JOSE DE DIEGO

Geometry Winter Review Packet

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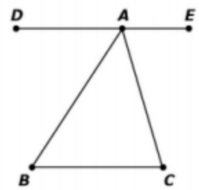
1.

A figure is shown, where $\overline{DE}$ is parallel to $\overline{BC}$.

Given: $\overline{DE} \parallel \overline{BC}$
Prove: $\angle ABC + \angle BCA + \angle CAB = 180°$



Drag statements from the statements column and reasons from the reasons column to their correct location to complete the proof.

Statement	Reason
1. $\overline{DE} \parallel \overline{BC}$	1. Given
2.	2.
3.	3.
4. $\angle DAE = 180°$	4.
5.	5. Angle addition
6.	6.
7. $\angle ABC + \angle BCA + \angle CAB = 180°$	7. Substitution

Statements
$\angle DAB + \angle CAB + \angle EAC = \angle DAE$
$\angle DAB \cong \angle ABC$
$\angle EAC = \angle ACB$
$\angle DAB + \angle CAB + \angle EAC = 180°$

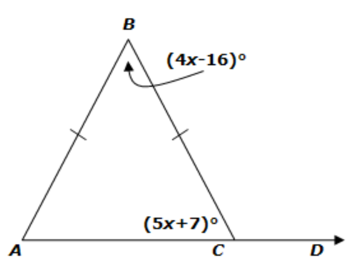
Reasons
Supplementary angles
Substitution
If two parallel lines are cut by a transversal, then the alternate interior angles are congruent.
If two parallel lines are cut by a transversal, the alternate interior angles are congruent.

Guided Questions

1. What can you prove that alternate interior angles are congruent?
2. How can you prove that angles are supplementary?
3. How can you use the property of substitution to prove angle measurements are congruent?

2. Devon exercised the same amount of time each day for 5 days last week.

Read the question to yourself and select the best answer(s).
Examine the figure below.



Determine which of the following angle measures are correct. Select *all* that apply.

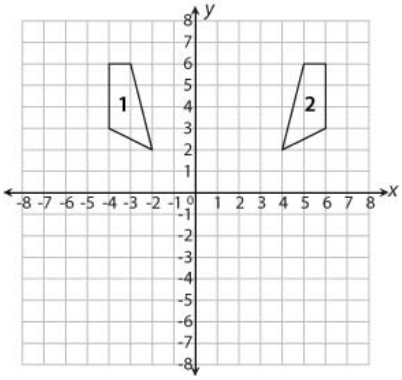
- ☐ $m\angle ABC = 68°$
- ☐ $m\angle BAC = 72°$
- ☐ $m\angle BCD = 108°$
- ☐ $m\angle ACB = 112°$
- ☐ $m\angle BCD = 68°$

Guided Questions

1. How can we use the rules of isosceles triangles to solve for x and then solve for each angle?
2. How can we use the rules of supplementary angles to solve for angles?

3.

On the coordinate plane below, quadrilateral 1 has been transformed to form quadrilateral 2.



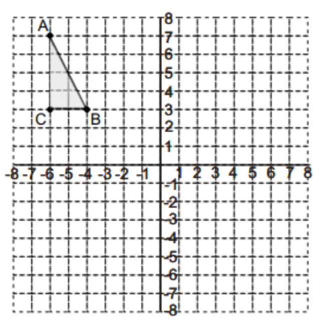
Which of these could be the transformation? Choose all that are correct.

- ☐ A reflection across the line $x = 1$
- ☐ A reflection across the line $y = 1$
- ☐ A translation 2 units to the left, and then a reflection across the y -axis
- ☐ A translation 2 units to the right, and then a reflection across the y -axis
- ☐ A reflection across the y -axis, and then a translation 2 units to the right
- ☐ A rotation of 180° about the point $(1, 4)$

Guided Questions

1. How can you use the rules of rigid motion to transform shapes around the coordinate plane?
2. How do you rotate a shape 180 degrees around a point other than the origin?

4.



21) Rotate triangle ABC 90° counter-clockwise. Plot the new points and draw the new triangle. Record the rotated points below.

A' _______ B'_______ C' ________

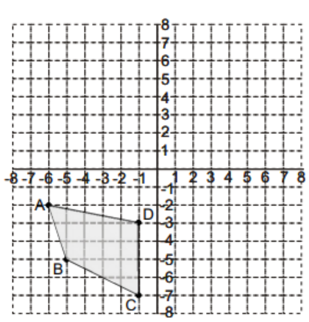
22) Rotate triangle ABC 90° clockwise. Plot the points and draw the triangle. Record the new coordinates below.

A' _______ B'_______ C' ________

Guided Questions

1. What are the steps to rotate 90 degrees around the origin?

5.



23) Rotate quadrilateral ABCD 90° clockwise around the origin. Plot the new points and draw the quadrilateral. Record the coordinates below.

A' _______ B'_______ C' ________ D' ________

24) Rotate quadrilateral ABCD 90° counter-clockwise around the origin. Plot the new points and draw the quadrilateral. Record the coordinates below.

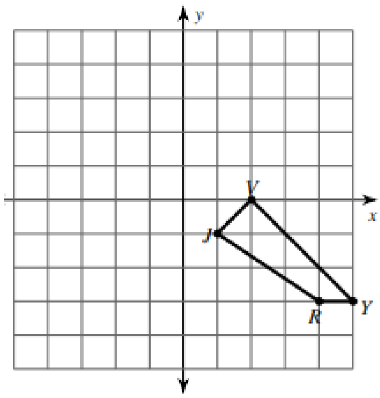
A' _______ B'_______ C' ________ D' ________

Guided Questions

1. What are the steps to rotate 90 degrees around the origin?

6.

rotation 180° about the origin

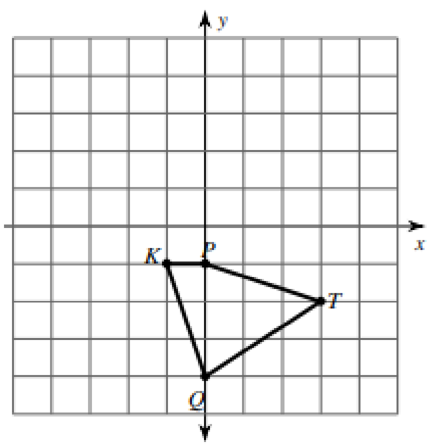


Guided Questions

1. What are the steps to rotate 180 degrees around the origin?

7.

rotation 180° about the origin

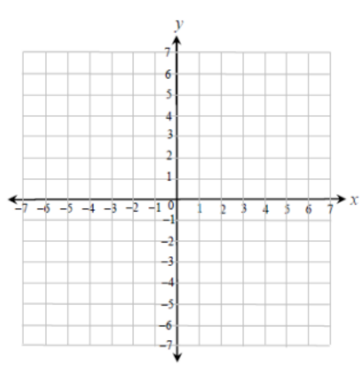


Guided Questions

1. What are the steps to rotate 180 degrees around the origin?

8.

1. Figure $B(2,-1)$, $A(5,-3)$, $D(1,-4)$ rotated $90°$ and $270°$ counter clockwise around the point $C(1,1)$.

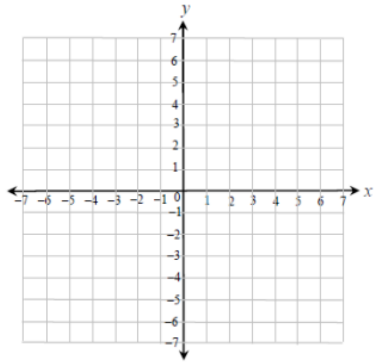


Guided Questions

1. Remember the center of rotation moves from the origin to (1, 1).

9.

2. Figure $S(1,4), Q(3,2)$, $U(6,5), A(4,7)$ rotated $180°$ and $270°$ counter clockwise around the point $C(0,1)$.

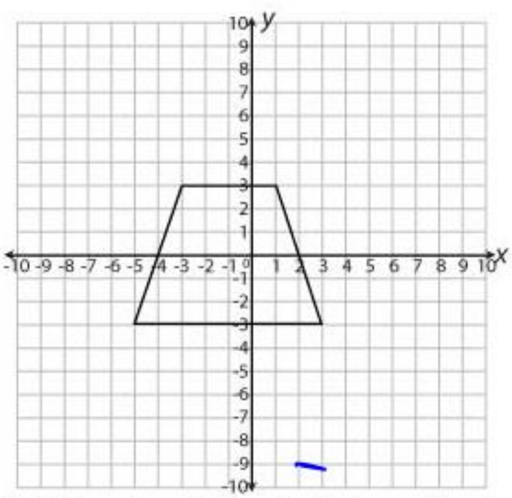


Guided Questions

2. Remember the center of rotation moves from the origin to (1, 1).

10.

Look at the trapezoid shown below.



Which transformation carries the trapezoid onto itself?

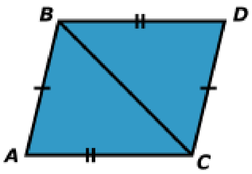
- a reflection across the line y = 0
- a rotation of 180° about the point $(-1, 0)$
- a rotation of 180° about the origin
- a reflection across the line x = –1

11.	

11.

Read the question to yourself and select the best answer.

Which postulate or theorem can be used to prove that $\Delta ABC \cong \Delta DCB$?

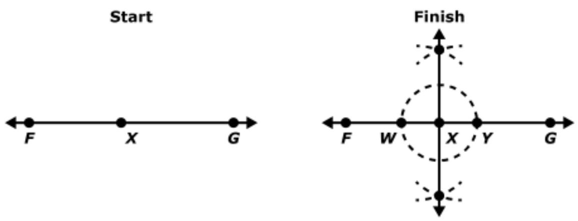


- SSS
- SAS
- ASA
- AAS

12.

Read the question to yourself and select the best answer(s).

The diagram below shows the start and finish diagrams of a construction using a compass and straightedge.



Which of the following statements are true about this construction? Select *all* that apply.

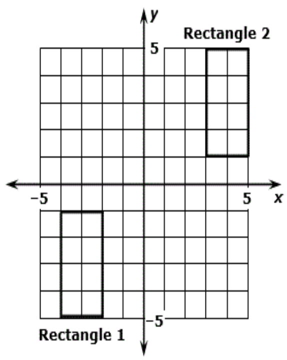
- The construction is of a line perpendicular to $\overleftrightarrow{FG}$ from a point not on $\overleftrightarrow{FG}$.
- The first step of the construction is to draw a circle with center X.
- The first step of the construction is to draw the perpendicular bisector of $\overline{WY}$.
- The second step of the construction is to draw the perpendicular bisector of $\overline{FG}$.
- The second step of the construction is to draw the perpendicular bisector of $\overline{WY}$.

13.	

13.

Read the question to yourself and select the best answer(s).

Two rectangles are shown on the coordinate plane below.



Hernando claims that the two rectangles are congruent. Which of the following statements could he use to prove his claim? Select *all* that apply.

- The rectangles are congruent since a translation of 6 units down and 7 units to the left carries Rectangle 1 onto Rectangle 2.
- The rectangles are congruent since a reflection over the *x*–axis followed by a translation of 7 units to the right carries Rectangle 1 onto Rectangle 2.
- The rectangles are congruent since a reflection over the *y*–axis followed by a translation of 1 unit to the right and 6 units up carries Rectangle 1 onto Rectangle 2.
- The rectangles are congruent since a rotation of 180° clockwise about the origin followed by a translation of 1 unit to the right carries Rectangle 1 onto Rectangle 2.
- The rectangles are congruent since a reflection over the *x*–axis followed by a translation of 5 units to the right carries Rectangle 1 onto Rectangle 2.

14.

Read the question to yourself and select the best answer(s).

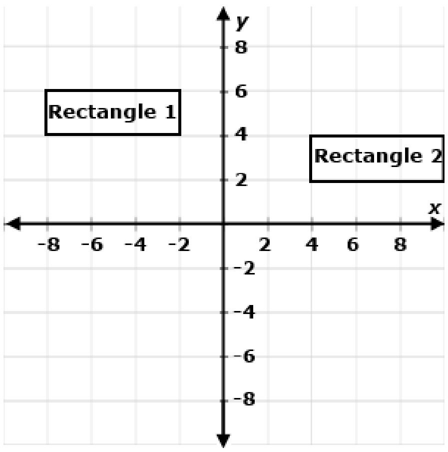
Select *each* transformation that carries a square onto itself.

- a reflection over one of the square's sides
- a reflection over one of the square's diagonals
- a rotation of 90° clockwise about the square's center
- a rotation of 180° clockwise about the square's center
- a rotation of 180° clockwise about one of the square's vertices

15.

Read the question to yourself and select the best answer(s).

Bob claims that he can map Rectangle 1 to Rectangle 2.



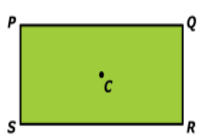
Select *all* of the transformations or series of transformations that support his claim.

- ☐ a translation of 2 units down followed by a 180° rotation about the point (1, 2)
- ☐ a reflection over the line $x = 0$ followed by a reflection over the line $y = 4$
- ☐ a reflection over the line $x = 1$ followed by a translation of 2 units down
- ☐ a translation of 12 units right and 2 units down
- ☐ a rotation of 180° about the point (1, 4)
- ☐ a translation of 6 units right

16.

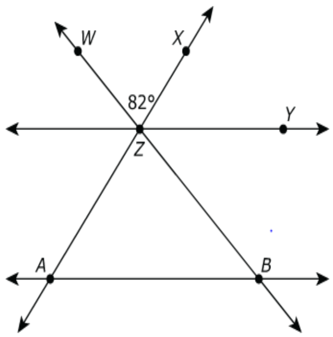
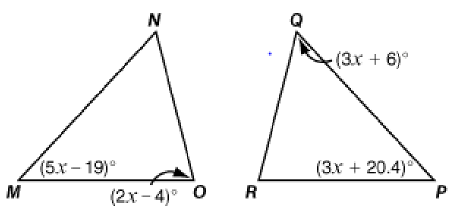
Read the question to yourself and select the best answer(s).

Rectangle *PQRS* is shown below. Point *C* is the center of the rectangle.



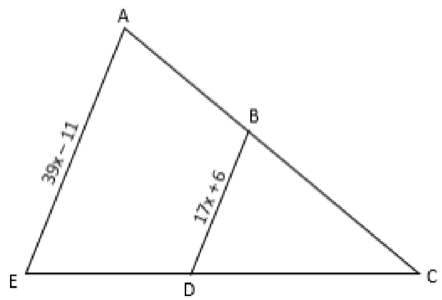
Maggie claims that there are transformations that preserve the length of the rectangle's sides. Which of the following transformations could be used to support Maggie's claim? Select *all* that apply.

- ☐ a reflection over the side $\overline{RS}$
- ☐ a rotation of 90° clockwise about vertex *Q*
- ☐ a dilation of scale factor 1 through center *C*
- ☐ a vertical stretch of scale factor 2 through center *C*
- ☐ a translation of 10 units to the right

17. Saul creates a piece of art. He begins with the figure shown, where $\overleftrightarrow{ZY} \parallel \overleftrightarrow{AB}$ and $m\angle WZX = 82°$.  Saul draws a line located below and parallel to $\overleftrightarrow{AB}$ that intersects $\overleftrightarrow{ZA}$ at C and $\overleftrightarrow{ZB}$ at D. The measure of $\angle BDC = 56°$. What is the measure of $\angle ACD$?	
18. In the figure below, $\triangle MNO \cong \triangle PQR$.  What is the measure of $\angle P$?	
19. Read the question to yourself and select the best answer. **Which equation is parallel to $y = -3x + 4$ and passes through the point $(-3, 4)$?** ○ $y = \frac{1}{3}x + 5$ ○ $y = -3x - 5$ ○ $y = \frac{1}{3}x + 3$ ○ $y = -3x + 15$	

20.

Segment BD is a midsegment of triangle AEC.



Which equation could be used to find the value of x?

- 39x -11 = 17x + 6
- 39x - 11 = 2(17x + 6)
- 2(39x - 11) = 17x + 6
- 2(39x - 11) = 2(17x + 6)