

# MATHEMATICS

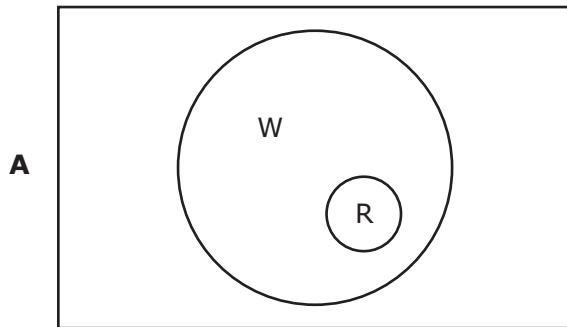
# Grade 8

2015 Released Test Questions

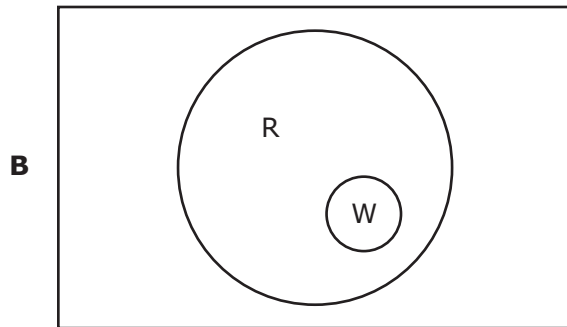
- 1 Which Venn diagram correctly describes the relationship between Set R and Set W?

$R = \{\text{real numbers}\}$

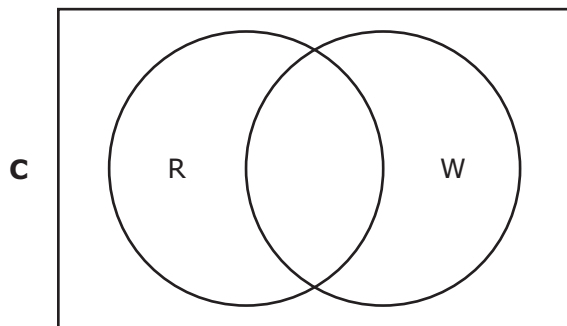
$W = \{\text{whole numbers}\}$



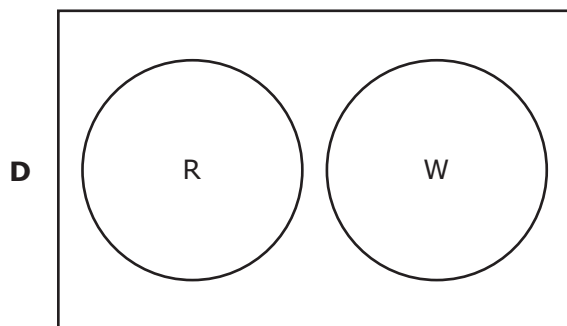
, because all real numbers are whole numbers



, because all whole numbers are real numbers

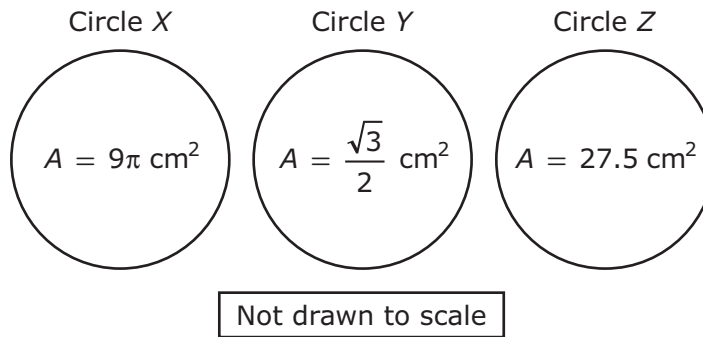


, because some whole numbers are not real numbers



, because whole numbers and real numbers have no elements in common

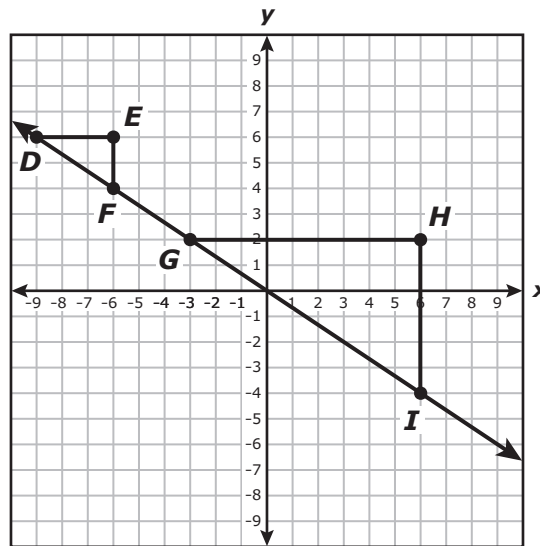
- 2 The areas of three circles are shown.



Which list shows the circles in order from greatest area to least area?

- A Circle Z, circle Y, circle X
- B Circle Y, circle Z, circle X
- C Circle X, circle Z, circle Y
- D Circle X, circle Y, circle Z

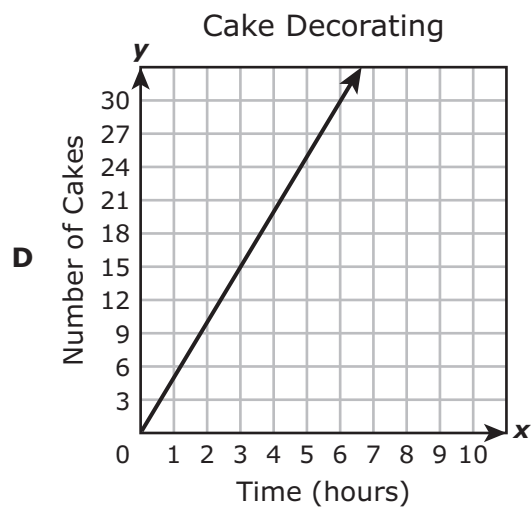
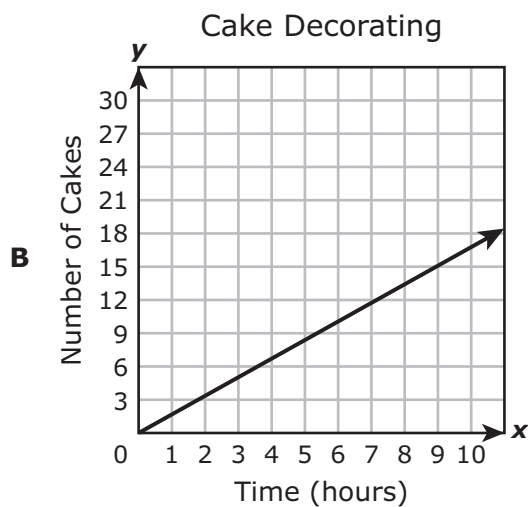
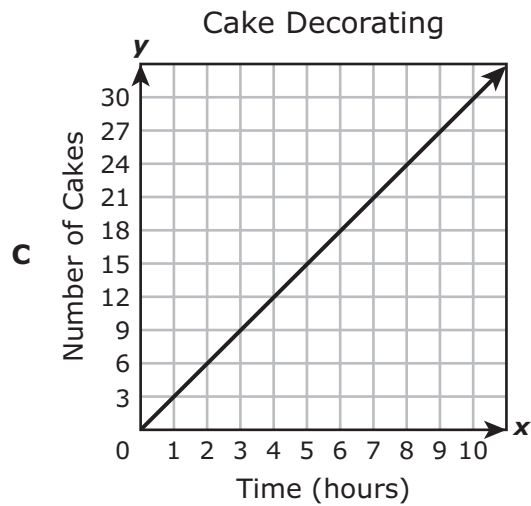
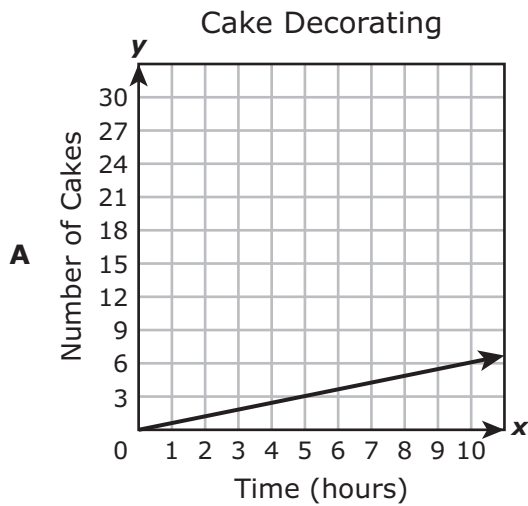
- 3 Triangle  $DEF$  and triangle  $GHI$  are similar right triangles.



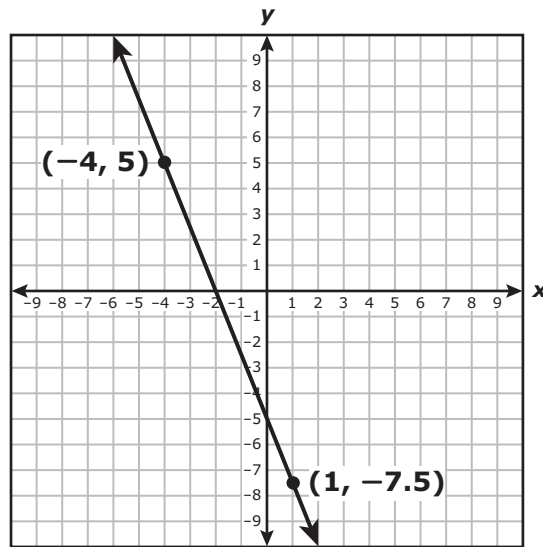
Based on this information, which statement is true?

- A The relationship between the slope of the hypotenuse of triangle  $DEF$  and the slope of the hypotenuse of triangle  $GHI$  cannot be determined.
- B The slope of the hypotenuse of triangle  $DEF$  is greater than the slope of the hypotenuse of triangle  $GHI$ .
- C The slope of the hypotenuse of triangle  $DEF$  is less than the slope of the hypotenuse of triangle  $GHI$ .
- D The slope of the hypotenuse of triangle  $DEF$  is equal to the slope of the hypotenuse of triangle  $GHI$ .

- 4 Judy can decorate 3 cakes in 5 hours. Which graph has a slope that best represents the number of cakes per hour Judy can decorate?



- 5 The graph of a linear function is shown on the coordinate grid.



What is the  $y$ -intercept of the graph of the linear function?

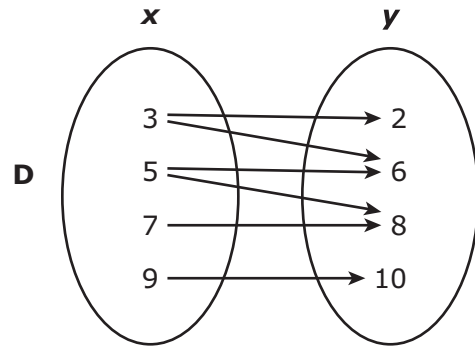
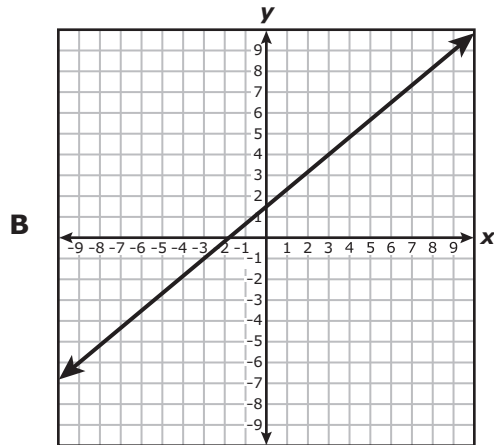
Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

6 Which representation does **not** show  $y$  as a function of  $x$ ?

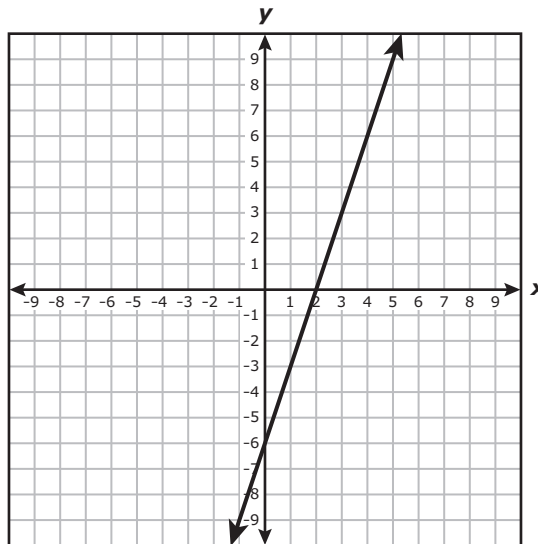
**A**

<b>x</b>	1	3	5	7
<b>y</b>	-6	-18	-30	-42

**C**  $\{(2, -2), (3, -2), (7, -2), (11, -2)\}$



- 7 Which equation can be used to describe the relationship between  $x$  and  $y$  shown in the graph below?



- A**  $y = 3x + 2$
- B**  $y = -3x - 6$
- C**  $y = 3x - 6$
- D**  $y = -3x + 2$
- 
- 8 Renting video games from Store S costs \$2.50 per game plus a monthly fee of \$5.00. Renting video games from Store T costs \$5.00 per game with no monthly fee. The monthly cost to rent video games depends on the number of video games,  $v$ , rented. Which inequality represents the situation when the monthly cost at Store S is less than the monthly cost at Store T?
- A**  $2.5v + 5 < 5v$
- B**  $2.5v + 5 > 5v$
- C**  $7.5v < 5v$
- D**  $7.5v > 5v$



- 9 Which situation can be represented by this equation?

$$340 + 5x = 650 - 8x$$

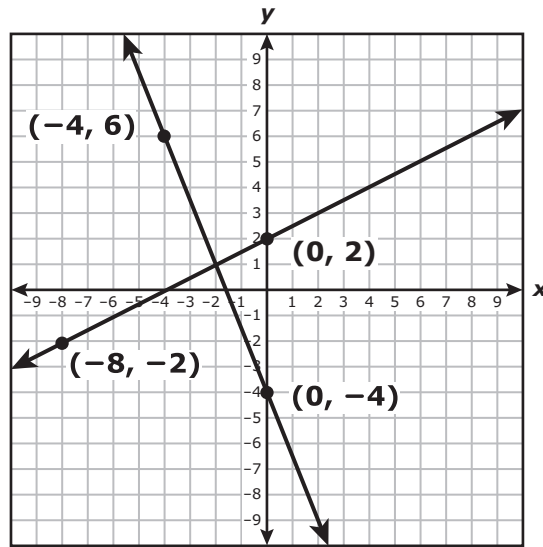
- A** Sierra has a bucket that originally contained 340 fl oz of water and is being filled at a rate of 5 fl oz per minute. Brian has a bucket that originally contained 650 fl oz of water and is being drained at a rate of 8 fl oz per minute. What is  $x$ , the number of minutes that need to pass in order for the two buckets to contain the same amount of water?
- B** Sierra started with savings of \$340 and spends \$8 of her savings every week. Brian started with savings of \$650 and adds \$5 to his savings every week. What is  $x$ , the number of weeks that need to pass in order for Sierra and Brian to have the same amount of savings?
- C** Sierra started with 340 cans of food for a food drive. She collects 5 more cans every day. Brian started with 650 cans of food for the food drive. He collects 8 more cans every day. What is  $x$ , the number of days that need to pass in order for Sierra and Brian to have the same number of cans of food?
- D** Sierra earns 345 points on each level of a video game. Brian earns 642 points on each level of the same video game. What is  $x$ , the number of levels that Sierra and Brian would have to play in order for them to have an equal number of points?
- 

- 10 What value of  $x$  makes this equation true?

$$0.6x - 5 = 0.1x + 7$$

- A** 4
- B** 14
- C** 24
- D** 6

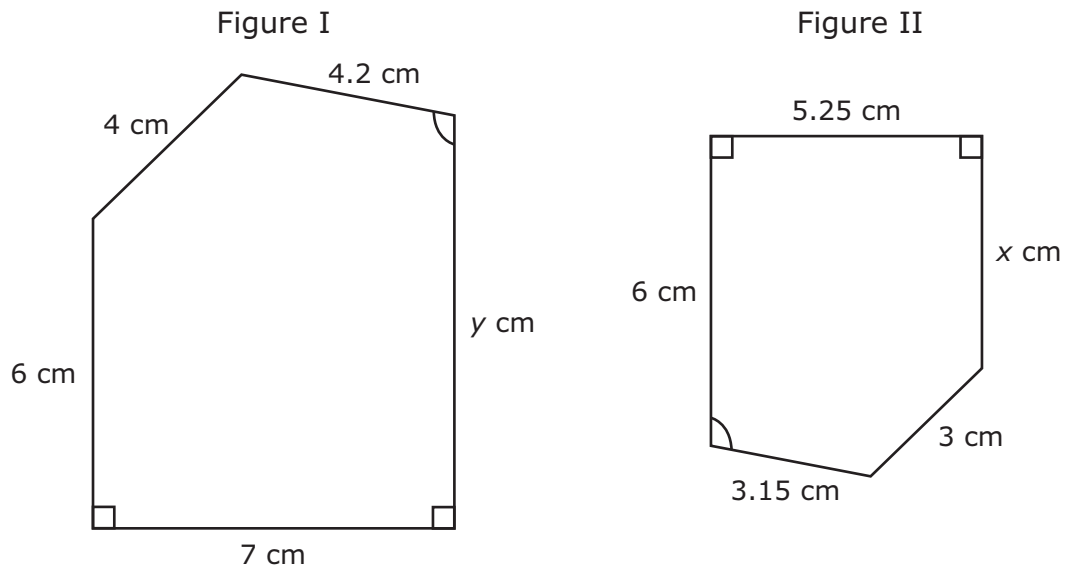
- 11 The two lines graphed on the coordinate grid each represent an equation.



Which ordered pair represents a solution to both equations?

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

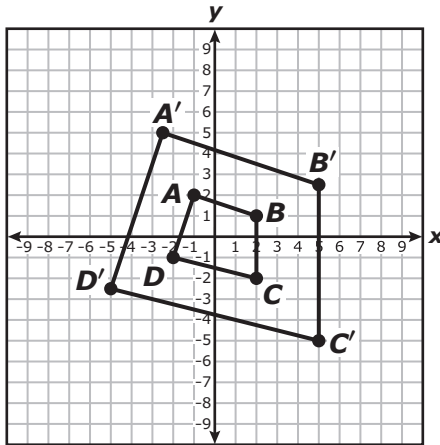
- 12 Figure I and Figure II are similar pentagons.



Which proportion must be true?

- A**  $\frac{y}{x} = \frac{4.2}{3.15}$
- B**  $\frac{6}{x} = \frac{5.25}{7}$
- C**  $\frac{y}{6} = \frac{7}{5.25}$
- D**  $\frac{x}{4} = \frac{3}{6}$

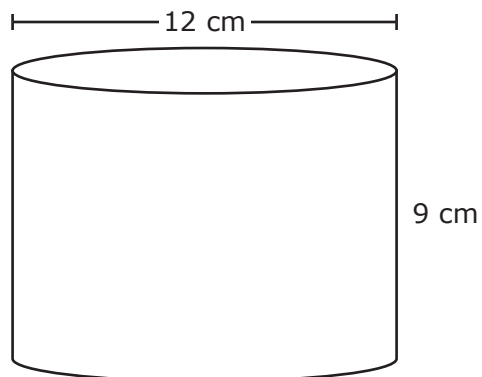
- 13 Quadrilateral  $ABCD$  was dilated with the origin as the center of dilation to create quadrilateral  $A'B'C'D'$ .



Which rule best represents the dilation that was applied to quadrilateral  $ABCD$  to create quadrilateral  $A'B'C'D'$ ?

- A  $(x, y) \rightarrow (0.4x, 0.4y)$
- B  $(x, y) \rightarrow (x + 3, y + 1.5)$
- C  $(x, y) \rightarrow (2.5x, 2.5y)$
- D  $(x, y) \rightarrow (x - 1.5, y + 3)$

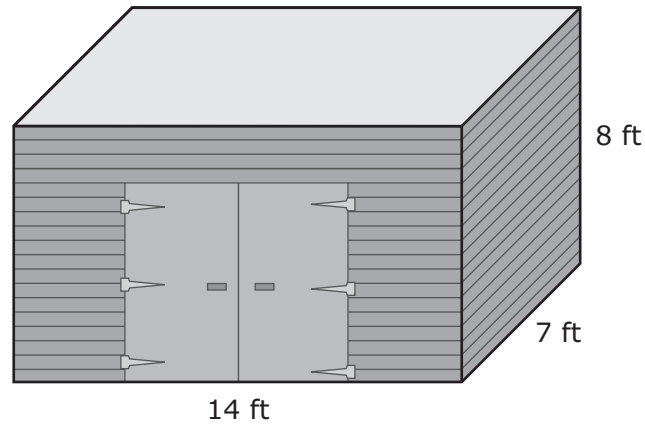
- 14 Sadie used a container shaped like a cylinder to catch rainwater. The dimensions of the container are shown below.



Which measurement is closest to the volume of the container in cubic centimeters?

- A 1,527  $\text{cm}^3$
- B 4,072  $\text{cm}^3$
- C 1,018  $\text{cm}^3$
- D 3,054  $\text{cm}^3$

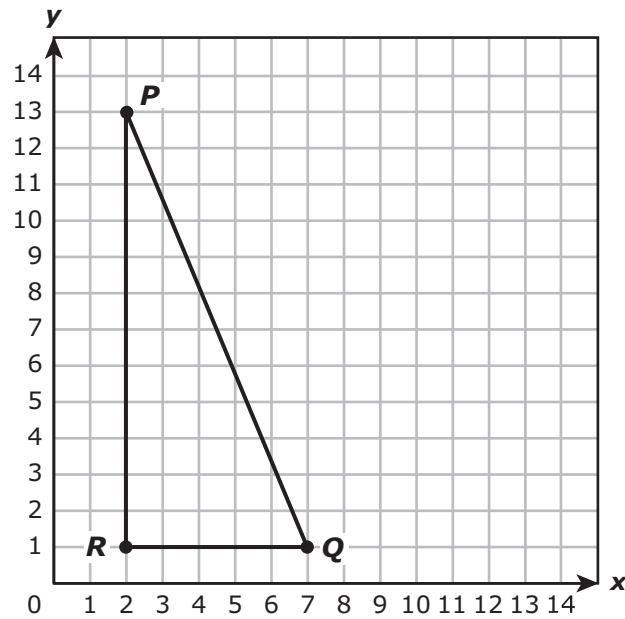
- 15 Mr. Suárez wants to paint his storage shed. He needs to calculate the lateral surface area of the shed so that he will know how much paint to buy. The shed is in the shape of a rectangular prism with the dimensions shown below.



Including the doors, what is the lateral surface area of the storage shed in square feet?

- A  $784 \text{ ft}^2$
- B  $266 \text{ ft}^2$
- C  $532 \text{ ft}^2$
- D  $336 \text{ ft}^2$
- 
- 16 Which measurements could **not** represent the side lengths of a right triangle?
- A 6 cm, 8 cm, 10 cm
- B 12 cm, 35 cm, 37 cm
- C 4 cm, 6 cm, 10 cm
- D 10 cm, 24 cm, 26 cm

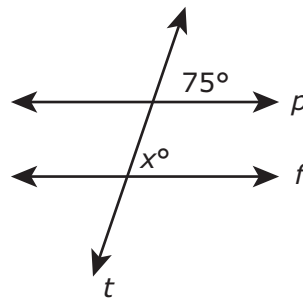
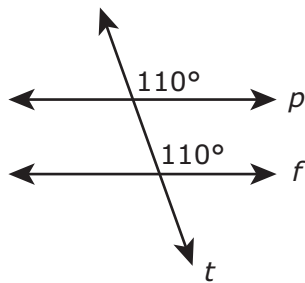
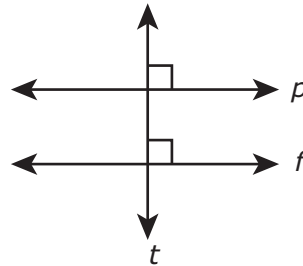
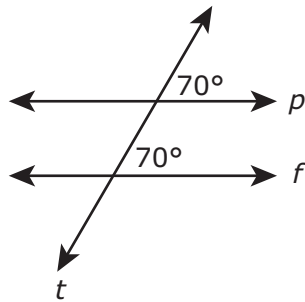
- 17 The coordinates of the vertices of the triangle shown are  $P(2, 13)$ ,  $Q(7, 1)$ , and  $R(2, 1)$ .



What is the length of segment  $PQ$  in units?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

18 In each diagram, line  $p$  is parallel to line  $f$ , and line  $t$  intersects lines  $p$  and  $f$ .

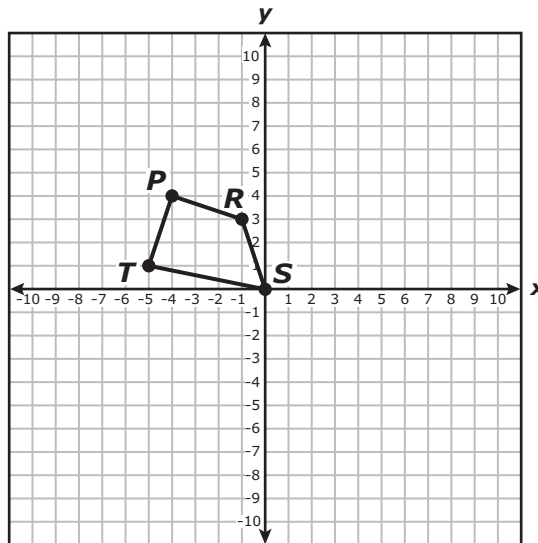


Based on these diagrams, which statement is true?

- A The value of  $x$  should be 75, because the angles shown in the diagrams are congruent.
- B The value of  $x$  should be 105, because the measures of the angles shown in the diagrams add up to  $180^\circ$ .
- C The value of  $x$  should be 140, because the measures of the angles shown in the diagrams should add up to  $360^\circ$  and  $360 - (110 + 110) = 140$ .
- D The value of  $x$  should be 70, because the measures of the angles shown in the diagrams are both  $70^\circ$ .



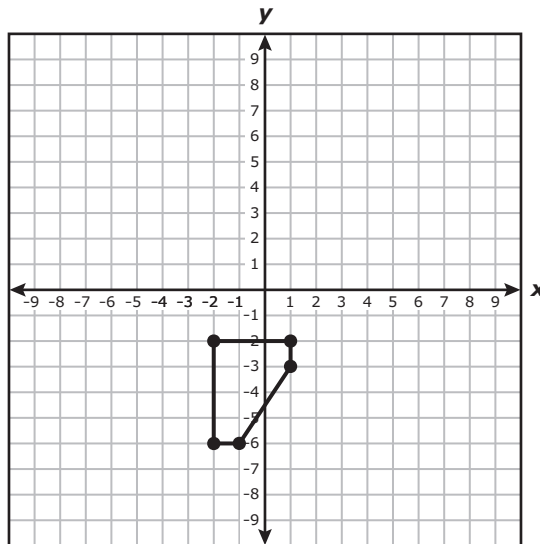
- 19 Quadrilateral  $PRST$  is transformed according to the rule  $(x, y) \rightarrow (x + 9, y + 4)$  to create quadrilateral  $P'R'S'T'$ .



Which statement is true?

- A** The side lengths of quadrilateral  $P'R'S'T'$  are twice the corresponding side lengths of quadrilateral  $PRST$ .
- B** The angle measures of quadrilateral  $P'R'S'T'$  are equal to the corresponding angle measures of quadrilateral  $PRST$ .
- C** The side lengths of quadrilateral  $P'R'S'T'$  are 9 units longer than the corresponding side lengths of quadrilateral  $PRST$ .
- D** The angle measures of quadrilateral  $P'R'S'T'$  are greater than the corresponding angle measures of quadrilateral  $PRST$ .
- 
- 20 A transformation is applied to a figure to create a new figure. Which transformation does **not** preserve congruence?
- A** A reflection across the  $x$ -axis
- B** A translation 7 units down
- C** A dilation by a scale factor of 5
- D** A rotation of  $90^\circ$  clockwise

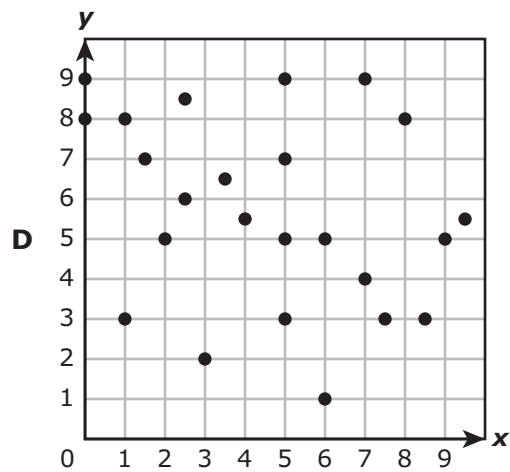
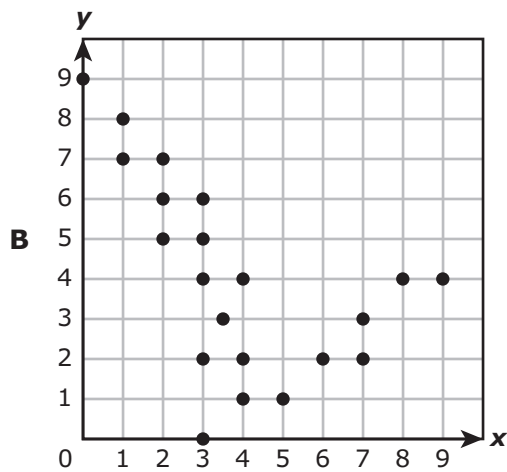
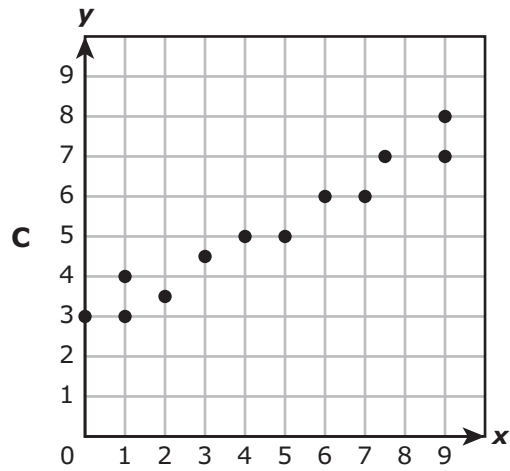
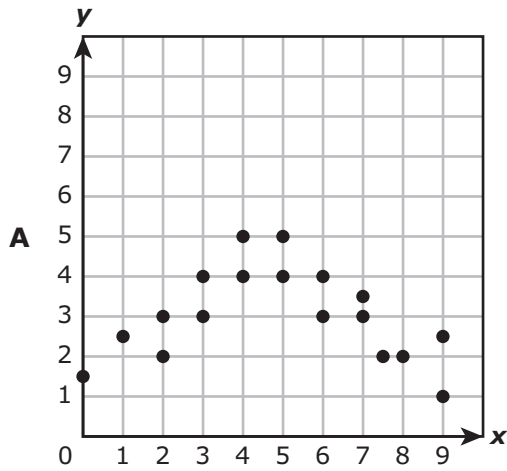
- 21 A figure is graphed on a coordinate grid as shown.



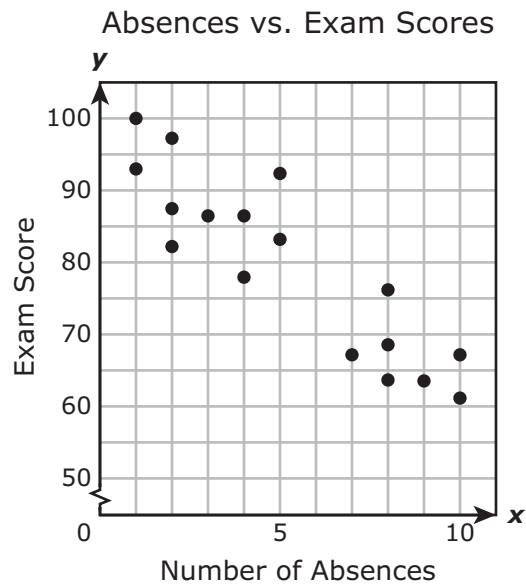
The figure is rotated  $180^\circ$  clockwise with the origin as the center of rotation to create a new figure. Which rule describes this transformation?

- A  $(x, y) \rightarrow (-x, -y)$
- B  $(x, y) \rightarrow (x, -y)$
- C  $(x, y) \rightarrow (-y, -x)$
- D  $(x, y) \rightarrow (-x, y)$

22 Which scatterplot suggests a linear relationship between  $x$  and  $y$ ?



- 23 Mrs. Collins made a scatterplot to show the relationship between the number of absences a student in her class has and the student's final exam score.



Based on this scatterplot, approximately what score should a student with 6 absences expect to receive on the final exam?

- A 65
- B 92
- C 67
- D 76

- 24 The table shows the number of contacts six people each have stored in their cell phone.

Cell Phone Contacts

Person	Number of Contacts
Mary	68
Wes	72
Keith	77
Julie	64
Anthony	69
Lan	76

What is the mean absolute deviation for this set of data?

- A** 71
- B** 24
- C** 4
- D** 13
- 
- 25 Holly is taking out a loan in the amount of \$10,000. Her choices for the loan are a 4-year loan at 4% simple interest and a 6-year loan at 5% simple interest. What is the difference in the amount of interest Holly would have to pay for each of these two loans?
- A** \$1,600
- B** \$3,000
- C** \$4,600
- D** \$1,400

- 26** Olivia will deposit \$1,530 in an account that earns 6% simple interest every year. Her sister Melinda will deposit \$1,500 in an account that earns 8% interest compounded annually. The deposits will be made on the same day, and no additional money will be deposited or withdrawn from the accounts. Which statement about the balances of Olivia's account and Melinda's account at the end of 3 years is true?
- A** Olivia's account will have about \$5.40 more than Melinda's account.
  - B** Olivia's account will have about \$84.17 more than Melinda's account.
  - C** Melinda's account will have about \$5.40 more than Olivia's account.
  - D** Melinda's account will have about \$84.17 more than Olivia's account.
- 
- 27** Tuition for one year at a state university is about \$13,000. Devon would like to attend this university and will save money each month for the next 4 years. His parents will give him \$5,200 for his first year of tuition. Which plan shows the minimum amount of money Devon must save to have enough money to pay for his first year of tuition?
- A** Save \$108.33 per month for the next 4 years
  - B** Save \$162.50 per month for the next 4 years
  - C** Save \$650.00 per month for the next 4 years
  - D** Save \$270.83 per month for the next 4 years

Item Number	Correct Answer	Reporting Category	Readiness or Supporting	Content Student Expectation	Process Student Expectation
1	B	1	Supporting	8.2(A)	8.1 (B),(E),(G)
2	C	1	Readiness	8.2(D)	8.1 (B),(E),(F)
3	D	2	Supporting	8.4(A)	8.1 (B),(C),(E),(G)
4	A	2	Readiness	8.4(B)	8.1 (A),(B),(C),(D),(F)
5	-5	2	Readiness	8.4(C)	8.1 (B),(E),(F)
6	D	2	Readiness	8.5(G)	8.1 (B),(E),(F)
7	C	2	Readiness	8.5(I)	8.1 (B),(C),(D),(F)
8	A	2	Supporting	8.8(A)	8.1 (A),(B),(D),(F)
9	A	2	Supporting	8.8(B)	8.1 (A),(B),(D),(G)
10	C	2	Readiness	8.8(C)	8.1 (B),(F)
11	B	2	Supporting	8.9(A)	8.1 (B),(E),(F)
12	C	3	Supporting	8.3(A)	8.1 (B),(E),(F)
13	C	3	Readiness	8.3(C)	8.1 (B),(D),(F)
14	C	3	Readiness	8.7(A)	8.1 (A),(B),(C),(E),(F)
15	D	3	Readiness	8.7(B)	8.1 (A),(B),(C),(E),(F)
16	C	3	Readiness	8.7(C)	8.1 (B),(C),(F)
17	13	3	Supporting	8.7(D)	8.1 (B),(C),(E),(F)
18	A	3	Supporting	8.8(D)	8.1 (B),(E),(G)
19	B	3	Supporting	8.10(A)	8.1 (B),(E),(G)
20	C	3	Supporting	8.10(B)	8.1 (B),(G)
21	A	3	Readiness	8.10(C)	8.1 (B),(D),(F)
22	C	4	Supporting	8.5(C)	8.1 (B),(E),(F)
23	D	4	Readiness	8.5(D)	8.1 (A),(B),(C),(E),(F)
24	C	4	Supporting	8.11(B)	8.1 (A),(B),(E),(F)
25	D	4	Supporting	8.12(A)	8.1 (A),(B),(C),(F)
26	D	4	Readiness	8.12(D)	8.1 (A),(B),(C),(G)
27	B	4	Supporting	8.12(G)	8.1 (A),(B),(G)