Webster County Schools

95 CLARK AVENUE – EUPORA, MS 39744

Office of Curriculum

662-258-5551, Extension 15

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6th Grade

Packet 2

Webster County Schools

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For Additional Online Resources, please see the Link to the following resources on the Curriculum page on www.webstercountyschools.org:

MDE Learning-at-Home Resources for Districts

The resources contained on this website contain materials and tools that may be used to provide additional resources to parents or students. This information is only intended to be a general summary of information provided to the public. The Mississippi Department of Education does not endorse or promote any commercial products or services. The views and opinion of authors expressed do not necessarily reflect those of the MDE, and they may not be used for advertising or product endorsement purposes. Please make sure that you choose the tool(s), resource(s) or material(s) that are developmentally appropriate and best fit the needs of your students, school, or district.

Resources have been divided into the following categories:

- Internet Services
- Multiple Content Area Resources
- Arts (Dance, Music, Theatre, Visual Arts) Resources
- Career Pathway Experiences (CPE) Alternative Resources
- English Language Arts Resources
- Mathematics Resources
- Science Resources
- Social Studies Resources
- World Language Resources
- Counselor Resources
- English Learner Resources
- Virtual Learning Resources

Webster County Schools

At-Home Learning Packet Schedule:

- Packet 2- April 20, 2020

- Packet 3- May 4, 2020

- Packet 4- May 18, 2020

Understanding Ratio Concepts

➤ **Complete each problem about ratio relationships.**

1 Ms. Omar runs the school tennis club. She has a bin of tennis balls and rackets. For every 5 tennis balls in the bin, there are 3 tennis rackets. Draw a model to show the ratio of tennis balls to tennis rackets.

Write the following ratios.

tennis balls to tennis rackets _____

tennis balls to total pieces of tennis equipment _____

2 Christian has a collection of 18 shark teeth. He identified them as 6 tiger shark teeth, 8 sand shark teeth, and the rest as bull shark teeth.

What does the ratio 6 : 8 represent in this situation?

What does the ratio 4 : 18 represent in this situation? Explain your reasoning. Include a model in your explanation.

3 How are part-to-part ratios different from part-to-whole ratios?

Using Equivalent Ratios

➤ **Solve each problem.**

1 Josie is training for a race. The ratio of the number of minutes she runs to the number of miles she runs is 24 to 3. She plans to run 10 miles. How many minutes will it take her?

2 A chef planning for a large banquet thinks that 2 out of every 5 dinner guests will order his soup appetizer. He expects 800 guests at the banquet. Use equivalent ratios to estimate how many cups of soup he should prepare.

3 Fred is making a fruit salad. The ratio of cups of peaches to cups of cherries is 2 to 3. How many cups of peaches will Fred need to make 60 cups of fruit salad?

4 A community garden center hosts a plant giveaway every spring to help community members start their gardens. Last year, the giveaway supported 50 families by giving away 150 plants. Based on this ratio, how many plants will the center give away this year in order to support 65 families?

5 The first week of January, there are 49 dogs and 28 cats in an animal shelter. Throughout the month, the ratio of dogs to cats remains the same. The last week of January, there are 20 cats in the shelter. How many dogs are there?

6 A wedding planner uses 72 ivy stems for 18 centerpieces. When she arrives at the venue, she realizes she will only need 16 centerpieces. How many ivy stems should she use so that the ratio of ivy stems to centerpieces stays the same?

Understanding Rate Concepts

1 It takes Maya 30 minutes to solve 5 logic puzzles, and it takes Amy 28 minutes to solve 4 logic puzzles. Use models to show the rate at which each student solves the puzzles, in minutes per puzzle.

If Maya and Amy had the same number of puzzles to solve, who would finish first? Explain.

2 A garden hose supplies 36 gallons of water in 3 minutes. Use a table of equivalent ratios to show the garden hose's water flow in *gallons per minute* and *minutes per gallon*.

How many gallons of water does the hose supply in 10 minutes? Explain.

Understanding Rate Concepts *continued*

3 Max travels to see his brother's family by car. He drives 216 miles in 4 hours. What is his rate in miles per hour? Use a double number line to show your work.

Suppose he makes two stops of 10 minutes each during his journey. Will he be able to reach the town in 4 hours if he keeps the speed the same?

Using Unit Rates to Find Equivalent Ratios

➤ **Solve each problem. Show your work.**

1 Rachel mows 5 lawns in 8 hours. At this rate, how many lawns can she mow in 40 hours?

2 A contractor charges $1,200 for 100 square feet of roofing installed. At this rate, how much does it cost to have 1,100 square feet installed?

3 It takes Jill 2 hours to run 14.5 miles. At this rate, how far could she run in 3 hours?

4 Bobby catches 8 passes in 3 football games. At this rate, how many passes does he catch in 15 games?

5 Five boxes of crackers cost $9. At this rate, how much do 20 boxes cost?

6 It takes a jet 2 hours to fly 1,100 miles. At this rate, how far does it fly in 8 hours?

Using Unit Rates to Find Equivalent Ratios *continued*

7 It takes Dan 32 minutes to complete 2 pages of math homework. At this rate, how many pages does he complete in 200 minutes?

8 Kendra gets a paycheck of $300 after 5 days of work. At this rate, how much does she get paid for working 24 days?

9 Tim installs 50 square feet of his floor in 45 minutes. At this rate, how long does it take him to install 495 square feet?

10 Taylin buys 5 ounces of tea leaves for $2.35. At this rate, how much money does she need to buy 12 ounces of tea leaves?

11 In problem 10, how would your work be different if you were asked how many ounces of tea leaves Taylin could buy with $10?

i-Ready

Using Unit Rates to Compare Ratios

➤ **Solve each problem. Show your work.**

1 Shawn sells 36 vehicles in 4 weeks. Brett sells 56 vehicles in 7 weeks. Who sells more vehicles per week?

2 The table shows the gas mileage of two vehicles. Which vehicle travels more miles per gallon?

Car	Miles	Gallons
Pickup Truck	120	8
Minivan	180	10

3 Joe and Chris each have a lawn mowing business. Joe charges $40 to mow 2 acres. Chris charges $30 to mow 1.2 acres. Who charges more per acre?

4 The table shows the time it took two athletes to run different races. Who ran faster?

Athlete	Seconds	Meters
Ellen	28	200
Lindsay	60	400

Using Unit Rates to Compare Ratios *continued*

5 Branden and Pete each play running back. Branden carries the ball 75 times for 550 yards, and Pete has 42 carries for 380 yards. Who runs farther per carry?

6 The table shows the price of two cereal brands and the number of ounces per box. Which is the better price per ounce?

Cereal	Ounces	Price
Brand A	18	$2.50
Brand B	24	$3.50

7 Describe two different ways you could change the values in the table so that the answer to problem 6 is different.

Using Unit Rates to Convert Measurements

➤ **Solve each problem. Show your work.**

1 Susan has a 12-inch board for constructing a wooden chair. The directions say to use a board that is 29 centimeters long. Is her board long enough to cut?
(1 inch = 2.54 centimeters)

2 Kevin uses 84 fluid ounces of water to make an all-purpose cleaner. The directions call for 4 fluid ounces of concentrated soap for every 3 cups of water. How many fluid ounces of soap should he use? (1 cup = 8 fl oz)

3 Shannon test-drives a car in Germany and drives 95 kilometers per hour. What is her speed in miles per hour? (1 kilometer ≈ 0.62 mile)

4 Keith works 8 hours per day for 5 days per week. Melba works 2,250 minutes each week. Who spends more time at work?

Using Unit Rates to Convert
Measurements *continued*

5 Jason runs 440 yards in 75 seconds. At this rate, how many minutes does it take him to run a mile? (1 mile = 1,760 yards)

6 Boxes of granola are on sale at a price of 2 for $4.50. There are 12 ounces of granola in each box. What is the unit price in dollars per pound?

7 Sam is delivering two refrigerators that each weigh 105 kilograms. There is an elevator with a weight limit of 1,000 pounds. Can he take both refrigerators on the elevator in one trip? (1 kilogram ≈ 2.2 pounds)

8 For every 140 feet that Kelly rides on her bicycle, the wheels turn 20 times. About how many times do the wheels turn in 5 miles? (1 mile = 5,280 feet)

Understanding Percents

1 Emma is saving for a bicycle that costs $300. This month, she reaches 60% of her goal. Label and shade the bar model to show her progress. How much money has she saved? Explain.

$0 | | | | | | $300

0% | | | | | | 100%
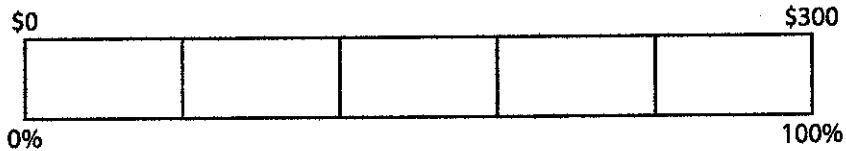
2 Justin needs to make 80 illustrations for an art book. He has made 40% of the illustrations. Make a bar model to show his progress. How many illustrations does he still need to make? Explain.

3 In a classroom of 28 students, 75% of the students have met their reading goal.

Label the double number line. How many students met their reading goal? What fraction of 28 students met their reading goal? Explain.

Students   28

Percent   100%
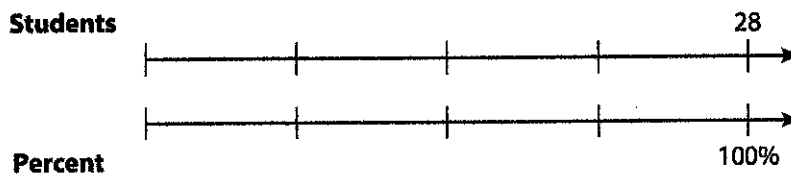
Finding a Percent of a Quantity

➤ **Find the percent of the number. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1 40% of 80

2 25% of 60

3 10% of 90

_____

_____

_____

4 50% of 70

5 80% of 500

6 75% of 80

_____

_____

_____

7 90% of 250

8 65% of 400

9 85% of 800

_____

_____

_____

10 55% of 140

11 45% of 160

12 95% of 180

_____

_____

_____

13 70% of 720

14 15% of 220

15 65% of 200

_____

_____

_____

Answers

9	77	504	72	225
260	171	33	60	35
400	32	130	680	15

Finding the Whole

➤ **Solve each problem.**

1 25% of what number is 13?

_____

2 50% of what number is 140?

_____

3 10% of what number is 60?

_____

4 5% of what number is 12?

_____

5 30% of what number is 72?

_____

6 70% of what number is 56?

_____

7 95% of what number is 57?

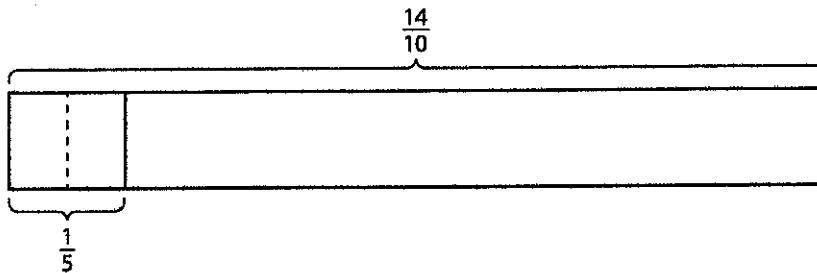_____

8 75% of what number is 66?

_____

9 85% of what number is 102?

_____

10 45% of what number is 63?

_____

11 Explain how you could use 25% of a number to find the number.

Understanding Division with Fractions

1 Complete the bar model to show how many $\frac{1}{5}$s make $\frac{14}{10}$.

$$\frac{14}{10}$$

$$\frac{1}{5}$$

How many $\frac{1}{5}$s make $\frac{14}{10}$? _____

Complete the equations.

$\frac{14}{10} \div$ _____ $= 7$ _____ $\cdot \frac{1}{5} = \frac{14}{10}$

2 Use the number line to show $\frac{2}{3} \div \frac{1}{12}$.

0 $\frac{2}{3}$

What is the quotient? _____

3 Which type of model do you like better, the bar model or the number line? Explain.

Using Multiplication to Divide by a Fraction

➤ **Write the missing digits in the boxes to make each equation true.**

1 $\dfrac{1}{2} \div \dfrac{2}{3} = \dfrac{1}{2} \times \dfrac{\boxed{}}{2} = \dfrac{3}{\boxed{}}$

2 $\dfrac{4}{5} \div \dfrac{1}{4} = \dfrac{4}{5} \times \dfrac{4}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

3 $\dfrac{2}{5} \div \dfrac{3}{4} = \dfrac{2}{5} \times \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{15}$

4 $\dfrac{5}{6} \div \dfrac{5}{12} = \dfrac{5}{6} \times \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{30} = 2$

5 $\dfrac{3}{4} \div \dfrac{5}{7} = \dfrac{3}{4} \times \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

6 $1\dfrac{1}{3} \div \dfrac{3}{7} = \dfrac{\boxed{}}{3} \times \dfrac{7}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

7 $4\dfrac{\boxed{}}{2} \div \dfrac{2}{5} = \dfrac{9}{2} \times \dfrac{\boxed{}}{\boxed{}} = \dfrac{\boxed{}}{\boxed{}}$

8 $3\dfrac{1}{2} \div \dfrac{\boxed{}}{8} = \dfrac{7}{\boxed{}} \times \dfrac{8}{7} = \dfrac{\boxed{}}{\boxed{}} = \boxed{}$

9 $1\dfrac{2}{3} \div 2\dfrac{1}{4} = \dfrac{\boxed{}}{3} \times \dfrac{\boxed{}}{9} = \dfrac{\boxed{}}{\boxed{}}$

10 $3\dfrac{3}{5} \div 1\dfrac{3}{\boxed{}} = \dfrac{18}{\boxed{}} \times \dfrac{4}{7} = \dfrac{\boxed{}}{\boxed{}}$

11 Write a word problem that could be solved by the equation in problem 8.

● i-Ready

Understanding Positive and Negative Numbers

1 The points on the number line are opposite numbers. The tick marks represent intervals of 1 unit.

<------+------●------+------+------+------+------+------+------+------+------●------>
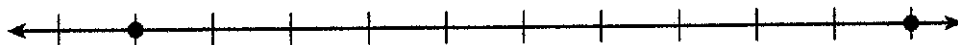
Label 0 at the correct spot on the number line.

Label the point plotted to the right of 0.

Label the point plotted to the left of 0.

2 Use this list of numbers to answer the following questions:

$0, 4, -2, \frac{2}{3}, -1.8, 16, 3.2, -\frac{5}{4}$

Which numbers are rational numbers that are not integers?

Of the remaining numbers, which are integers but not whole numbers?

Of the remaining numbers, which are whole numbers?

3 Use the following terms to complete the following statements: *integers, rational numbers,* and *whole numbers.* Use each term only once.

The counting numbers and zero are _____.

The counting numbers and their opposites, along with zero, are _____.

Integers and the decimal equivalents of fractions are _____.

Understanding Positive and Negative Numbers *continued*

4 Plot and label 4, −3, 1, and their opposites on the number line.

5 If several points are graphed on a number line, is the point that is the farthest from 0 always the greatest? Explain.

Comparing Positive and Negative Numbers

➤ Write < or > to make each comparison true.

1 $7 \bigcirc 10$

2 $7 \bigcirc -10$

3 $-7 \bigcirc -10$

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

5 $-50 \bigcirc 0.3$

6 $-12 \bigcirc -35$

7 $-5 \bigcirc 4.5$

8 $\frac{1}{2} \bigcirc -80$

9 $-\frac{1}{4} \bigcirc -1.4$

➤ Write each set of numbers in order from least to greatest.

10 $5, -2, -1, 4$

11 $3.4, 7, -3.5, -3$

12 $-2.1, -2, -3, 0$

_____

13 $-\frac{3}{4}, -2, -\frac{1}{4}, 2$

14 $5, 0, -6, -0.1$

15 $7.5, -200, -1.5, -8$

_____

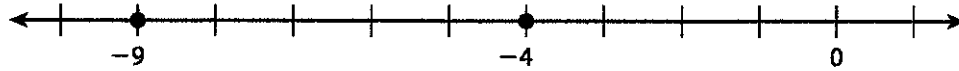**16** $\frac{1}{2}, -\frac{1}{2}, -\frac{1}{3}, \frac{1}{3}$

17 $1.2, -2.1, -21, 0.12$

18 $0.1, -0.2, 0.55, -0.31$

_____

19 Describe how to determine which of two negative numbers is greater. Give an example.

Understanding Absolute Value

1 Answer the questions about this number line.

Which is greater, −9 or −4? Explain.

Which is greater, |−9| or |−4|? Explain.

2 A football team tries to move the ball forward as many yards as possible on each play, but sometimes they end up behind where they started. The distances, in yards, that a team moves on its first five plays are 2, −1, 4, 3, and −5. A positive number indicates moving the ball forward, and a negative number indicates moving the ball backward.

Which number in the list is the greatest?

What is a better question to ask to find out which play went the farthest from where the team started?

The coach considers any play that moves the team more than 4 yards from where they started a "big play." Which play(s) are big plays?

3 When does it make sense to compare the absolute values of numbers rather than the numbers themselves?

Understanding the Four-Quadrant Coordinate Plane

➤ **For problems 1–6, plot and label each point in the coordinate plane. Name the quadrant or axis where the point is located.**
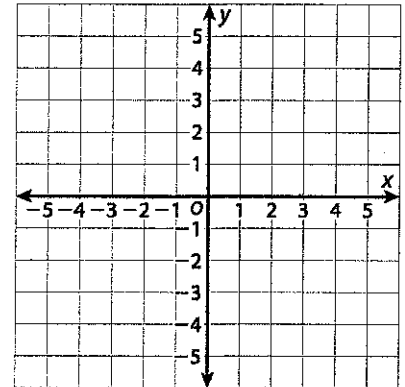
1 $A(-3, -2)$

2 $B(4, -4)$

3 $C(2, 3)$

4 $D(-2, 4)$

5 $E(3, -3)$

6 $F(4, 0)$

7 If point E above is reflected across the x-axis, what would be the coordinates of the reflection? Explain.

8 Imagine that one of the points given in problems 1–6 has been reflected. The reflection is in Quadrant II. What are the possible coordinates of the reflected point? Explain.

9 Bradley says that if point B is reflected across the y-axis and its reflection is then reflected across the x-axis, the result is point D. Is Bradley correct? Explain.

Writing and Interpreting Algebraic Expressions

➤ **Write an algebraic expression for each word phrase or situation.**

1 12 more than 8.2 times a number *n*

_____

2 3 less than the quotient of 18 and a number *m*

_____

3 5.6 times the sum of 4 and a number *p*

_____

4 the quotient of 2 and a number *x*, times 3

_____

5 Five friends split the cost of parking at an amusement park. Each of them also buys a $30 ticket. Write an algebraic expression that represents the amount of money each friend spends. Identify any variables.

_____

6 A movie theater is open *x* hours Monday through Thursday and *y* hours Friday through Sunday. Write an algebraic expression that represents the number of hours per week the theater is open.

_____

➤ **Interpret the meaning of the algebraic expression in each problem.**

7 Andrew writes the algebraic expression $2s + 2.79$ to represent the cost of his lunch. He bought 2 sandwiches and a large drink. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

Writing and Interpreting Algebraic
Expressions *continued*

8 A teacher writes the algebraic expression $24c + 5m + 19.99$ to represent the cost of supplies she purchased for her classroom. She bought 24 packages of colored pencils, 5 packages of markers, and a beanbag chair. Identify any variables, coefficients, and terms in the expression. Tell what each represents.

9 Write a situation that could be represented by the algebraic expression $3s + 2.15$.

Evaluating Algebraic Expressions

➤ Check each answer to see whether the student evaluated the expression correctly. If the answer is incorrect, cross out the answer and write the correct answer.

Algebraic Expressions	Student Answers
1 $5m + 26$ when $m = 3$	$5(3) + 26 = 15 + 26$ ~~$= 31$~~ Possible answer: $5(3) + 26 = 15 + 26$ $= 41$
2 $8(x + 2)$ when $x = 6$	$8(6 + 2) = 48 + 2$ $= 50$
3 $7p + 5$ when $p = 12$	$7(12) + 5 = 7(17)$ $= 119$
4 $q + 9p$ when $q = 18$ and $p = 4$	$18 + 9(4) = 18 + 36$ $= 54$
5 $6w - 19 + k$ when $w = 8$ and $k = 2$	$6(2) - 19 + 8 = 12 - 19 + 8$ $= 1$
6 $12x + y$ when $x = 3$ and $y = 52$	$12(3) + 52 = 36 + 52$ $= 88$

7 Check your answer to problem 2 by using a different strategy.

Using Order of Operations with Expressions with Exponents

➤ **Simplify or evaluate each exponential expression using the order of operations. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.**

1 $(6 + 3)^4$

2 $6 + 3^4$

3 $2(4^3) - 1$

_____

_____

_____

4 $2(4^3 - 1)$

5 $5 + 9(1 + 2)^2$

6 $5 + 9(1) + 2^2$

_____

_____

_____

7 $(18 - 4)^2$

8 $18 - 4^2$

9 $9 + 2(3^2)$

_____

_____

_____

10 $(9 + 2)3^2$

11 $12 + x^4 - 6$ when $x = 8$

12 $m^3 + 9n$ when $m = 4$ and $n = 5$

_____

_____

_____

Answers

27	196	2	18	126	99
127	86	109	4,102	87	6,561

Identifying Equivalent Expressions

➤ **Determine whether each pair of expressions is equivalent. Show your work.**

1 $2(x - y)$ and $2x - 2y$

2 $4(x + y)$ and $4y + 4x$

3 $4p + 3c$ and $(c + 2p)(2)$

4 $21q - 7p$ and $(3q - p)(7)$

5 $4(2a - 3v)$ and $8a + 6v$

6 $8(3x + c) - 1$ and $8c + 24x - 1$

Identifying Equivalent Expressions *continued*

7 $3(2x + 11)$ and $(3x + 15)(2)$

8 $2x + 2x + 2c + 6$ and $(2x + c + 3)(2)$

9 $3e + 7 - e$ and $2e + 10 + 2e - 3$

10 $5c + 4c + 2$ and $5c + 2(2c + 1)$

11 How can you check your answer to problem 8 by choosing values for the variables?

Writing and Solving One-Variable Equations

➤ **Solve each problem by writing and solving a one-variable equation.**

1 In the first three innings of a baseball game, the home team scored some runs. In the rest of the game, they scored 5 runs more than the number of runs scored in the first three innings. If the home team scored 9 runs in all, how many runs did they score during the first three innings? How many runs did they score in the remainder of the game? Let $x =$ the runs scored in the first three innings.

2 The punch bowl at Felicia's party is getting low, so she adds 12 cups of punch to the bowl. Two guests serve themselves 1.25 cups and 2 cups of punch. The punch bowl now contains 11.5 cups of punch. How many cups were in the punch bowl before Felicia refilled it? Let $n =$ number of cups in bowl before Felicia refilled it.

3 Vanessa is a caterer. She made several batches of appetizers last weekend for an event. This weekend, Vanessa made 4 times as many batches. She made a total of 25 batches of appetizers for the two weekends. Determine the number of batches Vanessa made last weekend and the number of batches she made this weekend. Let $b =$ the number of batches of appetizers Vanessa made last weekend.

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Writing and Solving One-Variable
Equations *continued*

4 Wanda earned $350 babysitting over the months of July and August. She earned $90 more in August than in July. How much did she earn babysitting in July? In August?

5 Charlene is 8 years older than Aaron. The sum of their ages is 44. What are their ages?

6 On Saturday, 45% of the music Brianna listened to was country songs. She listened to 27 country songs on Saturday. How many songs did Brianna listen to on Saturday?

Writing and Graphing One-Variable Inequalities

➤ **Write an inequality to represent each situation.**

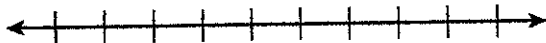**1** A farmer weighs a dozen chicken eggs. The heaviest egg is 56 g.

_____

2 A light bulb is programmed to turn on when the temperature in a terrarium is 72°F or cooler.

_____

3 Martin is building a sandcastle at the beach. He pours no less than 5 cups of wet sand into each plastic mold.
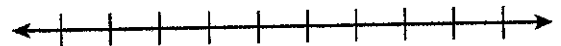
_____

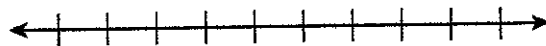**4** The shortest tree in a park is at least 25.5 ft tall.
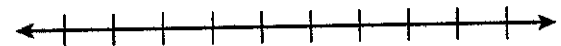
_____

➤ **Graph each inequality.**

5 $n \geq -2$

$\longleftarrow\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!\longrightarrow$

6 $h \leq 5$

$\longleftarrow\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!\longrightarrow$

7 $t \leq 7.1$

$\longleftarrow\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!\longrightarrow$

8 $r \geq -\frac{2}{3}$

$\longleftarrow\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!+\!\!\longrightarrow$
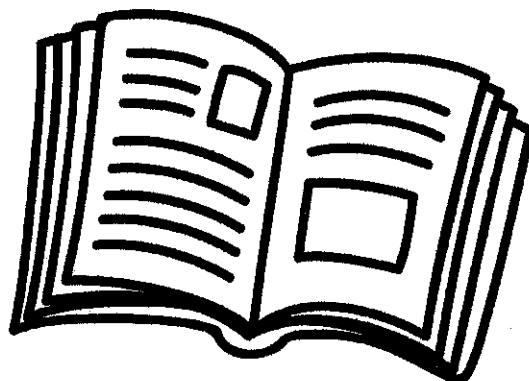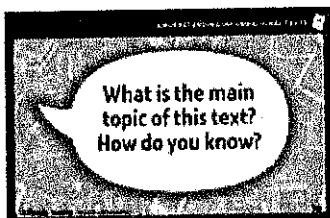
9 What is the difference between the inequality $x \leq 5$ and the equation $x = 5$?

Independent Reading!

See pages 72 and 73 of this packet.

What is the main topic of this text? How do you know?

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

Lesson 9
Varying Sentence Patterns

Introduction Good writers use a variety of sentence types. They mix short and long sentences, and they find different ways to start sentences. Here are ways to improve your writing:

- Use different sentence types: statements, questions, imperatives, and exclamations.
- Use different sentence structures: simple, compound, complex, and compound-complex.
- Sometimes begin a sentence with a prepositional phrase or a dependent clause.

Draft

We went on an impressive field trip. We went to the science museum. The building was huge. It had many exhibits. I especially liked the laser exhibit. You should make sure to visit the museum.

Revision

Our field trip to the science museum really impressed me. The building itself was huge, and it was filled with exhibits. Do you dream of seeing actual lasers? At some point, then, be sure to visit the museum. You won't be sorry!

Guided Practice Follow the directions to rewrite each sentence or pair of sentences.

Hint

When a sentence begins with a dependent clause, use a comma to separate it from the main clause. When a sentence begins with a prepositional phrase, usually use a comma after the phrase.

1 Change this sentence to a question: It is fun to learn about insect colonies.

_____

2 Use the word *when* to combine these sentences: I looked at the museum map. I noticed a new insect exhibit.

_____

_____

3 Combine these sentences so that the new sentence begins with a prepositional phrase: It was near the entrance to the exhibit. The first thing I saw was a giant grasshopper.

_____

_____

Read the paragraphs for numbers 1–4. Then answer the questions that follow in each column.

> (1) Many of the insects were robots. (2) I almost thought they were real. (3) They moved like real insects. (4) They were much larger than real insects.

1 Which is the best way to revise sentence 1?

A   For me, the insects were robots.

B   When looking, many of the insects were robots.

C   To my surprise, many of the insects were robots.

D   Surprised, many of the insects were robots.

2 Which best combines sentences 3 and 4?

A   They moved like real insects, or they were much larger.

B   They moved like real insects, so they were much larger.

C   They moved like real insects, but they were much larger.

D   They moved like real insects, because they were much larger.

> (5) The tour guide told us that the robots show insect behavior. (6) A wolf spider seemed to rush toward me. (7) I was scared. (8) I remembered it was a robot spider.

3 Which is the best way to revise sentence 6?

A   After a long time, a wolf spider seemed to rush toward me.

B   At that moment, a wolf spider seemed to rush toward me.

C   After the trip, a wolf spider seemed to rush toward me.

D   Along with others, a wolf spider seemed to rush toward me.

4 Which is the best way to combine sentences 7 and 8?

A   Remembering it was a robot spider, I was scared.

B   I looked scared, but the robot looked like a spider.

C   I was scared until I remembered it was a robot spider.

D   I was scared when I remembered it was a robot spider.

Lesson 11
Using Context Clues

Introduction When you come across a word you do not know in your reading, look for clues. **Context clues** are words and phrases in the text that give hints to a word's meaning.

Context Clue	Signal Words	Example
Definition	*are, is, means, or*	Larger animals often treat smaller animals as <u>prey</u>, or something to be killed and eaten.
Example	*like, such as, for example*	<u>Predators</u>, such as hawks, wolves, and coyotes, hunt rabbits.
Cause and Effect	*as a result of, because, and thanks to*	Because many animals eat rabbits, the number of wild rabbits has <u>decreased</u>.
Comparison and Contrast	*like, too, similarly, but, unlike, although*	Although wolves eat both plants and animals, hawks are completely <u>carnivorous</u>.

A word's position and function in the sentence can also be a clue to its meaning. For example, read the sentence below:

Brown bears are <u>solitary</u> animals and are often found alone.

You can tell that *solitary* is an adjective in this sentence. The adjective describes the bears. Then the word *solitary* is defined in the sentence. Since the bears *are often found alone,* this gives a good clue to what the word *solitary* means.

Guided Practice Read the paragraph below. Circle context clues to help you figure out the meaning of the underlined words. Then tell a partner the meaning of the underlined words.

Hint

Think about the different types of context clues. Look for words that signal examples, cause and effect, and contrasts. Then use the clues to help you figure out the meanings of the underlined words.

<u>Marsupials</u> are mammals that carry their young in pouches. The American opossum is a marsupial. Thanks to its <u>defense mechanisms</u>, the opossum keeps itself safe from predators. When threatened, it hisses, growls, and bites. If this doesn't work, the opossum reacts in an unusual way. Although many animals move quickly to escape danger, the opossum <u>collapses</u> and pretends to be dead. This is an <u>unconscious</u> response to stress that is similar to jerking your hand away from a hot object before thinking.

Read the paragraph. Then answer the questions that follow for numbers 1–4.

Pangolins have a physical <u>resemblance</u>, or likeness, to an armadillo, with claws and armored bodies. When attacked, pangolins <u>thwart combat</u> by rolling into a hard ball and hiding. Like bats and other animals that sleep all day, pangolins are <u>nocturnal</u>. Because they lack teeth, eating tiny stones with their food is <u>critical</u> for digestion.

1 Which phrase from the paragraph best helps you understand the meaning of the word <u>resemblance</u>?

A have a physical

B or likeness

C with claws

D armored bodies

2 What does the phrase <u>thwart combat</u> mean in the paragraph?

A get attacked

B attack others

C avoid a fight

D start a fight

3 What does the word <u>nocturnal</u> suggest about the pangolins?

A They roll into hard balls.

B They are awake at night.

C They are like all other animals.

D They lack teeth.

4 What does the word <u>critical</u> mean in the paragraph?

A safe

B possible

C necessary

D imaginable

Lesson 12
Greek and Latin Word Parts

Introduction Many English words have Greek and Latin roots and affixes. By becoming familiar with them, you will be able to unlock the meaning of many words.

- **Roots** are word parts that have meanings but usually cannot stand alone. Sometimes roots combine with other roots to form words, such as *audiovisual*.

Root	Meaning	Root	Meaning
aud	"hear"	*mot, mov*	"move"
cycle	"circle, wheel"	*vis, vid*	"see"
therm	"heat"	*meter*	"measure"

- **Affixes**, such as prefixes and suffixes, can also be added to roots to form words, such as *interject*.

Prefix	Meaning	Suffix	Meaning
uni-	"one"	*-ance, -ence*	"state of"
bi-	"two"	*-ion, -al*	"action, process"
tri-	"three"	*-or*	"state" or "quality of"

Guided Practice Circle the roots in the underlined words. Write the meaning of each root. Then tell a partner the meaning of the underlined words.

Hint

A suffix adds meaning to a root or word. Suffixes often give clues that indicate part of speech (noun, adjective, etc.). The suffix *-ence* usually signals a noun; the suffix *-al* usually signals an adjective.

1. Inez sat in the audience at a cooking show.

_____

2. The motor of the cake mixer broke. The chef needed help.

_____

3. He made a hand motion for Inez to come up on stage.

_____

4. As he worked, she kept an eye on the oven thermometer.

_____

5. Because she had great vision, this was an easy task.

_____

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

1 "Watch how I extend the dough with my hands," said the chef.

The prefix *ex-* means "out," and the root *tend* means "stretch." What does the word <u>extend</u> mean in the sentence?

A   pull it in different directions

B   form it into small balls

C   loosen it with water

D   cut it into small pieces

2 "Next, I add the equivalent of a teaspoon of spice," explained the chef.

The prefix *equi-* means "equal," and the root *vale* means "worth." What does the word <u>equivalent</u> mean in the sentence?

A   half portion

B   cost

C   same measure

D   double the amount

3 "Are my directions audible?" asked the chef.

The root *aud* means "hear," and the suffix *-ible* means "able." What does the word <u>audible</u> mean in the sentence?

A   necessary

B   too complicated

C   realistic

D   loud enough

4 Inez told the chef she was grateful for the cooking lesson.

The root *grat* means "pleasing," and the suffix *-ful* means "having or giving." What does the word <u>grateful</u> mean in the sentence?

A   eager

B   thankful

C   greatly impatient

D   responsible

Writers don't always tell you exactly what's on their minds. Sometimes you need to make a reasonable guess about what the writer thinks. A reasonable guess, which is based on both evidence and your prior knowledge of a topic, is called an **inference.**

The passage below is about a creature known as the giant squid. You will read it twice.

> For many years, both sailors and scientists suspected that a creature they called the giant squid lived in the ocean depths. Over the years, the evidence mounted, and in 2012 came solid proof: They filmed giant squids swimming in the ocean.
>
> Before the 2012 video, nobody had answers to several significant questions about giant squids. How did they act in the wild? Were they hunters? Or did they just float in the water, eating what came their way? What purpose did their huge eyes serve? Thanks to the video, we have some answers. We know that the squid is a hunter that uses its large eyes to spot prey and avoid being eaten. But many fascinating mysteries about the creature still need solving. Will this important research continue?

Read the passage again. This time, underline any evidence suggesting whether the writer feels scientists should keep researching the giant squid.

So, does the writer think that scientists should keep researching the giant squid? You can use evidence from the text to make and support an inference about what she thinks.

Study the chart. It shows how you can support an inference using textual evidence.

What You Know		What the Text Says		Inference
A person with positive feelings about a type of work usually wants that work to continue.		• "Before the 2012 video, nobody had answers to several significant questions about giant squids." • "But many fascinating mysteries about the creature still need solving." • "Will this important research continue?"		The author thinks that scientists should keep researching the giant squid.

By using text evidence and what you already know, you can make and support inferences. In a way, you make the same kinds of educated guesses that scientists do when they study mysterious creatures of the deep!

Read the first part of a scientific account about Bigfoot.

A Scientist's Search for Bigfoot   *by Tetsuo Fujii*

Dr. Jeffrey Meldrum is an Associate Professor of Anatomy and Anthropology at Idaho State University. He specializes in primate foot structure—a category that includes apes, monkeys, and humans. His interests also include evaluating footprints that some claim are left by a mythical North American ape known as Bigfoot.

Meldrum's laboratory houses more than 200 casts and artifacts relating to Bigfoot. Although he believes that some samples are hoaxes, others interest him, such as unidentified hair and unique casts of muscle and foot-bone anatomy.

(continued)

Explore how to answer this question: *"Dr. Meldrum thinks that some samples are hoaxes, but others interest him. Why is he most likely interested in those other samples?"*

Reread the second paragraph. It suggests what Dr. Meldrum thinks, but does not state it directly.

Look for details suggesting why Meldrum is interested in the other samples. One detail is listed in the second column; write another detail there. Then complete the inference statement.

What You Know	What the Text Says	Inference
• If a scientist is interested in something, he or she might think it has scientific value. • A scientist might keep samples that could lead to a discovery.	• "Meldrum's laboratory houses more than 200 casts and artifacts relating to Bigfoot." •	Dr. Meldrum is most likely interested in those other samples because . . .

On the lines below, explain how the details you presented in the chart support your inference.

_____

_____

_____

Continue reading the account about Meldrum's research. Use the Close Reading and the Hint to help you answer the question.

Close Reading

What do most other scientists think about Meldrum's work? **Underline** the sentence that tells how they feel about it.

(continued from page 20)

Many anthropologists criticize Meldrum's work. They feel he is trying to find an imaginary creature that exists only in folklore. Meldrum tells critics he is not saying that Bigfoot exists. He just believes there is enough evidence to justify scientific investigation.

Unsurprisingly, most anthropologists reject Meldrum's evidence. Dr. David J. Daegling, a University of Florida anthropologist who thinks Meldrum's methods of analyzing data are unscientific, sums up this feeling: "Meldrum's evidence doesn't look better on deeper analysis; it looks worse."

Hint

Which choice gives evidence of what most scientists think of Bigfoot research?

Circle the correct answer.

Which sentence from the account best supports the idea that most scientists do not find value in investigating Bigfoot artifacts?

A   "Many anthropologists criticize Meldrum's work."

B   "They feel he is trying to find an imaginary creature that exists only in folklore."

C   "Meldrum tells critics he is not saying that Bigfoot exists."

D   "He just believes there is enough evidence to justify scientific investigation."
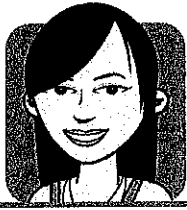
Show Your Thinking

Look at the answer you chose above. Explain how the evidence in your answer helped show that most scientists do not find value in investigating Bigfoot artifacts.

_____

_____

_____

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

Tales of Chupacabras   *by Cynthia Burnham*

As I read, I'm going to underline clues that help me infer the author's viewpoint about chupacabras.

Close Reading

According to the author, why do people hope that chupacabras are real? **Underline** a sentence that shows the author's explanation.

What examples of new discoveries does the author give? **Underline** the evidence that new creatures have been discovered.

1   Legend tells of the chupacabra, a monster that sucks the blood of livestock. *Chupacabra* means "goat sucker" in Spanish. For many in the southwestern United States and Mexico, these tales are more than just stories; they have been accepted as fact. In Puerto Rico in 1995, hundreds of livestock fatalities were blamed on the chupacabra.

2   Some describe chupacabras as two-legged, lizard-like creatures with claws, spikes, and piercing red eyes. Others insist they are hairless, four-legged creatures that are part kangaroo, part dog, and part rat. Many similar beasts have been brought to labs for DNA testing, but most have been coyotes with mange, a disease that strips animals of fur.

3   Why do we want these mythical beasts to be real? Surely not because we want livestock to fall prey to vampires! Perhaps it is because of our natural desire to shed light on the unknown. Scientists constantly identify new life-forms. According to the World Wildlife Federation, more than 1,200 species of plants and vertebrates were discovered in the Amazon rain forest between 1999 and 2009. Given this fact, the idea that undiscovered species could exist empowers our imaginations and gives us hope.

4   Although we have explored much of this planet, there are still creatures that lurk in the underbrush, evading recognition. That is a thrilling concept. So even as evidence mounts against the existence of chupacabras, a part of us hopes that one will creep from the shadows and boggle our minds.

Hints

Think about the word choice in each sentence. Which choice helps you infer what the author actually thinks about chupacabras?

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

1 A student makes the following claim about the author of "Tales of Chupacabras."

> The author believes that chupacabras are imaginary even though she would like to think they exist.

Which sentence from the text best supports this claim?

A   "*Chupacabra* means 'goat sucker' in Spanish."

B   "Some describe chupacabras as two-legged, lizard-like creatures with claws, spikes, and piercing red eyes."

C   "Why do we want these mythical beasts to be real?"

D   "Scientists constantly identify new life-forms."

Which sentence offers support for why people hope chupacabras are real?

2 Which sentence from the text explains why the author thinks people want to believe in chupacabras?

A   "For many in the southwestern United States and Mexico, these tales are more than just stories: they have been accepted as fact."

B   "Legend tells of the chupacabra, a monster that sucks the blood of livestock."

C   "Others insist they are hairless four-legged creatures that are part kangaroo, part dog, and part rat."

D   "Perhaps it is because of our natural desire to shed light on the unknown."

What kinds of life-forms were discovered between 1999 and 2009? What is the author's purpose for including this evidence?

3 Explain how the examples of recent scientific discoveries support the idea that chupacabras may one day be found. Use details from the text in your explanation.

_____

_____

_____

_____

_____

_____

_____

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

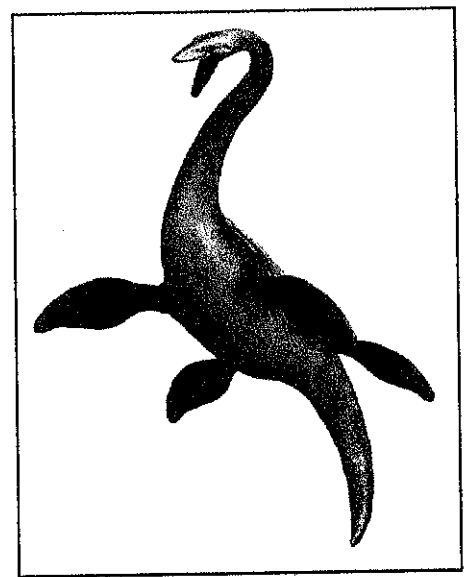# Looking for the Loch Ness Monster

by Stuart Clyburn

1   The word *loch* is a Scottish Gaelic word for *lake*. And there are a whole lot of lochs in Scotland—more than 500 of them! But one loch, Loch Ness in the Scottish Highlands, is known around the world. The reason for its fame is not its great size or beauty. People know the name *Loch Ness* because it is said to be the home of a mysterious, giant creature known as "the Loch Ness monster." Whether the creature really exists or not has been a matter of great debate for decades.

2   What does "Nessie," the popular nickname for the monster, supposedly look like? By most accounts, she has a small head on a very long neck. Her body is broad and rounded, with four flippers and a long tail. If you know your prehistoric creatures, you might be thinking: Nessie sounds like a *plesiosaur*, a giant sea reptile that lived hundreds of millions of years ago. One common theory about Nessie is that she actually *is* a plesiosaur. Other explanations for Nessie are far less dramatic. Some people think that the "mysterious" creature people have mistaken for a monster may have been nothing more than a walrus, seal, or eel.

an artist's depiction of a plesiosaur

3   How could a creature as big as a plesiosaur hide in a lake? Well, Loch Ness is a huge body of water. It's the second largest loch in Scotland, based on the surface area of its water. Loch Ness covers more than 21 square miles, and only Loch Lomond is bigger. But if you look at the volume of water, Loch Ness is the biggest. And that's because it's deep—about 755 feet at its deepest point. This single loch contains more water than all the freshwater lakes in England. In other words, it's one big place to hide.

4   Some people who believe in Nessie say that she's made her home in the region for more than a thousand years. A book written in the seventh century tells about an Irish monk who saw a giant "water beast" in the River Ness in 565 c.e. No one thought much about that story until 1933. A couple was driving home along the loch late one night. They said they were forced to stop when a giant, dragon-like creature crossed the road and slid into the water. Their story appeared in newspapers. Soon, many more people claimed to have seen the monster. The following year, in 1934, a doctor from England took a photo that became famous worldwide. The poorly lit, grainy photo shows what looks like the head and long neck of a plesiosaur-like creature rising from the water. The photo served as "proof" of the monster until 60 years later—when it was revealed to be a fake.

5   Since the 1930s, dozens of serious, scientific searches have been undertaken to find the Loch Ness monster. One early effort involved placing scouts with cameras and binoculars around the loch for five weeks. Later searches relied on the use of sonar. This method involves bouncing sound waves through the deep

waters of the loch to detect moving objects. In 2003, the famous British Broadcasting Corporation (BBC) sponsored one of the most thorough searches ever. Scientists used 600 sonar beams and satellite tracking. What did they find? Nothing of note, really. They concluded that Nessie was a myth.

6   After so many attempts, you have to wonder why people keep looking for the Loch Ness monster. It may just be that there's something exciting about the idea of mysterious creatures living so close to us, always just out of view. There's a word for such creatures: *cryptids*. It comes from a Greek word meaning "to hide." The Loch Ness monster is one of many cryptids that have captured the public imagination. Others include Bigfoot in North America, the Yeti in the Himalaya Mountains, and the chupacabra in the southwestern United States and Mexico.

7   Many animals whose existence we take for granted today might once have been considered cryptids. Komodo dragons and giant squids were once thought to be tall tales. Until 1902, people regarded stories of "giant ape-men" living in Africa as just a myth. Today, we know them as mountain gorillas. The odds of "Nessie" turning out to be real may not be quite as good. But if it were true, we'd all love it, wouldn't we? It's exciting to think that a real live monster lives deep in a loch in Scotland.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ
2 Ⓐ Ⓑ Ⓒ Ⓓ
3 Ⓐ Ⓑ Ⓒ Ⓓ   **Number** ⟋4
4 Ⓐ Ⓑ Ⓒ Ⓓ   **Correct**

1 According to the account, what is one reason many people believe the Loch Ness monster does not exist?

A   The earliest sighting of the Loch Ness monster occurred in 565 c.e.

B   The photo taken in 1934 has been proven to be a fake.

C   Plesiosaurs, like the dinosaurs, lived hundreds of millions of years ago.

D   Sonar beams and satellite tracking found no evidence in the loch.

2 Which detail provides evidence that a creature as huge as a plesiosaur could really hide in Loch Ness?

A   Loch Ness has a surface area of 21 square miles and is 755 feet deep.

B   The Loch Ness monster might actually be an ordinary walrus, seal, or eel.

C   Dozens of scientific searches of Loch Ness have been conducted.

D   The Loch Ness monster is known as a cryptid, a word whose root word means "to hide."

3 Which statement is **best** supported by the account?

   A It is illogical to think that a plesiosaur could still be living in Loch Ness today.

   B Someday, scientists will prove that no giant creatures live in Loch Ness.

   C Some people want to believe in the Loch Ness monster and ignore scientific evidence showing it does not exist.

   D People have always been fascinated by the idea of strange creatures such as Bigfoot and the Loch Ness monster.

4 Despite the great interest in the Loch Ness monster, it is highly unlikely that such an animal actually exists. Which sentence from the passage **best** supports this conclusion?

   A "Whether the creature really exists or not has been a matter of great debate for decades."

   B "Some people who believe in Nessie say that she's made her home in the region for more than a thousand years."

   C "Since the 1930s, dozens of serious, scientific searches have been undertaken to find the Loch Ness monster."

   D "Many animals whose existence we take for granted today might once have been considered cryptids."

5 Some people firmly believe that the Loch Ness monster is actually a plesiosaur. Use at least **three** details from the account to explain why some people believe this.

_____

_____

_____

_____

_____

_____

Self Check *Go back and see what you can check off on the Self Check on page 1.*

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Reading

Read the passage. Then answer the questions that follow.

Worth More Than Gold

by Amy Charles

1   Every summer, millions of acres of America are green with growing crops. American farmers grow wheat, soybeans, corn, and other foodstuffs, and it's an impressive sight. There's also something eerie about it, though. Each field grows an army of identical plants. Every cornstalk in the cornfield is exactly like its neighbors, with the same DNA. That means it has the same instructions for building itself. This kind of field is called a monoculture, *mono* meaning "one."

2   This is of some benefit to the farmer because each plant grows about as well as the next. The farmer is in trouble, however, if a pest or disease strikes. If one cornstalk in the field can be killed easily by an attacker, so can all the rest. This was a serious problem in Ireland long ago. The Irish potato famine in 1845 was caused by a fungus that is extremely harmful to potatoes. Because all the potatoes in Ireland at the time were so similar, most of the potato crop died. And because potatoes were the main food in Ireland at the time, people began to starve. The situation became even worse because the fungus stayed in the ground. When new potatoes were planted, the fungus killed them, too. Within 25 years, nearly half of Ireland's people had starved or moved away.

3   Why was the famine so destructive in Ireland? One problem was that we didn't have the science to know what had gone wrong; people didn't know about DNA. DNA tells the cell how to take atoms, the smallest pieces of matter, and make from them the smallest pieces of the body. These pieces, called molecules, are too small for us to see, but once they're made, the molecules work together to grow the body and keep it alive.

4   Some molecules are great at fighting disease. Unfortunately for those desperate farmers in Ireland, none of the potatoes they planted, year after year, could make the right molecules. Because of this, the potatoes weren't protected from the fungus.

5   Scientists now know how to solve that problem, and the answer lies in how DNA works. DNA is a molecule, too—a long molecule at the center of the cell. The cell can read DNA like a cookbook, finding recipes that tell how to make other molecules that it needs. We call the recipe for each molecule a gene. If you want molecules that will fight potato fungus, you need the genes for making those molecules. If a potato doesn't have those genes, that potato can't fight the fungus. One way to solve the problem is to give the potato the right genes. To find those genes, we look in other strains, or kinds, of potatoes. We look for a potato that can fight off the fungus. That potato has the genes for making the right molecules. Then all we have to do is put that plant's genes into the unprotected potato plants. And, roughly speaking, we know how to do that.

Go On

6   Here's the big question, though: Where do you find that super-strong potato when a fungus is attacking? The answer comes from scientists and farmers around the world who have built gene banks to keep our food supply safe. All over the world, scientists and farmers collect seeds from different crop plants—corn, potatoes, alfalfa, wheat, oats, rice, and every other grain, fruit, and vegetable; they collect them all. They record what diseases and pests each plant can fight off, and they record which plants can live well in certain conditions, such as limited water, high heat, floods, or poor soil. Then they store seeds from each plant in a safe place, a gene bank.

7   Now, when a pest attacks a wheat crop in Oklahoma, scientists don't wait. They look in gene banks for a strain of wheat that fights that pest well. They can use that wheat's genes to create a new wheat plant that will grow well in Oklahoma and will also fight off the pest.

8   There are more than 1,600 plant gene banks around the world, and one of the most famous gene banks is in Norway. It's an abandoned coal mine north of the Arctic Circle, in a group of islands called Svalbard. This bank stores backup copies of seeds that are in other banks around the world. The Svalbard bank now has copies of over half a million seeds. If crops are in trouble, what's in those vaults is worth more than gold.

9   That's the extent to which scientists and farmers around the world go to protect those crops growing all across the Midwest—and Brazil, and Russia, and China. Thanks to their work, the food supply for seven billion people is safer than it ever was before.

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1   Which sentence from the passage **best** supports the idea that growing monocultures can be risky?

A "American farmers grow wheat, soybeans, corn, and other foodstuffs, and it's an impressive sight."

B "Every cornstalk in the cornfield is exactly like its neighbors, with the same DNA."

C "If one cornstalk in the field can be killed easily by an attacker, so can all the rest."

D "One problem was that we didn't have the science to know what had gone wrong; people didn't know about DNA."

E "The cell can read DNA like a cookbook, finding recipes that tell how to make other molecules that it needs."

F "They look in gene banks for a strain of wheat that fights that pest well."

2 The following question has two parts. First, answer part A. Then, answer part B.

Part A

What is one main idea of "Worth More Than Gold"?

A Gene banks protect the world's food supply.

B People have studied DNA for hundreds of years.

C Monocultures are often destroyed by pests.

D The Irish potato famine began in 1845.

Part B

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

A "That means it has the same instructions for building itself."

B "Because all the potatoes in Ireland at the time were so similar, most of the potato crop died."

C "If you want molecules that will fight potato fungus, you need the genes for making those molecules."

D "If crops are in trouble, what's in those vaults is worth more than gold."

3 Which of the following would **not** belong in a summary of the passage?

A The Irish potato famine in the 1800s was made worse because people at the time did not know about DNA.

B To get molecules that will fight a potato fungus, you need to have the right materials.

C One solution to possible problems caused by monocultures lies in the field of genetics, in plant DNA.

D To protect the world's crops, a gene bank in Svalbard, Norway, has backup copies of more than half a million seeds.

Go On

4 What is the **main** purpose of paragraph 5?

 A It introduces the topic of worldwide famine.

 B It provides a definition of the key term "fungus."

 C It shows how genes can solve the problem of crop disease.

 D It poses and answers logical questions about DNA and genes.

5 Read the statement below.

 The author of this passage has great respect for the scientists and farmers who have made gene banks possible.

 How can you tell this statement is true? Use **two** details from the text to support your answer.

_____

_____

_____

_____

_____

_____

Read the passage. Then answer the questions that follow.

The Scent of Memory

by Christopher Ford

1   Scientists say that, more than sight, sound, touch, or taste, the sense of smell can trigger memory. For me, the smell of wood smoke always makes me think of autumn. One whiff, and I am twelve, at home on my family's farm, snuggled in bed as the smell of wood smoke snakes through my slightly-open bedroom window.

2   It is early autumn, and all around us, our neighbors are harvesting apples. We have been eating apple pie, applesauce, apple cakes, even apple stew. My family does not own an orchard, but we rejoice in the benefits of the harvest and our special neighbors.

3   It's Saturday morning. My father wakes me gently, saying, "Let's go, Chris, it's time." I stand up stiffly, shivering, the chill draft hurrying me over to pull on jeans and a shirt, my favorite old sweatshirt, and my warmest socks.

4   My mom is already up and at the stove, coffee cup in one hand, stirring a huge pot of oatmeal with the other. It's not my favorite breakfast in the world, but on a morning like this, with hard work ahead of me, I know I'll appreciate it later.

5   "Good stuff, Lynn," my dad says as he gives my mom a kiss on one cheek. He spoons out a huge bowl for himself and then one for me. Even with raisins and brown sugar, it's hard to swallow.

6   "Eat up, Chris," my dad teases. "It'll stick to your ribs!"

7   He and my mom talk as they drink their coffee and eat their breakfast. It's all bills and money talk, so I tune out, watching the leaves swirl outside. My little sister pads in after a while, all pink fluff and fuzzy curls. Even I have to admit she's kind of adorable. She crawls silently into my dad's lap and he nestles her right into the crook of his arm, as if the shape of his arm was made to fit the curve of her back. He manages this maneuver while continuing to sip his coffee and talk to my mom. After we finish breakfast, we say goodbye to the two of them and head out.

8   It is just past dawn, and in the east, a smattering of lacy clouds drifts slowly across the streaks of pink, orange, and red that forecast a cold day. The air smells lightly of wood smoke from the farmers who are burning brush in the nearby orchards. Crunch, crunch, crunch, my feet push easily through the carpet of fallen leaves on the way to the barn. The colors are outrageous: orange, red, yellow, and even greens that are bright and playful. I can't resist kicking a few piles into the air to watch them swirl.

9   In the barn, it's warmer, with animal breath and body heat creating a hazy fog. I scratch our old goat, Ginger, behind her ears, pat the orange tabby, Huck, and say good morning to Jessie and her three pups. They are still squirmy and warm, snuggling in for breakfast.

10   We feed the animals and then load up the truck with everything we need: axes, clippers, small saw, twine, gloves. Our neighbor has trees down and has offered the wood to anyone who wants to come and chop it up. With the winter weather we're expecting, we can use all the firewood he can spare. The more we can get by on fireplace heat this winter, the better.

Go On

11   "Woo-hoo, you feel that, Chris? Fall is here for sure!" my dad rubs his hands together and starts the truck.

12   I nod in agreement and reach up to tuck my nose into my sweatshirt collar, then my hands go into my sweatshirt pocket.

13   Dad laughs. "Don't worry. In no time at all, you'll be sweating."

14   At Mr. Arnold's place, there are three trees down: two apple trees and one huge old oak that got dragged down when the apples blew down in our first storm of the season. The holes their roots left behind are enormous, and I want to crawl into them and explore, but Dad has other plans for me.

15   "Okay, Chris, we're going to start with the lower branches, here. We'll strip the branches and work our way up the tree, then we can chop up the trunk." We dig in, Dad correcting my axe strokes from time to time, interrupting my swing to show me where to hit the branch just right so that I'll get a cleaner cut. He was right: in no time I'm sweating enough to take my sweatshirt off, but my breath comes out of my mouth steaming in the frosty air.

16   By noon we've stripped off the lower branches and have the truck full of wood, about a cord's worth. We'll need about four more to get through the winter, but we thank Mr. Arnold and promise to be back tomorrow.

17   On the ride home, I nearly fall asleep, so my dad reaches over and gives me a playful punch in the arm. "That went twice as fast today with your help, son. You're getting pretty strong," he says and I feel positively mighty.

18   I watch the orchards as we pass. There are so many shades of orange and red that I can't possibly record them all, so I breathe deep and flood my nose to best recall the memories of this day.

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

Part A

What is one theme of "The Scent of Memory"?

A   Scientists have proven that smell is an important scent.

B   The harvest is an unpleasant time with big rewards.

C   Life on a farm is better than life elsewhere.

D   Thinking about the past is a powerful source of emotion.

Part B

Which sentence from the "The Scent of Memory" **best** supports the answer to part A?

A   "Scientists say that, more than sight, sound, touch, or taste, the sense of smell can trigger memory."

B   "For me, the smell of wood smoke always makes me think of autumn."

C   "On the ride home, I nearly fall asleep, so my dad reaches over and gives me a playful punch in the arm."

D   "There are so many shades of orange and red that I can't possibly record them all, so I breathe deep and flood my nose to best recall the memories of this day."

7   Select **three** sentences that should be included in a summary of "The Scent of Memory."

A   A boy describes the many pleasures in his life on a farm.

B   Thinking about the smell of wood smoke, a man recalls an autumn day in his youth.

C   His best memories are of the barn, the goat, the cat, the dog, and chopping wood.

D   His mother and sister stay at home, while he and his father share a harvest with neighbors.

E   He wakes up early and has breakfast with his family before heading out with his father.

F   He and his father feed the animals in the barn and then chop wood on a neighbor's farm.

G   He sweats from working so hard, but his breath still looks like steam in the cold air.

Go On

8 Read this sentence from paragraph 5 of "The Scent of Memory."

> Even with raisins and brown sugar, it's hard to swallow.

What does the phrase "hard to swallow" suggest about the narrator?

A He has a sore throat.

B He does not like oatmeal.

C He prefers plain oatmeal.

D He is not hungry.

9 In paragraph 17 of "The Scent of Memory," why does the narrator **most likely** say that he feels "positively mighty"?

A He recognizes that he has grown taller in the past year.

B He believes that his father would not have been able to do the work himself.

C He is pleased that his father recognizes his helpfulness and ability.

D He has accomplished something he thought was impossible.

10 How does the author develop the narrator's point of view in "The Scent of Memory"?

A by having the narrator recall a specific day from his childhood

B by having the narrator use only the sense of smell to describe a memory

C by having the narrator alternate between past and present to show the past's influence

D by having the narrator reflect on how his life has changed a great deal since his youth

11 Read the following poem about October:

October is the lovely girl who draws her sisters' envy:
Mild in temper, fair of heart, and much admired by many.
Her sisters dress more modestly, but she is always bold,
clothed in red and violet, crowned with green and gold.

One theme of "The Scent of Memory" is that autumn is a special time of year with plentiful harvests and beautiful colors. The poem also shares this theme. Compare and contrast how "The Scent of Memory" and the poem present the theme stated above. Use details from the texts to support your answer.

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Go On

Read this account of important moments in the history of science. Then answer the questions that follow.

# Luck Favors the Prepared

by Maria Malzone

1   Making a great discovery generally requires hard work, years of study, and experiment after experiment. However, people sometimes accidentally stumble upon amazing discoveries. Some of the things we use in everyday life—such as sticky notes, microwaves, and artificial sweeteners—were all chance discoveries that changed the way we live. The inventor of the sticky note just happened to stumble on a type of glue that could be reused. The scientist who discovered microwaves wasn't looking for them. He was doing experiments with a new type of vacuum tube. Then one day the chocolate bar in his pocket began to melt, and he realized the machine in front of him could change the way people cooked. A scientist who was trying to find new uses for coal tar happened by chance to notice that it tasted sweet, thus discovering the first artificial sweetener.

2   It is exciting to think that anyone could discover something important, such as sticky notes or microwave ovens. However, most of the accidental discoveries you hear about required more than just luck. While the discoverers may have been lucky, they were also prepared. Some of the most famous "accidental" discoveries were made by scientists who had been working to solve problems for a long time.

3   The discovery of penicillin, which is a medicine used to kill bacteria, is one of the most famous stories of accidental discovery. In the early 1900s, a scientist named Alexander Fleming was trying to find ways to cure diseases and infections. While doing his research, Fleming grew bacteria on special plates called petri dishes.

4   One day he noticed a type of mold, called penicillin, growing on the plate. To Fleming's amazement, the mold killed the bacteria. He discovered that the mold could be used as an antibiotic, which is a medicine that fights bacterial infections. The penicillin antibiotic was used to treat cuts, infections, and diseases that made many people seriously ill. Because of this, it was called a "miracle drug." It is still used today to help save lives.
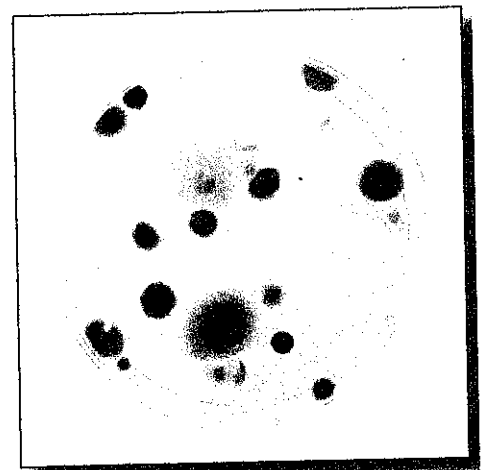
Mold growing in a petri dish. Alexander Fleming's chance observation of how a type of mold killed bacteria led to the development of modern antibiotics.

5 X-rays were another accidental discovery. A scientist named Wilhelm Röntgen, who had studied physics and engineering, was working as a professor in the late 1800s. At that time, Röntgen was performing experiments by passing an electric current through gas. His experiments sometimes produced sparks in the gas. Röntgen noticed that every time the gas sparked, a plate treated with a special chemical lit up. Röntgen thought that perhaps the sparks were producing some sort of rays. These rays were not like anything known at the time, however. For this reason, Röntgen called them X-rays.

6 After making this discovery, Röntgen decided to investigate the rays further. For example, he placed different objects in front of the rays. He tested whether the X-rays would pass through the objects or be blocked by them. Röntgen's most famous image is the X-ray shadow of his wife Bertha's hand. This image shows that the rays do not pass through bone. Doctors quickly realized that they could use X-ray images to look at broken bones.

the first X-ray photograph, showing Bertha Röntgen's hand

7 Another scientist who made an accidental discovery was Charles Goodyear. Goodyear was experimenting with natural rubber because he hoped to find a way to make it more useful. Natural rubber, which comes from the sap of rubber trees, is too soft and sticky to be used in many products. Goodyear was determined to find a way to change the rubber so that it would be more durable but also remain elastic, or stretchy. He tried to change the rubber in countless ways, but each attempt disappointed him. Goodyear even patented one method of changing the rubber, but he was still unhappy with the results.

8 One day, Goodyear spilled a mixture containing natural rubber onto a hot stove. The result was the hard, strong rubber he had been seeking. The process resulted in what we now call vulcanized rubber. Goodyear patented a process for making vulcanized rubber in 1844 and then sold his product to manufacturers. Today vulcanized rubber is used in everything from bowling balls to car tires to shoe soles.

9 These scientists and inventors are all known for their accidental discoveries. Could these discoveries have been made by anyone else? Perhaps. But Fleming, Röntgen, and Goodyear all studied and worked hard for many years. When their lucky accidents happened, they had learned enough to understand what they saw. They then worked hard to make their observations useful. Lucky accidents can happen to anybody, but great discoveries are almost always the result of hard work.

Answer Form

1 Ⓐ Ⓑ Ⓒ Ⓓ

2A Ⓐ Ⓑ Ⓒ Ⓓ

3 Ⓐ Ⓑ Ⓒ Ⓓ

4 Ⓐ Ⓑ Ⓒ Ⓓ

5 Ⓐ Ⓑ Ⓒ Ⓓ   **Number**

6 Ⓐ Ⓑ Ⓒ Ⓓ   **Correct**   / 6

1   Which sentence from the article **best** supports the idea that the discovery of X-rays helped to improve people's health?

A   "After making this discovery, Röntgen decided to investigate the rays further."

B   "He tested whether the X-rays would pass through the objects or would be blocked by them."

C   "Röntgen's most famous image is the X-ray shadow of his wife Bertha's hand."

D   "Doctors quickly realized that they could use X-ray images to look at broken bones."

2   Answer Parts A and B below.

Part A

Which statement is true about Alexander Fleming's initial understanding of penicillin?

A   He hoped that penicillin would cure certain diseases.

B   He was unaware that penicillin would have any effect.

C   He was sure penicillin would be a helpful medicine.

D   He knew penicillin was deadly to some bacteria.

Part B

Select **two** pieces of evidence from "Luck Favors the Prepared" that support the answer to Part A.

☐ "one of the most famous stories of accidental discovery"

☐ "a medicine used to kill bacteria"

☐ "trying to find ways to cure diseases and infections"

☐ "To Fleming's amazement"

☐ "the mold could be used as an antibiotic"

☐ "it was called a 'miracle drug'"

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3   The author believes that Charles Goodyear was a dedicated scientist who kept improving on his work. Which sentence from the article **best** supports this statement?

   A   "Another scientist who made an accidental discovery was Charles Goodyear."

   B   "He tried to change the rubber in countless ways, but each attempt disappointed him."

   C   "One day, Goodyear spilled a mixture containing natural rubber onto a hot stove."

   D   "Goodyear patented a process for making vulcanized rubber in 1844 and then sold his product to manufacturers."

4   Which of the following **best** matches a central idea from the text with a detail that supports it?

   A   Central idea: Many important discoveries are made during experiments. Supporting detail: Doctors began using X-rays to examine injured patients.

   B   Central idea: Some important discoveries are not well understood at first. Supporting detail: Artificial sweetener was based on a kind of coal tar.

   C   Central idea: Some scientists make accidental discoveries that help people. Supporting detail: Penicillin is still used in modern times to save lives.

   D   Central idea: Dedicated scientists may accidentally become great inventors. Supporting detail: Fleming used plates called petri dishes to grow bacteria.

5   Vulcanized rubber continues to be an important part of modern products. How does the author illustrate this idea in the passage?

   A   She lists examples of different uses for vulcanized rubber.

   B   She tells the story of the invention of vulcanized rubber.

   C   She compares vulcanized rubber with natural rubber.

   D   She notes the year in which vulcanized rubber was patented.

6 Which of the following **best** summarizes the article?

A Sticky notes, microwaves, and artificial sweeteners all have something in common. Each of these useful things was discovered by accident. The same is true of a number of other discoveries, including penicillin, X-rays, and vulcanized rubber.

B Many important scientific discoveries have been made by accident. These include the discoveries of penicillin, X-rays, and vulcanized rubber. In each case, the scientist making the discovery had the experience to see the usefulness in what others might have considered a mere "accident."

C Alexander Fleming may be the person who made the most important accidental discovery of all time. He was working in his lab when he noticed a type of bread mold that killed bacteria. This led to the invention of penicillin, an antibiotic that has saved countless lives.

D When a good scientist discovers something by accident, the discovery involves more than just luck. Microwaves, penicillin, and X-rays are all examples of useful things discovered by scientists who knew how to turn a mistake into something good. Their "lucky accidents" had more to do with hard work than good luck.

7 Explain how the author uses anecdotes, or stories, to illustrate key ideas of the passage. Use details from the passage to support your answer.

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8 Below is information from paragraphs 5 and 6 of the passage "Luck Favors the Prepared." Organize the information by writing each phrase from the passage into the proper section of the table: <u>central idea</u>, <u>supporting detail</u>, and <u>example used to make a point</u>.

Röntgen was performing experiments by passing an electric current through gas.

Röngten's image of his wife's hand showed that X-rays do not pass through bone.

X-rays were another accidental discovery.

Every time the gas sparked, a plate treated with a special chemical lit up.

Central idea	
Supporting detail	
Supporting detail	
Example used to make a point	

Performance Task—Extended Response

9 How does the author introduce and illustrate the differences between truly "accidental" discoveries and those made by hard-working scientists? How does the author feel about the two kinds of discoveries? Write an essay of two to three paragraphs explaining your answer. Be sure to include examples from the passage in your answer.

In your answer, be sure to
- explain how the author presents the differences between these discoveries
- explain how the author feels about these types of discoveries
- use examples from the passage in your answer

Check your writing for correct spelling, grammar, capitalization, and punctuation.

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