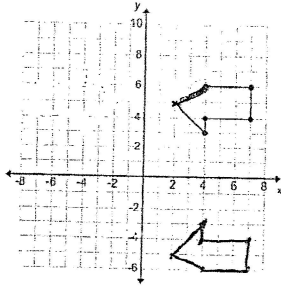
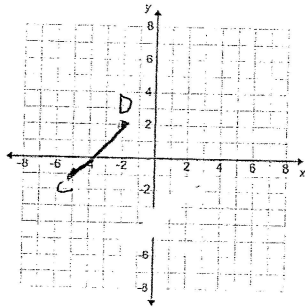


1. Which of the following statements is true about the arrows on the coordinate plane below?



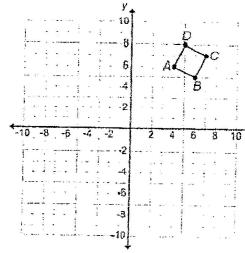
- A. A translation of the arrow on the top produced an arrow with corresponding equal sides.
 B. A reflection of the arrow on the top produced an arrow with corresponding unequal sides.
 C. A translation of the arrow on the top produced a second arrow with corresponding equal angles.
 D. A reflection of the arrow on the top produced a second arrow with corresponding equal angles.

2. Which of the following statements is true about the image of the segment when it is reflected across the y -axis?



- A. The image shares an endpoint with \overline{CD} .
 B. The length of the image equals the length of \overline{CD} .
 C. The image intersects \overline{CD} .
 D. The length of the image is twice the length of \overline{CD} .

3. Jordan believes that rotating square $ABCD$ 90 degrees clockwise about the origin results in a square that has the same area in the fourth quadrant. Laurita does not agree. She believes the square will have the same area, but will be in the second quadrant. Which of the following statements is true about the students' work?

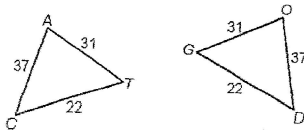


- A. Laurita is correct. What Jordan described could be the results of reflecting the square across the y -axis rather than rotating it.
 B. Jordan is correct. What Laurita described could be the results of reflecting the square across the y -axis rather than rotating it.
 C. Laurita is correct. What Jordan described could be the results of translating the square horizontally rather than rotating it.
 D. Jordan is correct. What Laurita described could be the results of translating the square horizontally rather than rotating it.
4. Roberta is given a line segment with endpoints $A(-9, -2)$ and $B(-4, -7)$. She is then asked to reflect the segment across the y -axis. What are the coordinates of the endpoints of the new segment?
- A. $A(-9, 2)$ and $B(-4, 7)$
 B. $A(9, -2)$ and $B(4, -7)$
 C. $A(9, 2)$ and $B(4, 7)$
 D. $A(-9, -2)$ and $B(4, 7)$
5. Ronald's teacher gave him the segment CD with end points $C(3, 1)$ and $D(7, 4)$ and asked him to rotate the segment 90 degrees clockwise about point D . Which of the following is true about the original segment and the result of the rotation?
- A. The segments have lengths with a ratio of 2:1.
 B. The segments share an endpoint.
 C. The segments share both endpoints.
 D. The segments have lengths with a ratio of 1:2.

6. Carmela graphed a triangle with the coordinates $A(5, 7)$, $B(2, 3)$, and $C(7, 4)$. Her teacher asked her to translate the triangle 5 to the right and 4 up. Carmela determined that the new coordinates of the translated triangle were $A'(1, 12)$, $B'(-2, 8)$, and $C'(3, 9)$. Which of the following is true about Carmela's statement?

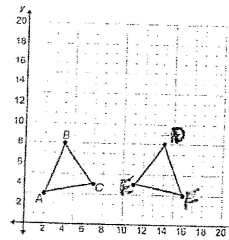
- A. Carmela's answer is correct.
 B. Carmela's answer is not correct. She should have added 5 to the x -values and added 4 to the y -values.
 C. Carmela's answer is not correct. She should have subtracted 5 from the x -values and subtracted 4 from the y -values.
 D. Carmela's answer is not correct. She should have subtracted 4 from the x -values and subtracted 5 from the y -values.

7. If $\triangle TCA$ is the result of a translation and a reflection of $\triangle GDO$, which angle is congruent to $\angle O$?



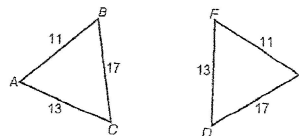
- A. $\angle T$
 B. $\angle C$
 C. $\angle A$
 D. Since the triangles are the result of a translation and a reflection, the angle measures are not preserved.

8. Given the reflected triangles in the diagram below, which congruency statement is correct?



- A. $\triangle ABC \cong \triangle FDE$
 B. $\triangle ABC \cong \triangle DEF$
 C. $\triangle ABC \cong \triangle FED$
 D. $\triangle ABC \cong \triangle EFD$

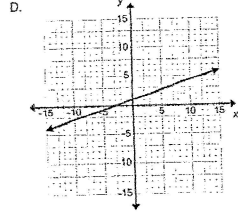
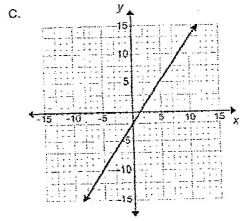
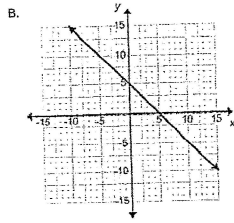
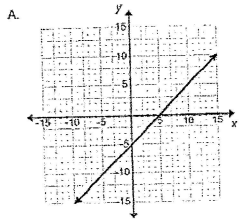
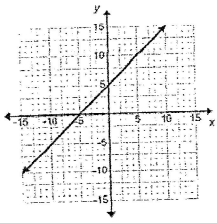
9. Mrs. Billings gives her students the triangles below created by performing a rotation and asks them to state which angle is congruent to angle B .



Stacie tells her friend Joelle that angle B is congruent to angle F . Joelle says she is wrong and that angle B is congruent to angle E . Which of the following statements correctly describes the students' work?

- A. Stacie is correct. Angle B and angle E are both located on the lower right hand corner of the triangles, so they must be congruent.
 B. Stacie is correct. Angle B and angle E are both the middle angles, so they must be congruent.
 C. Joelle is correct. Angle B and angle E are both opposite the side with a length of 13 centimeters, so they must be congruent.
 D. Neither student is correct. Since the triangles are the result of a rotation, angle measure is not preserved.

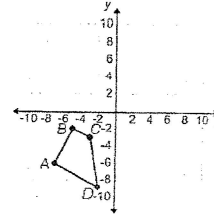
10. Which of the following lines is parallel to the line on the coordinate plane below?



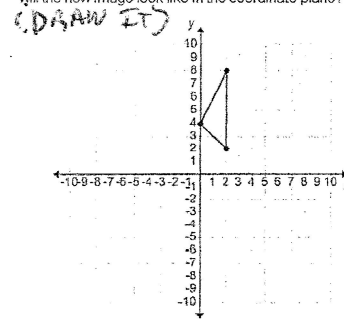
11. A pair of parallel lines defined by the equations $y = \frac{3}{4}x + 7$ and $y = \frac{3}{2}x$ is translated 9 units along the y -axis. Which of the following statements is true?

- A. The two lines that are the result of the translation are parallel to each other and perpendicular to the original lines.
- B. The two lines that are the result of the translation are parallel to each other and parallel to the original lines.
- C. The two lines that are the result of the translation are perpendicular to each other and perpendicular to the original lines.
- D. The two lines that are the result of the translation are perpendicular to each other and parallel to the original lines.

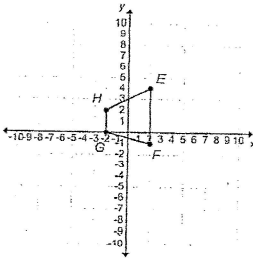
12. Quadrilateral $ABCD$ is translated to quadrilateral $A'B'C'D'$ by $(x, y) \rightarrow (x + 4, y + 6)$. What are the coordinates of B' ?



13. The triangle below is translated using $(x, y) \rightarrow (x - 3, y - 5)$. What will the new image look like in the coordinate plane?



14. Quadrilateral $EFGH$ below is dilated by a scale factor of $\frac{1}{3}$ about the origin to get quadrilateral $E'F'G'H'$. What are the coordinates of F' ?



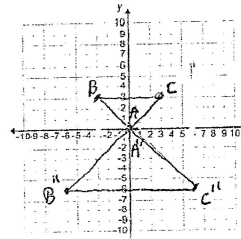
15. The sign for a new music store is going to include the two images of a guitar. Which two transformations would move the first guitar on top of the second?



16. Which of the following transformations will result in a figure that is congruent to a given figure?

- I. a reflection across the x -axis
- II. a reflection across the y -axis
- III. a translation to the right 2 and up 3.
- IV. a rotation of 180 degrees counterclockwise
- V. a dilation by a factor of 2

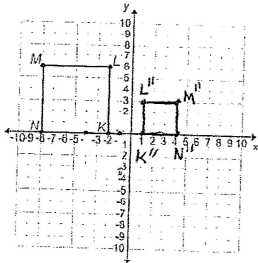
17. Look at $\triangle ABC$ and $\triangle A'B'C'$ below.



Which of the following statements is true about $\triangle ABC$ and $\triangle A'B'C'$?

- A. Since a reflection and a dilation created $\triangle A'B'C'$ using $\triangle ABC$, the figures are not similar.
- B. Since a translation and a dilation created $\triangle A'B'C'$ using $\triangle ABC$, the figures are similar.
- C. Since a reflection and a dilation created $\triangle A'B'C'$ using $\triangle ABC$, the figures are similar.
- D. Since a translation and a dilation created $\triangle A'B'C'$ using $\triangle ABC$, the figures are not similar.

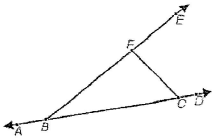
18. Use the graph below to solve the problem.



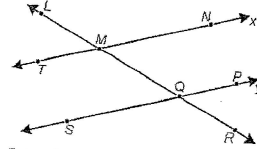
Lauren stated that $KLMN \sim K'L'M'N'$ since $KLMN$ went through two transformations. Which statement correctly describes the transformations?

- A. $KLMN$ was dilated by a factor of $\frac{1}{2}$ and reflected over the y -axis.
- B. $KLMN$ was dilated by a factor of 2 and reflected over the x -axis.
- C. $KLMN$ was dilated by a factor of 2 and reflected over the y -axis.
- D. $KLMN$ was dilated by a factor of $\frac{1}{2}$ and reflected over the x -axis.

19. What is $m\angle FCD$ in the drawing below if $m\angle CBF = 42^\circ$ and $m\angle BFC = 93^\circ$?



20. In the diagram below, $x \parallel y$, $m\angle TMQ = 115^\circ$, and $m\angle MQS = 65^\circ$.



Determine $m\angle MQP$ and how this measure relates to $m\angle TMQ$ including the justification for the determination.

- A. The diagram does not have enough information to determine $m\angle MQP$.
- B. Since $\angle MQP$ and $\angle MQS$ are adjacent angles, $m\angle MQP = 270^\circ - 65^\circ = 205^\circ$. Therefore, $m\angle MQP > m\angle TMQ$.
- C. Since $\angle MQP$ and $\angle MQS$ are adjacent angles, $m\angle MQP = 360^\circ - 65^\circ = 295^\circ$. Therefore, $m\angle MQP > m\angle TMQ$.
- D. Since $\angle MQP$ and $\angle MQS$ are a linear pair, $m\angle MQP = 180^\circ - 65^\circ = 115^\circ$. Therefore, $m\angle MQP = m\angle TMQ$.

21. Mrs. James asked her math class to determine the solution(s) of the equation below.

$$y^3 = 8$$

Which of the following represents the solution(s) of this equation?

- A. $y = \pm 2$
- B. $y = 2$
- C. $y = \pm 4$
- D. $y = 4i$

22. Solve.

$$x^2 = 36$$

- A. $x = \pm 18$
- B. $x = \pm 6$
- C. $x = \pm 8$
- D. $x = 6$