

# Unit 1

## (Non-Calculator)

**Directions:**

Today, you will take Unit 1 of the Grade 8 Mathematics Practice Test. You will not be able to use a calculator.

Read each question. Then, follow the directions to answer each question. Mark your answers by completely filling in the circles in your answer document. Do not make any pencil marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely. If a question asks you to show or explain your work, you must do so to receive full credit. Only responses written within the provided space will be scored.

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**Directions for Completing the Answer Grids**

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7. See below for examples on how to correctly complete an answer grid.

**EXAMPLES**

To answer  $-3$  in a question, fill in the answer grid as shown below.

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4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

To answer  $.75$  in a question, fill in the answer grid as shown below.

.	7	5			
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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1. Which of these equations represent functions where  $x$  is the input and  $y$  is the output?

Select **each** correct answer.

A.  $x = 2$

B.  $y = 2$

C.  $y = 2x$

D.  $x = 2y$

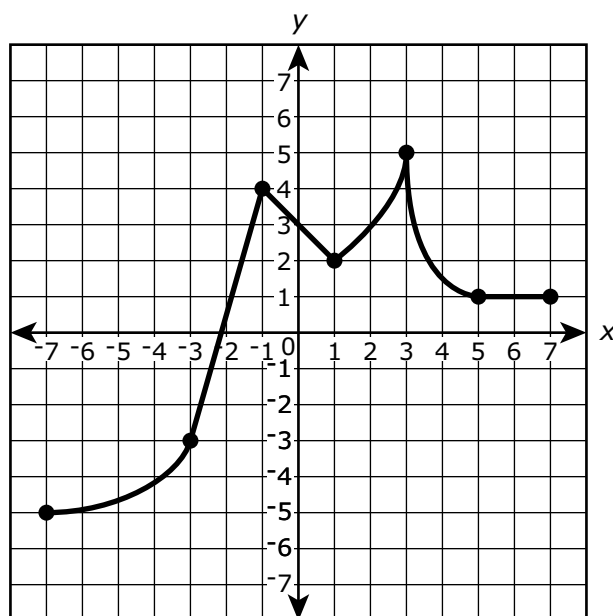
E.  $x + y = 2$

2. Solve this equation for  $x$ .

$$0.5(5 - 7x) = 8 - (4x + 6)$$

Enter your answer in the box.

3. The graph shows  $y$  as a function of  $x$ .



For which intervals is the function decreasing?

Select **all** that apply.

- A.  $-7 < x < -3$
- B.  $-3 < x < -1$
- C.  $-1 < x < 1$
- D.  $1 < x < 3$
- E.  $3 < x < 5$
- F.  $5 < x < 7$

4. Which statement **best** describes the value of  $\sqrt{8}$  ?
- A. The value of  $\sqrt{8}$  is between 2 and 2.5.
  - B. The value of  $\sqrt{8}$  is between 2.5 and 3.
  - C. The value of  $\sqrt{8}$  is between 3 and 3.5.
  - D. The value of  $\sqrt{8}$  is between 3.5 and 4.
5. Which equation has **both** 4 and  $-4$  as possible values of  $y$ ?
- A.  $y^2 = 8$
  - B.  $y^3 = 8$
  - C.  $y^2 = 16$
  - D.  $y^3 = 64$
6. A system of equations is shown.

$$\begin{cases} x = 10 \\ 3x + 5y = 20 \end{cases}$$

In the system of equations, what is the value of  $y$ ?

Enter your answer in the box.

7. Which equations define  $y$  as a nonlinear function of  $x$ ?

Select **all** that apply.

A.  $y = 7.4x$

B.  $y = 2x + 5^2$

C.  $y = 10x^2$

D.  $y = 5x - 3$

E.  $y = \frac{x}{2}$

F.  $y = 2x^3 + 1$

8. Consider the system of equations.

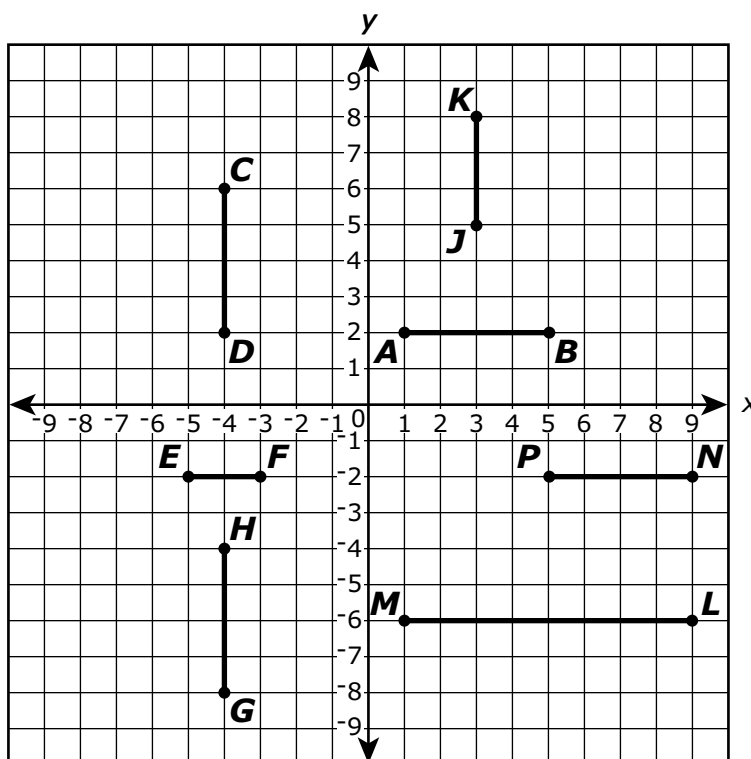
$$\begin{cases} y = 2x + 2 \\ y = 6x + 2 \end{cases}$$

Which statements are true about the system of equations?

Select **each** correct answer.

- A. The graph of the system consists of lines that have no points of intersection.
  - B. The graph of the system consists of lines that have exactly one point of intersection.
  - C. The graph of the system consists of lines that have more than one point of intersection.
  - D. The system has no solution.
  - E. The system has exactly one solution.
  - F. The system has more than one solution.
9. Which decimal is the equivalent of  $\frac{6}{11}$ ?
- A.  $0.18\bar{3}$
  - B.  $0.18\bar{3}$
  - C.  $0.5\bar{4}$
  - D.  $0.5\bar{4}$

10.



Seven line segments are shown on the coordinate plane.

Which of these segments could be the image of segment  $AB$  after a sequence of reflections, rotations, and/or translations?

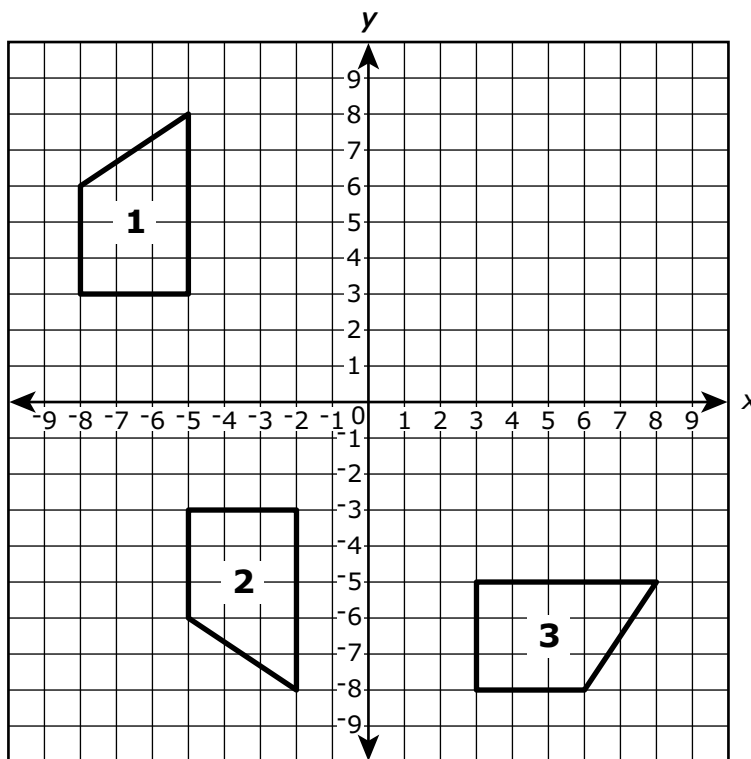
Select **each** correct answer.

- A.** line segment  $CD$
- B.** line segment  $EF$
- C.** line segment  $GH$
- D.** line segment  $JK$
- E.** line segment  $LM$
- F.** line segment  $NP$



Use the information provided to answer Part A and Part B for question 11.

Three congruent figures are shown in the coordinate plane.



**11. Part A**

Which statement describes a possible sequence of transformations that transforms figure 1 into figure 2?

- A.** a reflection across the  $x$ -axis, followed by a translation 2 units to the left
- B.** a reflection across the  $x$ -axis, followed by a translation 3 units to the right
- C.** a rotation  $180^\circ$  clockwise about the origin, followed by a translation 2 units to the left
- D.** a rotation  $180^\circ$  clockwise about the origin, followed by a translation 3 units to the right

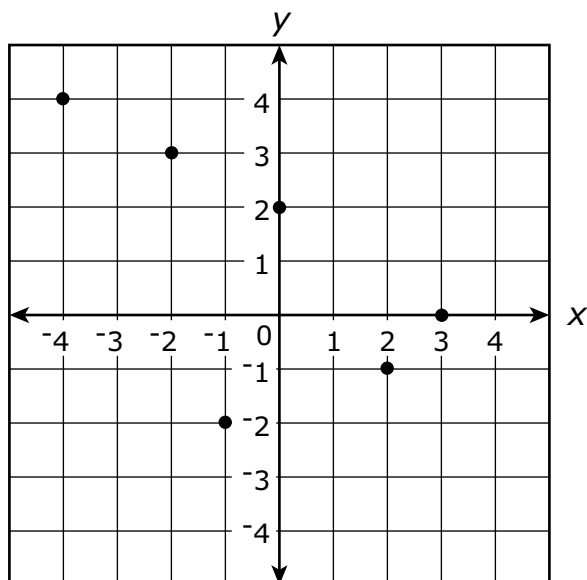
**Part B**

Figure 3 can also be created by transforming figure 1 with a sequence of two transformations.

Which statement describes a possible sequence of transformations that transforms figure 1 into figure 3?

- A.** a rotation  $180^\circ$  clockwise about the origin, followed by a translation 2 units to the left
- B.** a rotation  $90^\circ$  clockwise about the origin, followed by a reflection across the  $x$ -axis
- C.** a rotation  $180^\circ$  clockwise about the origin, followed by a reflection across the  $y$ -axis
- D.** a rotation  $90^\circ$  clockwise about the origin, followed by a translation 3 units to the right

12. The graph represents  $y$  as a function of  $x$ .



Which additional point can be plotted so that the graph continues to represent  $y$  as a function of  $x$ ?

- A.  $(0, 1)$
- B.  $(2, 2)$
- C.  $(3, 4)$
- D.  $(4, 2)$

13. Which expressions are equivalent to  $\frac{3^{-8}}{3^{-4}}$ ?

Select **all** that apply.

A.  $3^{-12}$

B.  $3^{-4}$

C.  $3^2$

D.  $\frac{1}{3^2}$

E.  $\frac{1}{3^4}$

F.  $\frac{1}{3^{12}}$

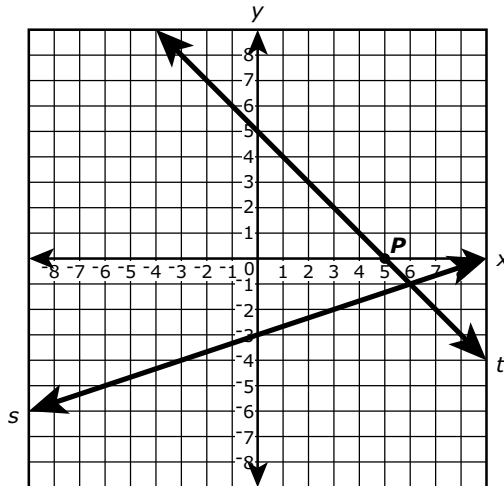
14. The equation of line  $s$  is  $y = \frac{1}{3}x - 3$ .

The equation of line  $t$  is  $y = -x + 5$ .

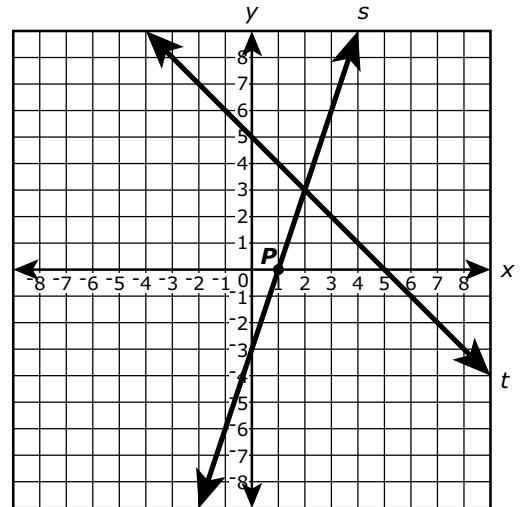
The equations of lines  $s$  and  $t$  form a system of equations. The solution to the system of equations is located at point  $P$ .

Which graph correctly shows line  $s$ , line  $t$ , and point  $P$ ?

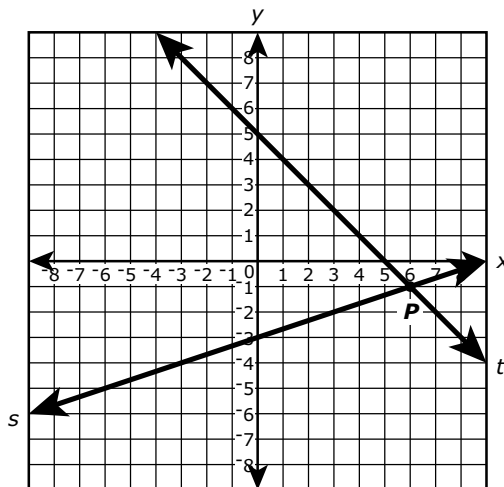
A.



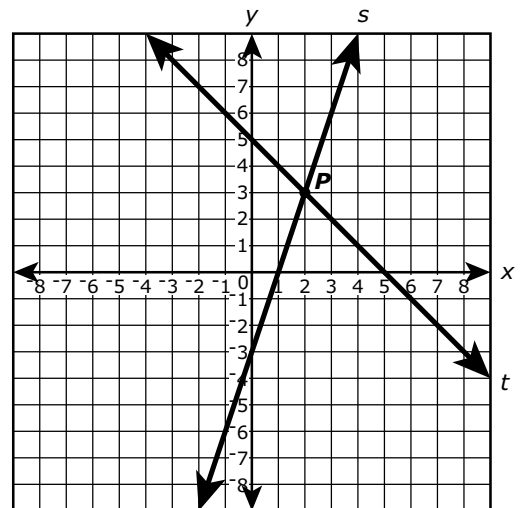
B.



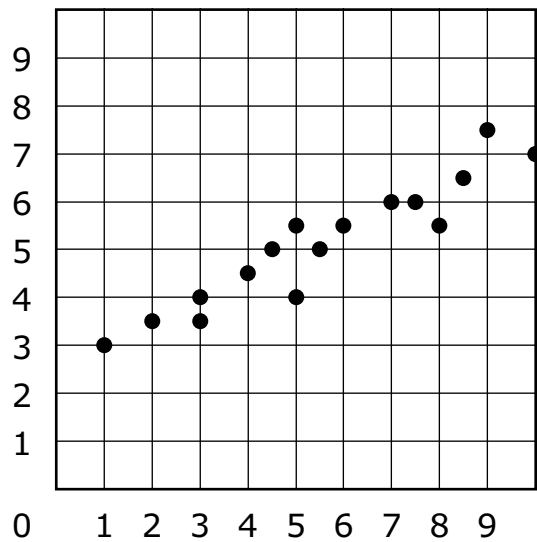
C.



D.

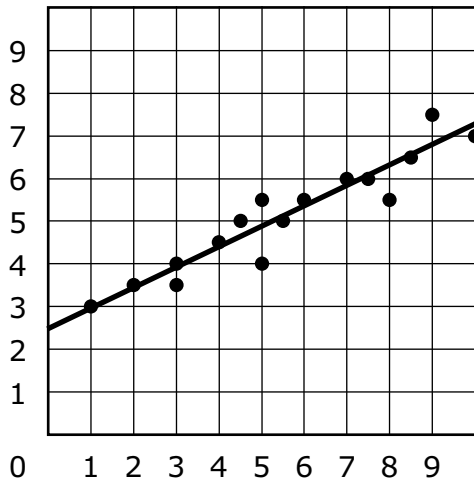


15. A scatter plot is shown on the coordinate plane.

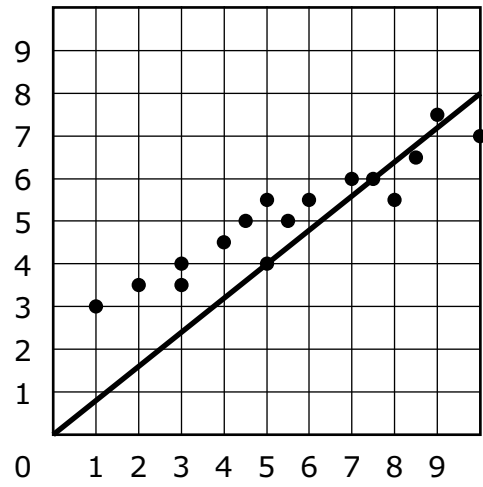


Which of these **most closely** approximates a line of best fit for the data in the scatter plot?

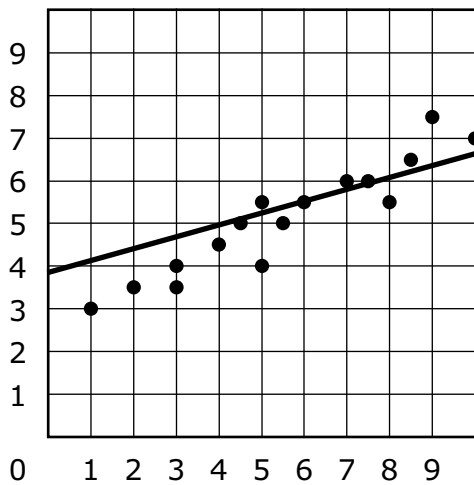
A.



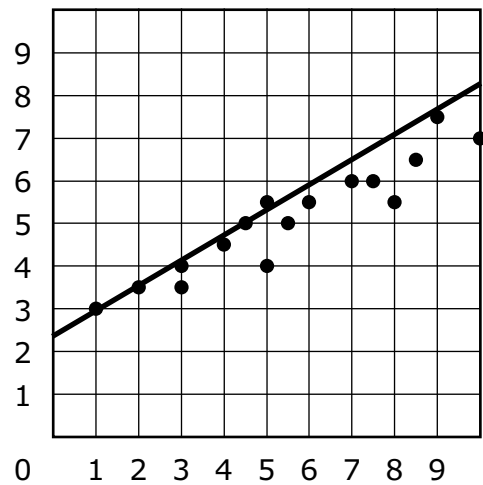
B.



C.



D.



16. The body of a 154-pound person contains approximately  $2 \times 10^{-1}$  milligrams of gold and  $6 \times 10^1$  milligrams of aluminum. Based on this information, the number of milligrams of aluminum in the body is how many times the number of milligrams of gold in the body?

Enter your answer in the box.





# Unit 2 (Calculator)

## Directions:

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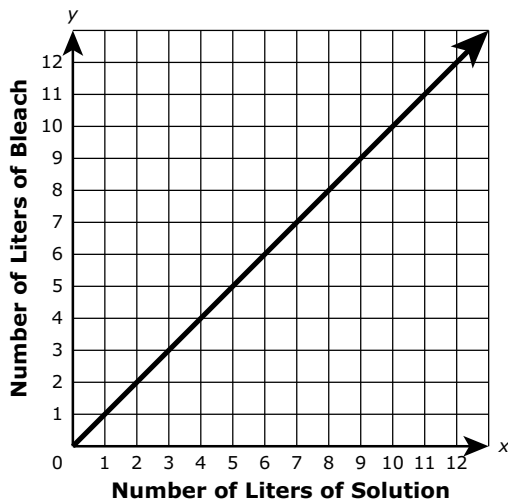
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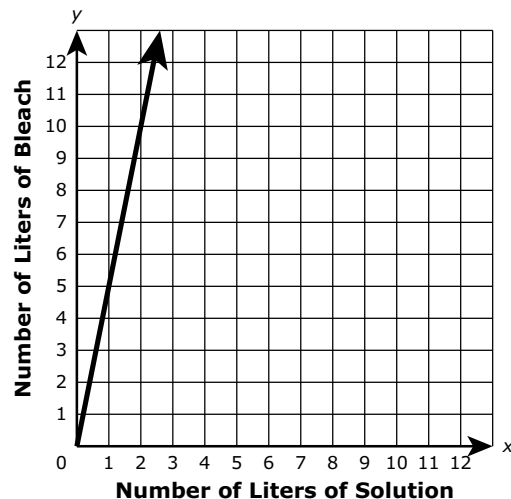
17. A solution is 20% bleach.

Which graph represents the number of liters of bleach,  $y$ , contained in  $x$  liters of solution?

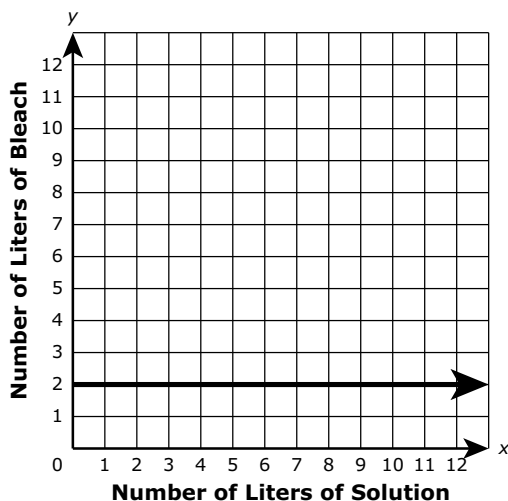
A.



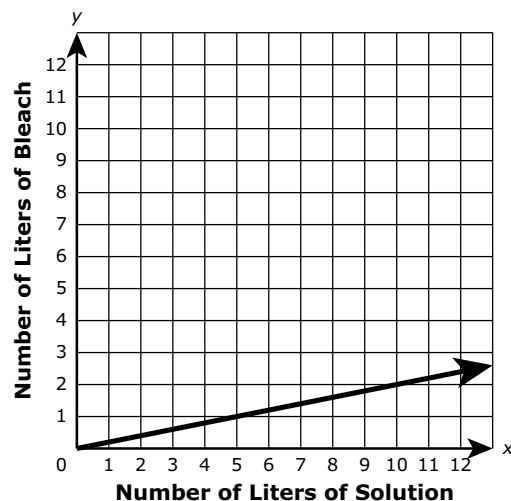
B.



C.



D.





Use the information provided to answer Part A and Part B for question 18.

Filipo is building a rectangular sandbox for his younger brother. The length of the sandbox is 1 foot longer than twice the width of the sandbox. The perimeter of the sandbox is 29 feet.

**18. Part A**

Which equation could be used to determine  $w$ , the width, in feet, of the sandbox?

**A.**  $w + w + 2 = 29$

**B.**  $w + 2w + 1 = 29$

**C.**  $2w + 2(w + 2) = 29$

**D.**  $2w + 2(2w + 1) = 29$

**Part B**

What is the width, in feet, of the sandbox?

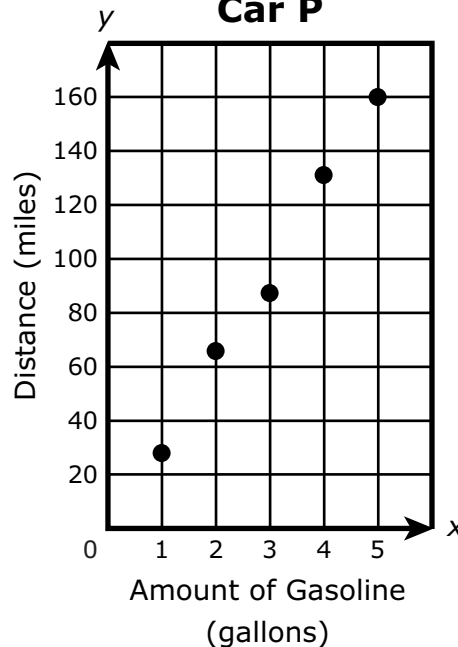
Enter your answer in the box.



- 19.** The gasoline mileage for two cars can be compared by finding the distance each car traveled and the amount of gasoline used. The table shows the distance that car M traveled using  $x$  gallons of gasoline. The graph shows the distance,  $y$ , that car P traveled using  $x$  gallons of gasoline.

**Car M**

Amount of Gasoline (gallons)	Distance (miles)
2	50.4
3	80.5
7	181.3
5	137.5

**Car P**

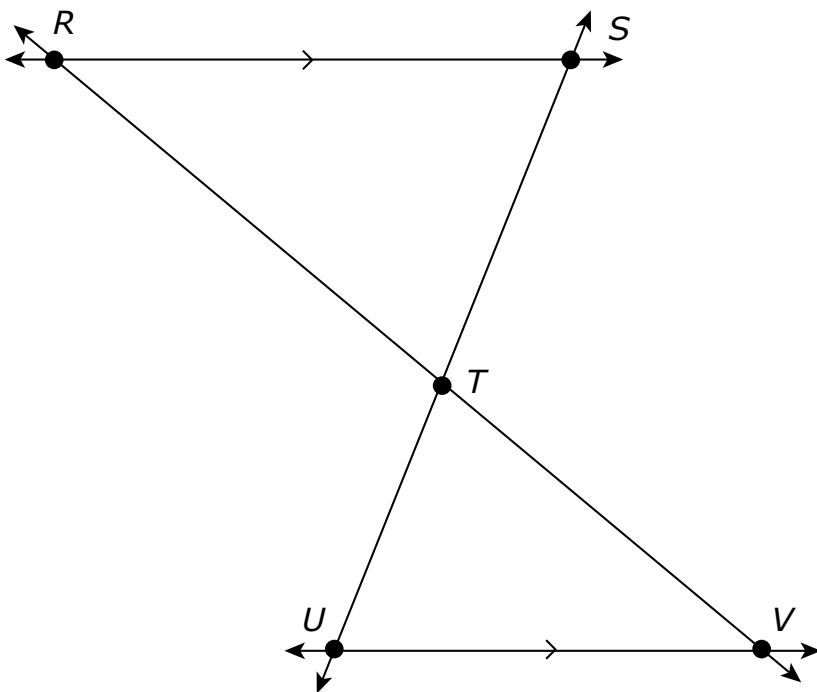
Based on the information in the table and the graph, compare the approximate miles per gallon of car M to car P. Show your work or explain your answer.

Enter your answer and your work or explanation in the space provided.



Use the information provided to answer Part A and Part B for question 20.

The figure shows line  $RS$  parallel to line  $UV$ . The lines are intersected by 2 transversals. All lines are in the same plane.



**20. Part A**

Explain why triangle  $RTS$  is similar to triangle  $VTU$ .

Enter your explanation in the space provided.

**Part B**

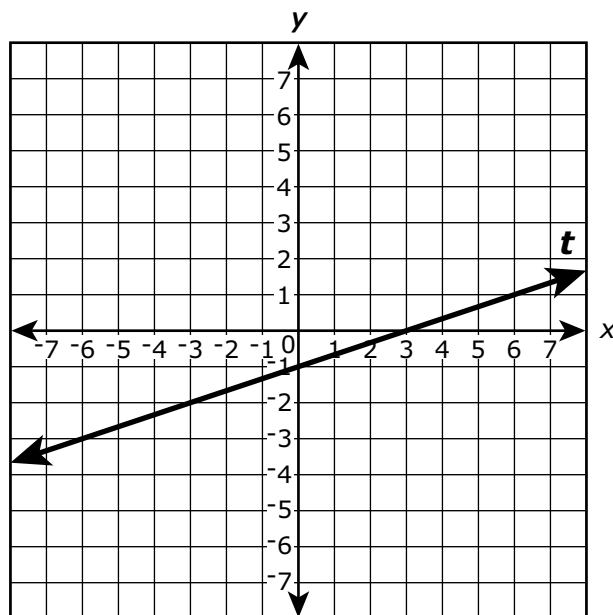
Given that  $m\angle STV = 108^\circ$ , determine  $m\angle SRT + m\angle TUV$ . Show your work or explain your answer.

Enter your answer and your work or explanation in the space provided.



Use the information provided to answer Part A through Part D for question 21.

Line  $t$  is shown in the coordinate plane.

**21. Part A**

What is the slope of line  $t$ ?

- A.** 3
- B.**  $\frac{1}{3}$
- C.**  $-\frac{1}{3}$
- D.** -3

**Part B**

What is the  $y$ -intercept of line  $t$ ?

- A.  $-1$
- B.  $-\frac{1}{3}$
- C.  $\frac{1}{3}$
- D.  $3$

**Part C**

Line  $s$  (not shown) has the same slope and passes through the point  $(0, 4)$ . Which table represents 4 points on line  $s$ ?

**A.**

$x$	$y$
$-6$	$2$
$-3$	$3$
$0$	$4$
$3$	$5$

**B.**

$x$	$y$
$-6$	$-14$
$-3$	$-5$
$0$	$4$
$3$	$13$

**C.**

$x$	$y$
$-6$	$6$
$-3$	$5$
$0$	$4$
$3$	$3$

**D.**

$x$	$y$
$-6$	$22$
$-3$	$13$
$0$	$4$
$3$	$-5$

**Part D**

Which equation could represent line  $s$ ?

**A.**  $y = -\frac{1}{3}x + 4$

**B.**  $y = -3x + 4$

**C.**  $y = 3x + 4$

**D.**  $y = \frac{1}{3}x + 4$





Use the information provided to answer Part A through Part C for question 22.

Martin is considering the expressions  $\frac{1}{2}(7x + 48)$  and  $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$ . He wants to know if one expression is greater than the other for all values of  $x$ .

## 22. Part A

Which statement about the relationship between the expressions is true?

- A.** The value of the expression  $\frac{1}{2}(7x + 48)$  is always equal to the value of the expression  $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$ .
- B.** The value of the expression  $\frac{1}{2}(7x + 48)$  is always less than the value of the expression  $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$ .
- C.** The value of the expression  $\frac{1}{2}(7x + 48)$  is always greater than the value of the expression  $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$ .
- D.** The value of the expression  $\frac{1}{2}(7x + 48)$  is sometimes greater than and sometimes less than the value of the expression  $-\left(\frac{1}{2}x - 3\right) + 4(x + 5)$ .

## Part B

Show or explain how you found your answer to Part A.

Enter your work or your explanation in the space provided.

## Part C

Write a new expression that always has a greater value than both of these expressions.

Enter your expression in the space provided.





# Unit 3

## (Calculator)

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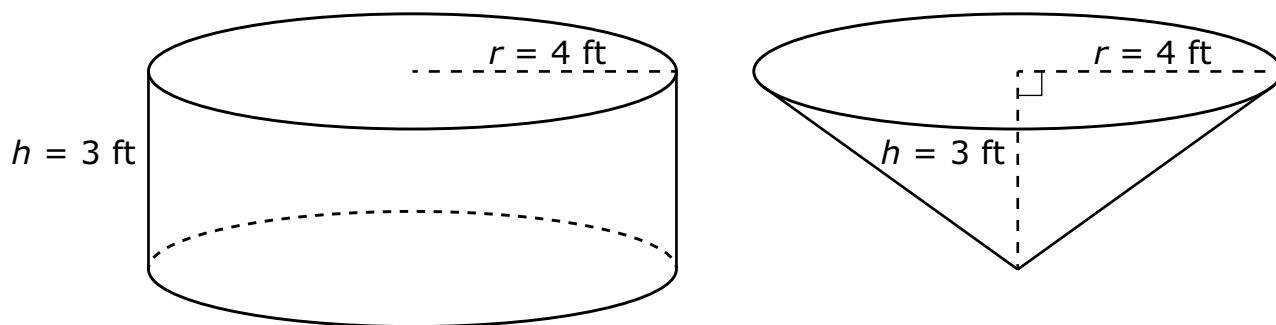
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9	9	9	9	9	9



Use the information provided to answer Part A and Part B for question 23.

The figure shows a right-circular cylinder and a right-circular cone. The cylinder and the cone have the same base and the same height.

**23. Part A**

What is the volume, in cubic feet, of the cone?

- A.  $12\pi$
- B.  $16\pi$
- C.  $36\pi$
- D.  $48\pi$

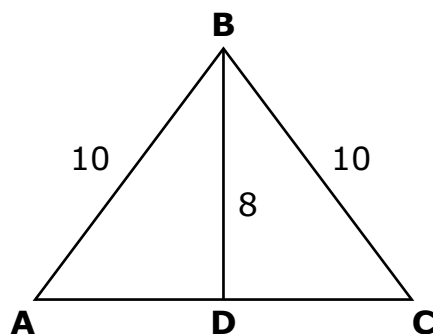
**Part B**

What is the ratio of the cone's volume to the cylinder's volume?

- A.  $\frac{1}{1}$
- B.  $\frac{1}{2}$
- C.  $\frac{1}{3}$
- D.  $\frac{1}{4}$



24. In  $\triangle ABC$ ,  $\overline{BD}$  is perpendicular to  $\overline{AC}$ . The dimensions are shown in centimeters.



What is the length, in centimeters, of  $\overline{AC}$ ?

Enter your answer in the box.



- 25.** Relationship A is defined by the equation  $y = 9x$ .

Some values of relationship B are shown in the table.

**Relationship B**

$x$	$y$
0	0
3	34.5
5	57.5
8	92

Both relationships represent a direct proportion between  $x$  and  $y$ . The rate of change of relationship B is how many units greater than the rate of change of relationship A?

- A.** 1.5
- B.** 2.5
- C.** 25.5
- D.** 43.5



26. Two utility companies sell electricity in units of kilowatt-hours. The cost of electricity for company P is shown in the table. The cost of electricity for company M can be found by using the equation shown, where  $y$  represents the total cost in dollars for  $x$  kilowatt-hours of electricity.

Electricity Costs		
Company P		Company M
Number of Kilowatt-hours	Total Cost (dollars)	$y = 0.15x$
1,250	150.00	
1,650	198.00	

- Use the information provided to find the unit rate, in dollars per kilowatt-hour, for each company. Show your work or explain your answers.
- Find the total cost, in dollars, of buying 2,375 kilowatt-hours of electricity from the **least** expensive company.

Enter your answers and your work or explanation in the space provided.



Use the information provided to answer Part A and Part B for question 27.

In a system of two linear equations, the lines represented by each equation have the same slope.

**27. Part A**

Which could be the total number of solutions to the system of equations?

Select **each** correct answer.

- A.** no solutions
- B.** 1 solution
- C.** 2 solutions
- D.** 3 solutions
- E.** infinitely many solutions

**Part B**

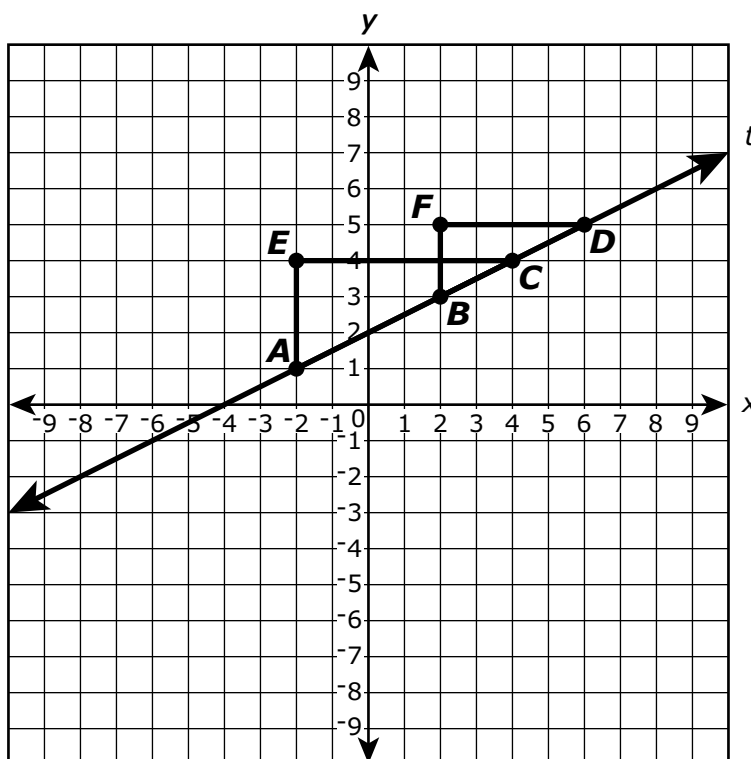
Explain why you chose your answer(s) in Part A.

Enter your explanation for each selection in the space provided.





28. Line  $t$  and  $\triangle ECA$  and  $\triangle FDB$  are shown on the coordinate plane.



Which statements are true?

Select **all** that apply.

- A. The slope of  $\overline{AC}$  is equal to the slope of  $\overline{BC}$ .
- B. The slope of  $\overline{AC}$  is equal to the slope of  $\overline{BD}$ .
- C. The slope of  $\overline{AC}$  is equal to the slope of line  $t$ .
- D. The slope of line  $t$  is equal to  $\frac{EC}{AE}$ .
- E. The slope of line  $t$  is equal to  $\frac{FB}{FD}$ .
- F. The slope of line  $t$  is equal to  $\frac{AE}{FD}$ .



Use the information provided to answer Part A and Part B for question 29.

The owner of a computer store is offering a discount on a computer sold in the store.

**Computer Sale!**

Original Price: \$598.00

25% off original price

*8% tax applied after discount*

**29. Part A**

The owner offers a payment plan where the total cost of the computer is paid in 6 equal monthly payments.

- Determine the amount of each monthly payment.
- Show your work or explain your answer.

Enter the monthly payment and your work or explanation in the space provided.

**Part B**

A different computer is advertised as 40% off of the original price. After the discount, the tax is \$44.64.

- Determine the total price of this computer after the discount and tax are applied.
- Show your work or explain your answer.
- Determine the original price of this computer.
- Show your work or explain your answer.

Enter your answers and your work or explanations in the space provided.

- 30.** Function A is a linear function. Some values of Function A are shown in the table.

**Function A**

$x$	$y$
-1	-5
3	3
5	7
6	9

Function B is a linear function with a  $y$ -intercept of 3 and an  $x$ -intercept of -5.

Which statement is true?

- A.** The slope of Function A is greater than the slope of Function B, and the  $y$ -intercept of Function A is greater than the  $y$ -intercept of Function B.
- B.** The slope of Function A is less than the slope of Function B, and the  $y$ -intercept of Function A is greater than the  $y$ -intercept of Function B.
- C.** The slope of Function A is greater than the slope of Function B, and the  $y$ -intercept of Function A is less than the  $y$ -intercept of Function B.
- D.** The slope of Function A is less than the slope of Function B, and the  $y$ -intercept of Function A is less than the  $y$ -intercept of Function B.



**Mathematics – Grade 8**  
**Practice Test Answer and Alignment Document**  
**Pencil-and-Paper ABO**

The following pages include the answer key for all machine-scored items, followed by the rubrics for the hand-scored items.

- The rubrics show sample student responses. Other valid methods for solving the problem can earn full credit unless a specific method is required by the item.
- In items where the scores are awarded for full and partial credit, the definition of partial credit will be confirmed during range-finding (reviewing sets of real student work).
- If students make a computation error, they can still earn points for reasoning or modeling.

**Unit 1**

<b>Item Number</b>	<b>Answer Key</b>	<b>Evidence Statement Key/Content Scope</b>
1.	<b>B, C, D, E</b>	8.F.1-1
2.	-1	8.EE.7.b
3.	<b>C, E</b>	8.F.5-1
4.	<b>B</b>	8.NS.2
5.	<b>C</b>	8.EE.2
6.	-2	8.EE.8b-1
7.	<b>C, F</b>	8.F.3-2
8.	<b>B, E</b>	8.EE.8a
9.	<b>D</b>	8.NS.1
10.	<b>A, C, F</b>	8.G.1a

11.	Part A: <b>B</b> Part B: <b>B</b>	8.G.2
12.	<b>D</b>	8.F.1-2
13.	<b>B, E</b>	8.EE.1
14.	<b>C</b>	8.EE.8b-2
15.	<b>A</b>	8.SP.2
16.	<b>300</b>	8.EE.3

## Unit 2

Item Number	Answer Key	Evidence Statement Key/Content Scope
17.	<b>D</b>	8.EE.5-1
18.	Part A: <b>D</b> Part B: <b>4.5 or equivalent</b>	8.EE.C.Int.1
19.	See rubric	8.D.3/8.EE.5
20.	Part A: see rubric Part B: see rubric	8.C.3.3/8.G.5
21.	Part A: <b>B</b> Part B: <b>A</b> Part C: <b>A</b> Part D: <b>D</b>	8.F.4
22.	Part A: <b>C</b> Part B: see rubric Part C: see rubric	8.C.6/7.EE.1

## Unit 3

Item Number	Answer Key	Evidence Statement Key/Content Scope
23.	Part A: <b>B</b> Part B: <b>C</b>	8.G.9

24.	<b>12</b>	8.G.7-1
25.	<b>B</b>	8.EE.5-2
26.	See rubric	8.D.1/8.EE.5
27.	Part A: <b>A, E</b> Part B: see rubric	8.C.1.2/8.EE.8
28.	<b>A, B, C, E</b>	8.EE.6-1
29.	Part A: see rubric Part B: see rubric	8.D.2/7.RP.3 & 7.EE.3
30.	<b>C</b>	8.F.2

Rubrics start on the next page.

Unit 2 #19 Rubric	
Score	Description
<b>3</b>	<p>Student response includes each of the following 3 elements.</p> <ul style="list-style-type: none"> <li>• Approximate miles per gallon for car M, from 25 to 27</li> <li>• Approximate miles per gallon for car P, from 28 to 33</li> <li>• Valid work shown or explanation given for each answer</li> </ul> <p>Sample Student Response:</p> <p>Car M gets approximately 26.5 miles per gallon.  I found this by finding an average unit rate for the table for Car M.  <math>50.4 + 80.5 + 181.3 + 137.5 = 449.7</math> Total Miles  <math>2 + 3 + 7 + 5 = 17</math> Total Gallons  <math>\frac{449.7}{17} \approx 26.5</math> Miles Per Gallon</p> <p>Car P gets approximately 31.7 miles per gallon.  I found this by approximating the points in the graph as  (1, 30), (2, 65), (3, 90), (4, 130) and (5, 160). Then I found the  average unit rate for these points.  <math>30 + 65 + 90 + 130 + 160 = 475</math> Total Miles  <math>1 + 2 + 3 + 4 + 5 = 15</math> Total Gallons  <math>\frac{475}{15} \approx 31.7</math> Miles Per Gallon</p>
<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

Unit 2 #20 Rubric Part A	
Score	Description
<b>1</b>	<p>Student response includes the following element.</p> <ul style="list-style-type: none"> <li>• Correct explanation of why triangle <i>RTS</i> is similar to triangle <i>VTU</i></li> </ul> <p>Sample Student Response:</p> <p><math>\angle SRT</math> and <math>\angle UVT</math> are alternate interior angles, and therefore congruent.  <math>\angle RST</math> and <math>\angle TUV</math> are alternate interior angles, and therefore</p>

	<p>congruent.</p> <p><math>\angle RTS</math> and <math>\angle UTV</math> are vertical angles, and therefore congruent.</p> <p>Triangle <math>RTS</math> is similar to triangle <math>VTU</math> by the angle-angle criterion.</p> <p>Note: Two of the three angle statements must be stated for the student to get one point.</p>
<b>0</b>	Student response is incorrect or irrelevant.
Unit 2 #20 Rubric Part B	
<b>Score</b>	<b>Description</b>
<b>2</b>	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> <li>Determines <math>m\angle SRT + m\angle TUV = 108^\circ</math></li> <li>Correct work shown or explanation given</li> </ul> <p>Sample Student Response:</p> <p>Angles <math>TUV</math> and <math>RST</math> are alternate interior angles so <math>m\angle TUV = m\angle RST</math>.</p> <p>Since <math>m\angle RTS + m\angle STV = 180</math> and <math>m\angle STV = 108^\circ</math>,  <math>m\angle RTS = 180^\circ - 108^\circ = 72^\circ</math>.</p> <p>The measures of the angles of a triangle sum to <math>180^\circ</math> so,  <math>m\angle SRT + m\angle RST = 180^\circ - m\angle RTS</math>  <math>= 180^\circ - 72^\circ</math>  <math>= 108^\circ</math></p> <p>So <math>m\angle SRT + m\angle TUV = m\angle SRT + m\angle RST = 108^\circ</math>.</p>
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.

Unit 2 #22 Rubric Part A	
<b>Score</b>	<b>Description</b>
<b>1</b>	Machine Scored: C
Unit 2 #22 Rubric Part B	
<b>Score</b>	<b>Description</b>
<b>2</b>	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> <li>Writes equivalent expressions</li> <li>Uses a correct series of reasoning to determine that the first expression is always greater than the second expression</li> </ul> <p>Sample Student Response:</p>



	<p>I need to compare the expressions, so I will rewrite them by distributing and combining like terms.</p> $\begin{array}{rcl} \frac{1}{2}(7x + 48) & & -\left(\frac{1}{2}x - 3\right) + 4(x + 5) \\ \frac{7}{2}x + 24 & & -\frac{1}{2}x + 3 + 4x + 20 \\ & & \frac{7}{2}x + 23 \end{array}$ <p>When I compare <math>\frac{7}{2}x + 24</math> to <math>\frac{7}{2}x + 23</math>, I can subtract <math>\frac{7}{2}x</math> from both expressions since they give the same value and just compare 24 to 23. Since 24 is always greater than 23, the expression <math>\frac{1}{2}(7x + 48)</math> is always greater than the expression <math>-\left(\frac{1}{2}x - 3\right) + 4(x + 5)</math>.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>The student does not need to show both equivalent expressions, but can earn this point if it is clear from their explanation that they found equivalent expressions. For example, if the student explains that the only difference between the two expressions is that one has 23 and the other has 24, it is clear that they have found equivalent expressions.</li> <li>The student may receive a total of 1 point if he or she computes the correct answer, but shows no work or insufficient work to indicate a correct reasoning process.</li> </ul>
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.
Unit 2 #22 Rubric Part C	
<b>Score</b>	<b>Description</b>
<b>1</b>	Student creates an expression using the variable $x$ that is always greater than the two given expressions.
<b>0</b>	Student response is incorrect or irrelevant.

Unit 3 #26 Rubric	
<b>Score</b>	<b>Description</b>
<b>3</b>	<p>Student response includes each of the following 3 elements.</p> <ul style="list-style-type: none"> <li>Finds unit rates for both companies</li> <li>Valid work or explanation of how unit rates are found for each company</li> <li>Finds the cost of buying 2,375 kilowatt-hours of electricity from the least expensive company</li> </ul>

	<p>Sample Student Response:</p> <p>The unit rate for Company P is \$0.12 per kilowatt-hour of electricity. When I divide the cost by the number of kilowatt-hours of electricity I get the unit rate.</p> $150.00 \div 1250 = 0.12$ $198.00 \div 1650 = 0.12$ <p>The slope of a linear function can be considered the function's rate. The unit rate for Company M is \$0.15 per kilowatt-hour of electricity. It costs \$285.00 to buy 2,375 kilowatt-hours of electricity from Company P.</p>
<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	Student response is incorrect or irrelevant.

Unit 3 #27 Rubric Part A	
Score	Description
<b>1</b>	Machine Scored: A, E
Unit 3 #27 Rubric Part B	
Score	Description
<b>2</b>	<p>Student response includes each of the following 2 elements.</p> <ul style="list-style-type: none"> <li>• Explanation for no solutions</li> <li>• Explanation for infinitely many solutions</li> </ul> <p>Sample Student Response:</p> <p>Lines with the same slope could have different <math>y</math>-intercepts which would make them parallel lines. Because parallel lines never intersect, there would be no common point of intersection on the lines, and therefore, no solution to the system of equations.</p> <p>Lines with the same slope could also have the same <math>y</math>-intercept which would make them be the same line. Because lines that are the same intersect at all possible points, there would be infinitely many common points of intersection on the lines, and therefore infinitely many solutions to the system of equations.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>• The student cannot receive more than 1 point for reasoning if he or she includes an explanation for either "1 solution", "2 solutions", or "3 solutions" as being a correct answer.</li> </ul>

<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.

### Unit 3 #29 Rubric Part A

<b>Score</b>	<b>Description</b>
<b>2</b>	<p>Student response includes each of the following 2 elements:</p> <ul style="list-style-type: none"> <li>• Correct amount of each payment, \$80.73</li> <li>• Valid work shown or explanation given</li> </ul> <p>Sample Student Response:</p> <p>The discounted price is 75% of the original price, so I need to multiply the original price by 0.75. Then, I will multiply that amount by 0.08 to determine the sales tax. Adding the two together will give me the total price of the computer. I then divide the total price of the computer by 6 to determine the six monthly payments.</p> $\$598.00 \times 0.75 = \$448.50$ $\$448.50 \times 0.08 = \$35.88$ $\$448.50 + \$35.88 = \$484.38 \text{ total cost}$ $\$484.38 \div 6 = \$80.73 \text{ per month}$
<b>1</b>	Student response includes 1 of the 2 elements.
<b>0</b>	Student response is incorrect or irrelevant.

### Unit 3 #29 Rubric Part B

<b>Score</b>	<b>Description</b>
<b>4</b>	<p>Student response includes each of the following 4 elements:</p> <ul style="list-style-type: none"> <li>• Correct total price of the different computer, \$602.64</li> <li>• Valid work or explanation given</li> <li>• Correct original price of the different computer, \$930.00</li> <li>• Valid work or explanation given</li> </ul> <p>Sample Student Response:</p> <p>The total cost of the different computer is \$602.64 and the original price is \$930.00.</p> <p>The tax is \$44.64, which is 8% of the sale price of the computer, <math>d</math>.</p> $\frac{44.64}{d} = \frac{8}{100}$ $4464 = 8d$ $d = 558.00$ <p>The price of the computer after discount and sales tax is \$602.64.</p>

	$558.00 + 44.64 = 602.64$ The sale price is 60% of the original price, $p$ . $\frac{558.00}{p} = \frac{60}{100}$ $55800 = 60p$ $p = 930.00$
<b>3</b>	Student response includes 3 of the 4 elements.
<b>2</b>	Student response includes 2 of the 4 elements.
<b>1</b>	Student response includes 1 of the 4 elements.
<b>0</b>	Student response is incorrect or irrelevant.