Name _____

Topics **1–6**
Cumulative/
Benchmark Assessment

1. Xavier asked 18 players on his baseball team whether they prefer using a wood or an aluminum bat. He used a calculator to compare the number of players who said they prefer using a wood bat to the total number he surveyed. The calculator showed the results as 0.22222222.

Part A

Write this number as a fraction. **1 point**

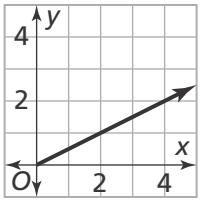
$\frac{2}{9}$

Part B

How many players preferred using a wood bat? **1 point**

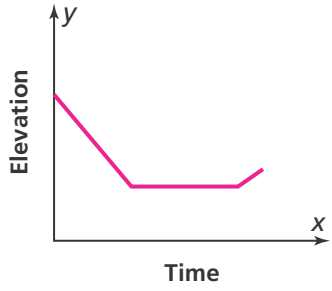
4 players

2. Which of the following statements is true? Select all that apply. **1 point**

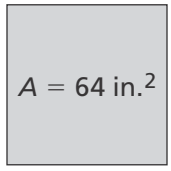


- [x] The slope is positive.
- [ ] The y-intercept is 2.
- [x] The relationship is proportional.
- [ ] The equation of the line is $y = 2x$.
- [x] The equation of the line is $y = \frac{1}{2}x$.

3. Richard takes a hang gliding lesson. He lifts off at the top of a hill and glides downward for the first 5 minutes. Then he soars at a consistent elevation for 10 minutes. The last 3 minutes he glides upward until he lands on a smaller hill. Sketch a graph of Richard's gliding lesson over time. **1 point**



4. What is the perimeter of the square? **1 point**



- Ⓐ 8 inches
- Ⓑ 16 inches
- Ⓒ 24 inches
- Ⓓ 32 inches

5. A truck rental company charges $27 per day plus $0.79 per mile. What is the equation of the line in slope-intercept form? **1 point**

$y = 0.79x + 27$

6. The two-way frequency table shows the number of text messages sent by seventh and eighth graders.

Number of Texts	Students		
	7th	8th	Total
0–50	72	57	129
50+	48	73	121
Total	120	130	250

Complete the two-way relative frequency table. **1 point**

Number of Texts	Students		
	7th	8th	Total
0–50	29%	23%	52%
50+	19%	29%	48%
Total	48%	52%	100%

7. Draw lines to match each equation on the left to its number of solutions on the right. **1 point**

$3(4x - 2) = 12x - 6$	One solution
$3(4x - 2) = -12x - 6$	No solution
$-3(4x - 2) = -12x - 2$	Infinitely many solutions

8. The data in the table below represents a linear relationship. Fill in the missing data. **1 point**

x	15	20	25	30	35
y	9.5	12	14.5	17	19.5

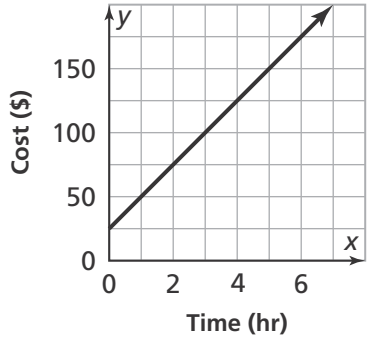
9. Nolan says that Function A and Function B have the same slope. Is Nolan correct? Explain. **2 points**

Function A

Function B					
x	6	12	18	24	30
y	9	13	17	21	25

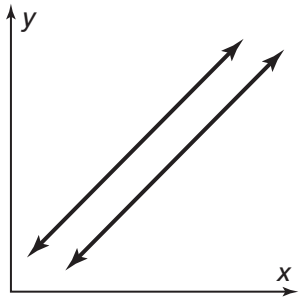
Yes; Sample answer: They both have a slope of $\frac{2}{3}$.

10. The graph of the line represents the cost of renting a jet ski. Write a linear function in the form $y = mx + b$ to represent the situation. **1 point**



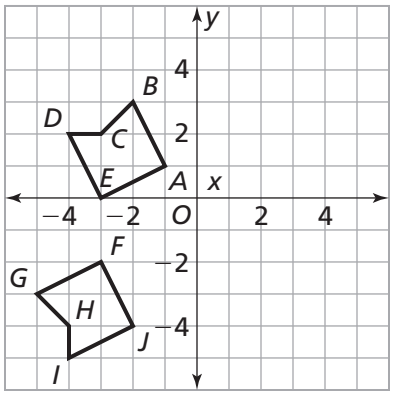
$y = 25x + 25$

11. How many solutions does the system of equations have? Explain. **2 points**



None; Sample answer: They are parallel lines that never intersect.

12. Describe the sequence of transformations that maps Figure *ABCDE* onto Figure *FGHIJ*. **1 point**



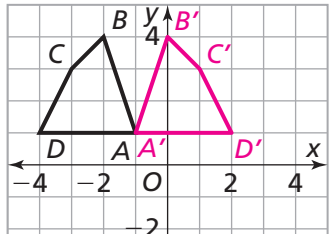
Sample answer: A rotation of 90° about the origin and a translation 2 units left and one unit down

13. Consider the system of equations below. What is the solution of the system? **1 point**

$y = 4x - 8$
$4x + 2y = 20$

$x = 3, y = 4$

14. Draw the reflection of *ABCD* across the line $x = -1$. **1 point**



What are the coordinates of point *C′*? **1 point**

(1, 3)

15. One equation in a system is $4x - 2y = 8$. Which equation gives the system no solution? **1 point**

Ⓐ $y = 2x - 4$

Ⓑ $y = -2x + 4$

Ⓒ $y - 2x = 9$

Ⓓ $y = \frac{1}{4}x - 4$

16. The coordinates of $\triangle PQR$ are $P(1, 1)$, $Q(2, 2)$, and $R(3, 1)$. If $\triangle PQR$ is rotated 90° about the origin, what are the vertices of $\triangle P'Q'R'$? **1 point**

Ⓐ $P'(-1, 1), Q'(-2, 2), R'(-1, 3)$

Ⓑ $P'(-1, -1), Q'(-1, -3), R'(-2, -2)$

Ⓒ $P'(1, -1), Q'(2, -2), R'(3, 1)$

Ⓓ $P'(-1, -1), Q'(-2, -2), R'(-3, 1)$

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17. One platter has 6 veggie wraps, 12 turkey wraps, and costs $64.50. Another platter has 8 veggie wraps, 8 turkey wraps, and costs $56.

Part A

Write a system of equations to represent the situation. **1 point**

$6x + 12y = 64.50;$
$8x + 8y = 56$

Part B

What is the cost of a veggie wrap? **1 point**

$3.25

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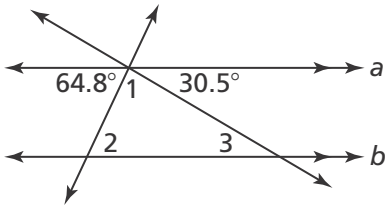
18. What are the measures of the interior angles of the triangles? **1 point**



$m\angle 1 = 84.7°,$
$m\angle 2 = 64.8°,$
$m\angle 3 = 30.5°$

19. The perimeter of a garden is 88 feet. The length is 12 feet greater than the width.

Part A

What system of equations could you use to find the dimensions of the garden? **1 point**

Sample answer:
$2L + 2W = 88,$
$L = W + 12$

Part B

What are the dimensions of the garden? **1 point**

$L = 28$ feet, $W = 16$ feet

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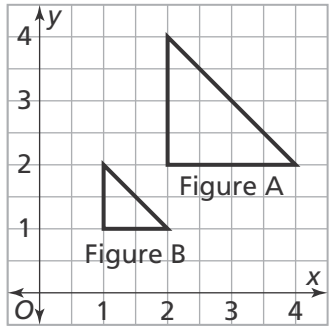
20. Figure B is the image of Figure A after a dilation with center (0, 0). What is the scale factor? **1 point**



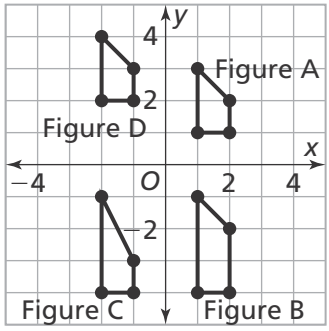
Ⓐ $\frac{1}{4}$

Ⓑ $\frac{1}{2}$

Ⓒ 2

Ⓓ 4

21. Which figure is a translation of Figure A? **1 point**



Ⓐ Figure B

Ⓑ Figure C

Ⓒ Figure D

Ⓓ None of the above

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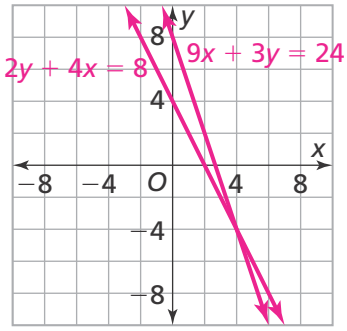
22. Graph the system of equations and find the solution. **1 point**

$$9x + 3y = 24$$
$$2y + 4x = 8$$



(4, −4)

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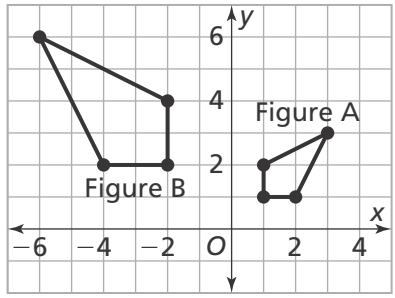
23. Describe a sequence of transformations that shows that Figure A is similar to Figure B. **1 point**



Sample answer: A dilation with center (0, 0) and scale factor of 2, then a rotation of 90° about the origin

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24. Use substitution to find a solution to the system of equations. Explain. **1 point**

$$1.75x + 1.25y = 2.75$$
$$7x + 5y = 9$$

No solution; Sample answer: Since 11 ≠ 9 there is no solution.

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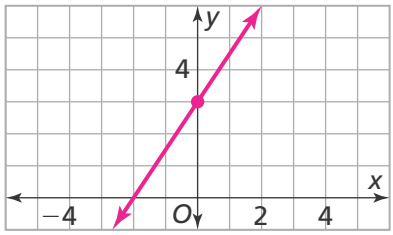
25. $\triangle ABC$ has vertices at $A(1, 1)$, $B(2, 3)$, and $C(3, 1)$. $\triangle DEF$ has vertices at $D(-1, 1)$, $E(-2, 4)$, and $F(-3, 1)$. Is $\triangle ABC$ congruent to $\triangle DEF$? Explain. **1 point**

No; Sample answer: There is no sequence of transformations that maps $\triangle ABC$ onto $\triangle DEF$.

26. Graph the system of equations to determine the solution. **2 points**

$$3x - 2y = -6$$
$$y = 1.5x + 3$$



Infinitely many solutions

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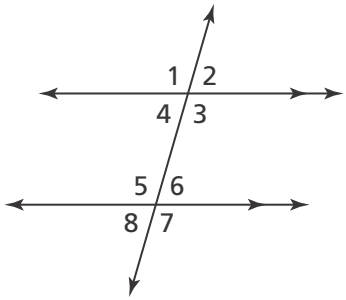
27. Use the figure below.



Part A

What angles are congruent to $\angle 5$? **1 point**

$\angle 1, \angle 3, \angle 7$

Part B

If $m\angle 6 = 85°$, what is the measure of $\angle 3$? **1 point**

95°

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28. Solve the system of equations through elimination. Explain your method. **2 points**

$$2a + 3b = 23$$
$$3a - 2b = 2$$

$a = 4, b = 5$; Sample answer: Multiply the first equation by 3 and the second equation by -2. Add the equations. Solve for a. Substitute the value of a into one of the original equations and solve for b.

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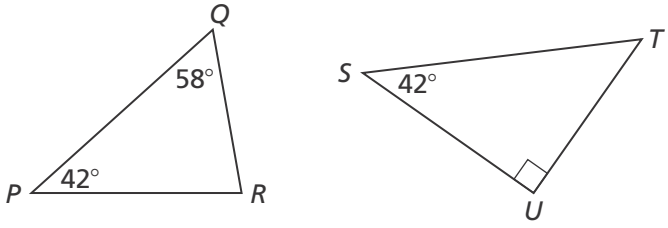
29. Is $\triangle PQR \sim \triangle STU$? Explain. **1 point**



No; Sample answer: The two triangles do not have congruent interior angles, so they are not similar.

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30. How many solutions does the following system have? Explain. **2 points**

$$x + 4y = 0$$
$$16y = -4x$$

Infinitely many solutions; Sample answer: Both equations have the same slope, $-\frac{1}{4}$, and the same y-intercept, 0, so there are infinitely many solutions.