system of equations? Choose **all** the correct answers.

A. Multiply Equation A by 3 and multiply Equation B by 2.
B. Multiply Equation A by -3 and multiply Equation B by 2.
C. Multiply Equation A by 2 and multiply Equation B by 3.
D. Multiply Equation A by 2 and multiply Equation B by -3.
E. Multiply Equation A by 4 and leave Equation B alone.

Problem 3

Solve the system of linear equations below using the linear combination/elimination method.

$-5x + 9y = -27$

$3x + y = -3$

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Problem 4

Solve the system of linear equations below using the linear combination/elimination method.

$-5x + 4y = 1$

$10x - 8y = 2$

Problem 5

Solve the system of linear equations below.

$4x - 3y = 2$

$3x - 2y = 4$

Problem 6

Solve the system of linear equations below using the linear combination/elimination method.

$6x - 5y = 11$

$-12x + 10y = -22$

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Problem 7

An art teacher purchases 8 gallons of paint and 3 brushes for $166. The next day she purchases 6 gallons of paint and 2 brushes for $124. How much does each gallon of paint and each brush cost?

a. What variables will you need to solve this problem? Define them clearly below.

b. What are the two equations in this system?

c. Find the cost for each gallon of paint and each brush.

Problem 8

Solve the system of linear equations below.

$$\frac{1}{4}x - \frac{5}{4}y = \frac{11}{4}$$

$$x + 3y = 5$$

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SYSTEM OF LINEAR EQUATIONS: Lesson 10

OBJECTIVE:

Solve real-world and mathematical problems using systems and any method of solution.

Problem 1

Which method—graphing, substitution, or elimination—would be best to solve each system below? Explain your answer.

System A

$$y = \frac{2}{3}x - 6$$
$$y = -\frac{x}{4} + 2$$

System B

$$1.5x - 6.2y = 18.3$$
$$1.5x + 6.2y = -4.8$$

System C

$$x = 3(y + 1)$$
$$2x + 4y = -7$$

Problem 2

The sum of two numbers is 361, and the difference between the two numbers is 173. What are the two numbers?

Write a system of equations to represent the information above. Solve it using any method.

Problem 3

A type of pasta is made of a blend of quinoa and corn. The pasta company is not disclosing the percentage of each ingredient in the blend, but we know that the quinoa in the blend contains 16.2% protein and the corn in the blend contains 3.5% protein. Overall, each 57-gram serving of pasta contains 4 grams of protein. How much quinoa and how much corn is in one 57-gram serving of the pasta?

Name:_____ **Date:**_____

Problem 1

Complete the table below with strengths and weaknesses of each method of solving a system of equations. Consider when you might choose a specific strategy, if you'd need any special tools, and what kind of mistakes you might make when using a given strategy.

Solving Strategy	Strengths	Weaknesses
Graphing the system of equations		
Substitution		
Linear Combination/Elimination		

Problem 2

Neil and Glen are arguing about which method to use to solve a system of equations. "It doesn't matter," says Neil. "Any method will work if you're careful enough." "I don't agree," says Glenn. "There are some systems of equations you can only solve with one method and not the others."

Do you agree with Neil or Glenn? Explain your reasoning.

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Problem 3

A day care has a collection of bicycles and tricycles. One day, a sneaky toddler took all the wheels and handlebars off the bicycles and tricycles! The day care staff is trying to put everything together, but they don't remember how many of each kind of toy they had. They have a pile of 16 handlebars and a pile of 45 wheels. (Each bicycle or tricycle has one handlebar.)

a. What variables will you need for the system of equations? Define your variables below.

b. Write two equations that describe this situation.

c. Solve the system of equations using the method of your choice.

d. How many tricycles were there?

Problem 4

Leona and Annabell are raising money for their class trip to Washington D.C. Leona sells 20 candy bars and 10 boxes of stationary for a total of $65. Annabell sells 5 candy bars and 22 boxes of stationary for a total of $84.50. How much does each item cost?

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Problem 5

Solve the system of equations below using the method of your choosing.

$y = \frac{3}{5}x + 6$

$y = -4x - 17$

Problem 6

Three ounces of bacon and four ounces of chicken has a total of 66.7 grams of protein. Six ounces of bacon and three ounces of chicken has 89.4 grams of protein. How many grams of protein are there in one ounce of bacon? How many grams of protein are there in one ounce of chicken?

Problem 7

Tim is 5 years older than JoAnn. Six years from now, the sum of their ages will be 79. How old are they now?

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