Name:_____ **Period:**_____

GEOMETRY

Review Packet

2018-19

	SEMESTER 1 FINALS				
	MONDAY 12/17		**TUESDAY 12/18**	**WEDNESDAY 12/19**	**THURSDAY 12/20**	**FRIDAY 12/21**
12/17-12/21	Per1 Per 3 Per 5 Per 7 Break Per 2 Per 4 Per 6 Lunch	8:15-8:40 8:45-9:10 9:15-9:40 9:45-10:10 10:15-10:25 10:30-10:55 11:00-11:25 11:30-11:55 11:55-12:30	Per. 6 8:15-10:15	Per.7 8:15-10:15	Per. 3 8:15-10:15	NO SCHOOL FOR STUDENTS Teacher Work Day
	Per. 2 12:35-2:35		Per. 4 10:35-12:35	Per. 5 10:35-12:35	Per. 1 10:35-12:35	

1ˢᵗ Semester Review Checklist

For each Unit/module/section that we covered during the first semester, you should:

- ✓ Review vocab, notes, openers, warm-ups, properties, formulas, etc.
- ✓ Review & redo homework problems & *correct & fix mistakes*
- ✓ Go over test & quizzes, redo & correct problems as needed

Unit 1 (Modules 1-3): Transformation and Congruence

- o 1.1 Segment Length & Midpoints
- o 1.2 Angles
- o 1.3: Transformations
- o 1.4 Reasoning & Proofs
- o 2.1 Translations
- o 2.2 Reflections

- o 2.3 Rotations
- o 2.4 Symmetry
- o 3.1 Transformation Sequences
- o 3.2 Congruence & Rigid Motion
- o 3.3 CPCFC (or CPCTC)
- o Application

Unit 2 (Modules 4-8): Transformation & Symmetry

- o 4.1 Angles formed by Intersecting Lines
- o 4.2 Transversals & Parallel Lines
- o 4.3 Proving lines parallel
- o 4.4 Perpendicular Lines
- o 4.5 Equations of parallel & Perpendicular Lines
- o 5.1 Exploring Congruent Δ's
- o 5.2 ASA Δ Congruence
- o 5.3 SAS Δ Congruence
- o 5.4, 6.2, 6.3 SSS, AAS, & HL Δ Congruence

- o 7.1 Interior & Exterior Angles
- o 7.2 Isosceles & Equilateral Triangles
- o 7.3 triangle Inequalities & Triangle constructions
- o 8.1 Perpendicular Bisectors of Triangles
- o 8.2 Angle Bisectors of Triangles
- o 8.3 Medians & Altitudes of Triangles
- o 8.4 Midsegments of Triangles
- o Applications

When you arrive the day of the final:

Please have your calculator, #2 pencils, highlighter and eraser in your hand upon arrival to Room 106. Turn your phones OFF or use Airplane Mode. If they vibrate during the period, or you are using a phone in any way, it will be confiscated. Do not have your phone on your body. You will be directed where to sit. Be sure to have a quiet activity to work on if you are finished early.

Electronic devices of any kind may NOT be used during the testing period (even if you are done)!

Benchmark Test Modules 1–6

For 1–2, use the graph.
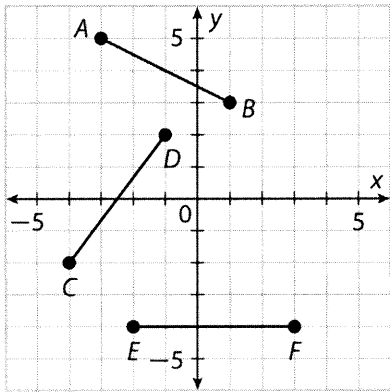
1. Determine the measure of each segment. Then indicate whether the statements are true or false.

   A $\overline{AB} \cong \overline{CD}$ ○ True ○ False

   B $\overline{CD} \cong \overline{EF}$ ○ True ○ False

   C $\overline{EF} \cong \overline{AB}$ ○ True ○ False

2. What is the <u>midpoint</u> of $\overline{AB}$? of $\overline{CD}$?

   _____

Use the following information for 3–4.
In the figure, $m\angle PQS = 38°$.
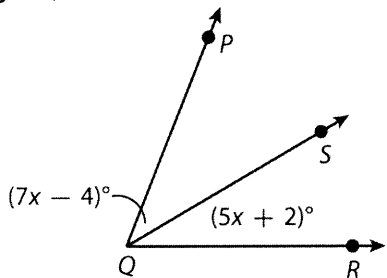
3. What is the value of x?

   _____

4. What is $m\angle PQR$?

   _____

5. $\square ABC$ maps to $\square A'B'C'$ as follows.

Preimage		Image
$A(-3, 4)$	$\rightarrow$	$A'(-1, 3)$
$B(-5, -1)$	$\rightarrow$	$B'(-3, -2)$
$C(2, 3)$	$\rightarrow$	$C'(4, 2)$

   Use coordinate notation to write the rule that maps the preimage to the image.

   _____

6. Write the transformation in words for the rule $(x, y) \rightarrow (-x, -y)$.

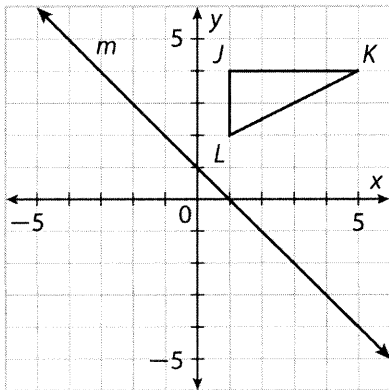   _____

   _____

7. Use the graph.
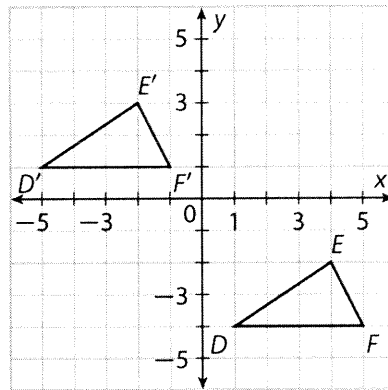
   Specify the component form of the vector that maps ABC to $A'B'C'$.

   _____

8. Line segment AB with endpoints $A(7, 2)$ and $B(-1, 2)$ is reflected over the x-axis. What are the coordinates of the midpoint of $\overline{A'B'}$?
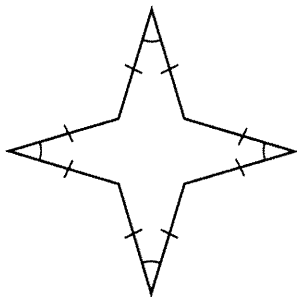
   _____

Benchmark Test Modules 1–6

9. Use the graph.

What are the coordinates of the image of triangle *JKL* after a reflection over line *m*?

_____

10. Parallelogram *QRST* has vertices *Q*(–4, 2), *R*(–2, 4), *S*(0, 1), and *T*(–2, 1). What are the coordinates of its image after a counterclockwise rotation of 270° about the origin?

_____

Use the figure for 11–12.


11. How many lines of symmetry does the figure have?

_____

12. What are the angles of rotation less than 360° for the figure?

_____

13. A point is located at (3, –2). Which transformation will result in an image located in Quadrant III?

   A Reflection over *x*-axis
      ○ Yes ○ No

   B Reflection over *y*-axis
      ○ Yes ○ No

   C Translation 4 units left and 3 units up
      ○ Yes ○ No

   D Rotation 90° clockwise about the origin
      ○ Yes ○ No

   E Reflection over the line $y = -x$
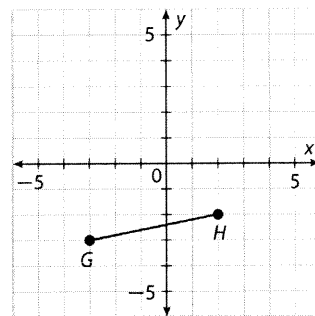   ○ Yes ○ No

Use the figures for 14–15.
Given ▱ *RST* ≅ ▱ *XYZ*
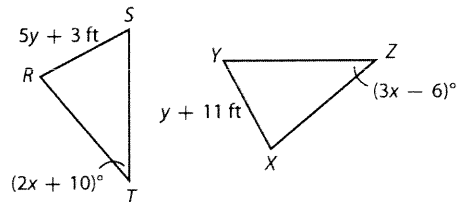
14. What is m∠*T*?
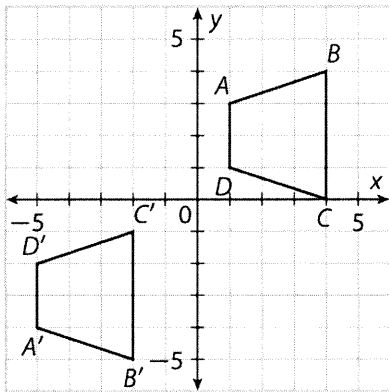
_____

15. What is *YX*?

_____

16. Line segment *GH* is reflected across the *x*-axis and rotated 90° clockwise about the origin.

What are the coordinates of points *G'* and *H'*?

_____

Benchmark Test Modules 1–6

Use the graph for 17–18.

17. What transformations can you use to show that quadrilaterals *ABCD* and *A'B'C'D'* are congruent?

_____

18. Express the transformations as a single mapping rule in the form of $(x, y) \rightarrow (?, ?)$.

_____

19. Triangle *PQR* has vertices *P*(0, 2), *Q*(3, 4), and *R*(4, 2). If triangle *PQR* is rotated 270° clockwise about the origin, what is the length of side *P'R'*?
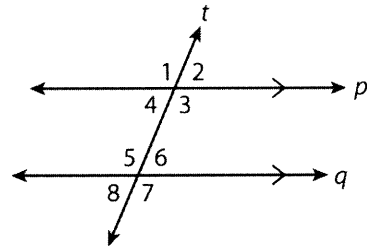
_____

Use the following information for 20–21.
☐*GHJ* ≅ ☐*PQR* and ☐*PQR* ≅ ☐*STU*
Complete the following using a side or angle of ☐*STU*. Explain/provide a reason.

20. ∠*H* ≅

_____

_____

21. $\overline{JG}$ ≅

_____

Use the figure for 22–23.

22. Name all angles congruent to ∠4.

_____

_____

23. Name all angles supplementary to ∠2.

_____

_____

24. Write an equation in slope-intercept form for the line that passes through (−2, 2) and is parallel to $2x + 4y = 16$.

_____

25. Write an equation in slope-intercept form for the line that passes through (4, 1) and is perpendicular to $4x - y = 3$.
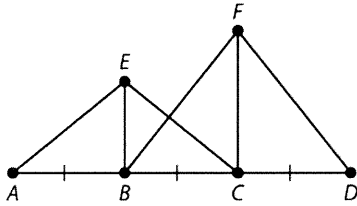
_____

26. Look at the figure below.
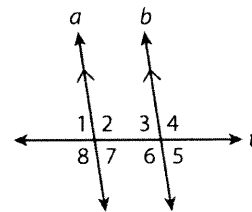
In the figure, $m\angle 1 = m\angle 5$. What theorem can be used to prove that line *a* and line *b* are parallel?

_____

Benchmark Test Modules 1–6

Use the following information for 27–28. In the figure below, $\overline{EB}$ is the perpendicular bisector of $\overline{AC}$ and $\overline{FC}$ is the perpendicular bisector of $\overline{BD}$.
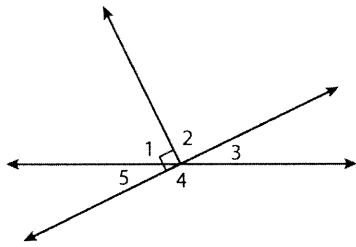

27. If $AE = 6$ cm and $FD = 9$ cm, what is FB?

_____

28. If $AC = 8$ cm, what is CD?

_____

29. The measures of two vertical angles are represented by the expressions $(2x + 7)°$ and $(4x - 5)°$ Find the value of x.
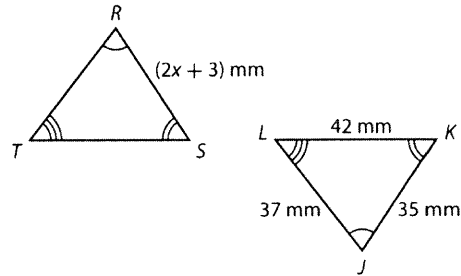
_____

Use the following information for 30–31. In the figure, $m\angle 4 = 154°$.

30. What is $m\angle 3$?

_____

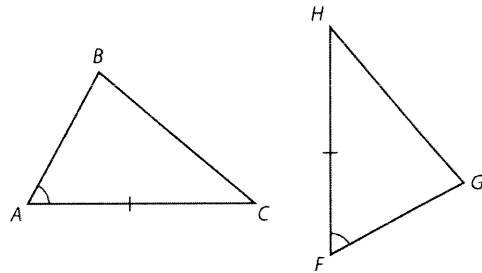31. What is $m\angle 1$?

_____

32. Use the figures.

Determine the value of x that makes the triangles congruent.

_____

For 33–34, state the additional congruency statement or statements needed to prove $\square BCD \cong \square QRS$ for the given theorem.

33. SAS Theorem

_____

34. ASA Theorem

_____

Answer Key

Benchmark Test Modules 1–6

1. A False   B True   C False

2. $(-1, 4)$

3. $x = 6$

4. $70°$

5. $(x, y) \rightarrow (x + 2, y - 1)$

6. rotation of 180° about the origin or reflection over the x- and y-axes

7. $\langle -6, 5 \rangle$

8. $(3, -2)$

9. $J'(-3, 0)$, $K'(-3, -4)$, $L'(-1, 0)$

10. $Q'(2, 4)$, $R'(4, 2)$, $S'(1, 0)$, $T'(1, 2)$

11. 4

12. $90°$, $180°$, $270°$

13. A No   B Yes   C No   D Yes   E No

14. $42°$

15. 13 ft

16. $G'(3, 3)$, $H'(2, -2)$

17. Answers may vary. Reflect parallelogram ABCD over the x-axis and then translate it left 6 units and down 1 unit.

18. $(x, y) \rightarrow (x - 6, -y - 1)$

19. 4 units

20. $\angle T$

21. $\overline{US}$

22. $\angle 2$, $\angle 6$, $\angle 8$

23. $\angle 1$, $\angle 3$, $\angle 5$, $\angle 7$

24. $y = -\dfrac{1}{2}x + 1$

25. $y = -\dfrac{1}{4}x + 2$

26. Converse of Alternate Exterior Angles Theorem

27. 9 cm

28. 4 cm

29. $x = 6$

30. $26°$

31. $64°$

32. $x = 16$

33. $\overline{AB} \cong \overline{FG}$

34. $\angle C \cong \angle H$

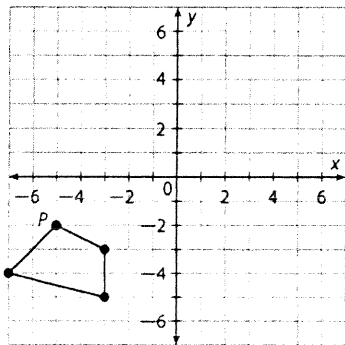**MODULE 1** **Response to Intervention**

Pre-Test: Skills 1, 2, 9

Use the information given for 1–2.

A triangle has coordinates of A(1, 2), B(4, 6), and C(4, –3).

1. If the triangle is translated 2 units right, what are the new coordinates?

_____

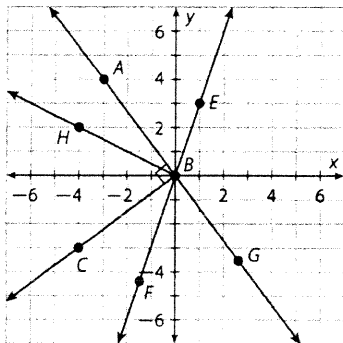2. If △ABC is reflected over the x-axis, what are the new coordinates?

_____

Use the figure for 3–4.

3. If the figure is rotated 90° counterclockwise, in which quadrant will it appear?

_____

4. After the rotation, what will be the coordinates of P'?

_____

Use the figure for 5–8.

Identify the following pairs of angles as complementary, supplementary, adjacent, and/or vertical angles.
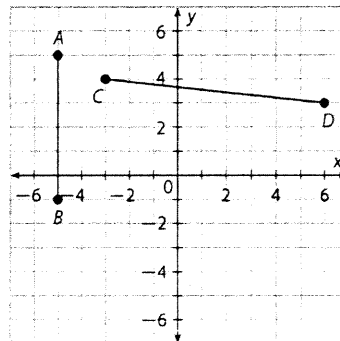
5. ∠ABH and ∠HBC

_____

6. ∠ABE and ∠FBG

_____

7. ∠ABE and ∠EBG

_____

8. ∠HBF and ∠BFG

_____

For 9–10, use the graph below.

9. What is the length of $\overline{AB}$? Explain your reasoning.

_____

_____

_____

10. What is the midpoint of $\overline{CD}$? Justify your answer.

_____

_____

_____

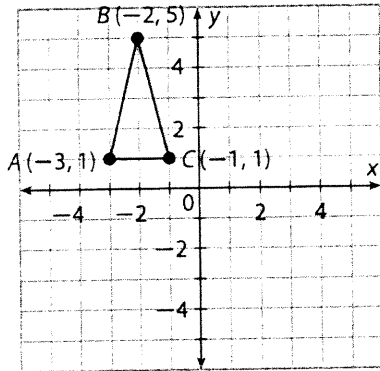| MODULE	**Response to Intervention**
2	*Pre-Test: Skills 17, 18, 19*

1. Find the image of the point $P(3, 7)$ under the transformation $(x, y) \rightarrow (x + 2, y - 1)$.

_____

2. Find the image of $\triangle ABC$ after it is reflected across the y-axis.

3. Point $P(3, 9)$ in the coordinate plane is rotated $90°$ counterclockwise about the origin. What are the coordinates of its image?

_____

4. In the graph below, if $ABCD$ is rotated about the origin $180°$, then which quadrant would contain its image?

_____
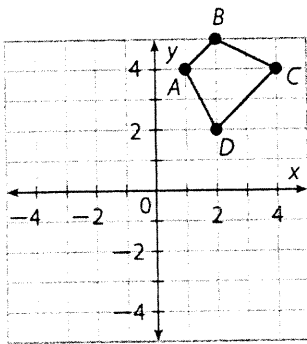
5. Write the rule for an image that is translated 4 units down and 3 units to the right.

_____

For 6–8, use a triangle with vertices at $A(1, 1)$, $B(2, 4)$, and $C(3, 1)$.

6. Find the coordinates of the image of $\triangle ABC$ after it is rotated about the origin $270°$.

_____

7. Find the coordinates of the image of $\triangle ABC$ after it is reflected across the line $y = x$.

_____

8. Find the coordinates of the image of $\triangle ABC$ after it is translated 2 units left and 3 units up.

_____

9. Each of the following will map the point P in the coordinate plane onto itself. Choose True or False for each description of a transformation.

A   a rotation of $720°$ about the origin

   ○ True   ○ False

B   a reflection across the line $y = -x$

   ○ True   ○ False

C   a translation of 2 units down and 2 units up

   ○ True   ○ False

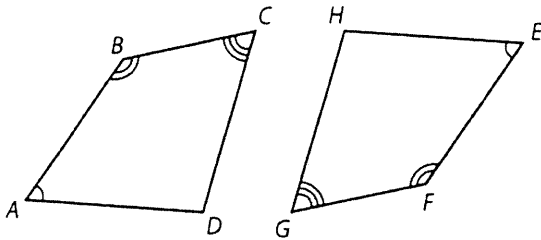D   a reflection across a line containing the point P

   ○ True   ○ False

E   a rotation of $1620°$ about the origin

   ○ True   ○ False

MODULE 3 Response to Intervention

Pre-Test: Skills 7, 17, 18, 19
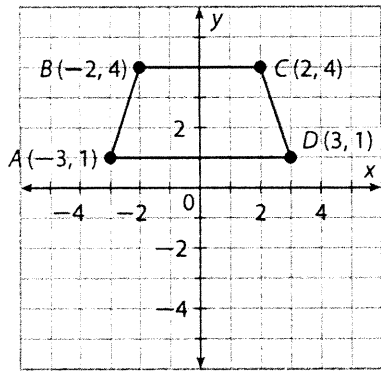
1. The figures below are congruent.

Choose True or False for each statement.

A $\overline{AD} \cong \overline{GF}$ ○ True ○ False

B $\angle B \cong \angle F$ ○ True ○ False

C $\angle C \cong \angle E$ ○ True ○ False

D $\overline{BC} \cong \overline{HE}$ ○ True ○ False

2. Write the rule for the translation that takes point $P(3, 2)$ to its image $P'(2, 6)$.

_____

3. Find the image of $ABCD$ after it is reflected across the line $y = x$.

4. If $\triangle A'B'C'$ in the coordinate plane is the image of $\triangle ABC$ after it is rotated 180° in the coordinate plane, then is it true that $\triangle A'B'C' \cong \triangle ABC$? Explain.

_____

_____

For 5–6, use the point $P(-2, 7)$ in the coordinate plane.

5. What is the image of the point P after it is reflected across a line containing itself?

_____

6. What is the image of the point P after it is rotated about the origin by 270° counterclockwise?

_____

For 7–10, $\triangle ABC \cong \triangle DFE$.
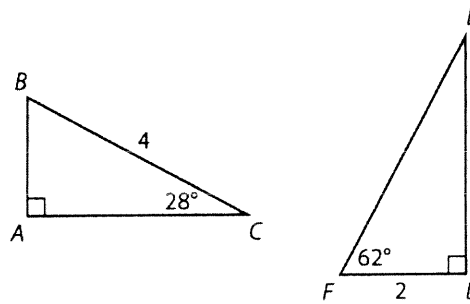
7. What is the measure of $\angle B$?

_____

8. What is the measure of $\angle E$?

_____

9. What is the length of $\overline{FE}$?

_____

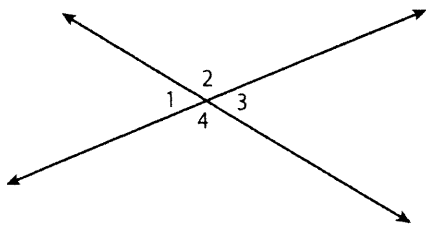10. What is the length of $\overline{AB}$?

_____

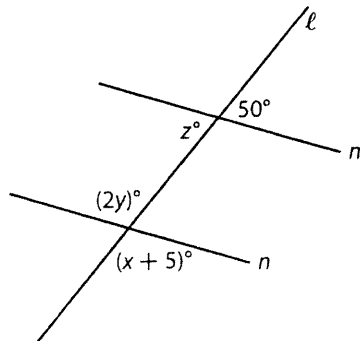**MODULE 4** **Response to Intervention**

Pre-Test: Skills 2, 12, 17, 28

1. Write the equation of a line that is parallel to $y = -5x + 1$ and passes through the *point* (0, 3).

_____

For 2–5, use the figure below where
**$m\angle 1 = (x - 6)°$ and $m\angle 2 = (2x)°$.**

2. What is the value of *x*?

_____

3. What is $m\angle 3$?

_____

4. What is $m\angle 4$?

_____

5. Classify $\angle 1$ and $\angle 4$ as complementary, supplementary, or neither.

_____

6. Write the equation of a line that is perpendicular to the line $y = -6$ and passes through the *point* (3, 7).

_____

7. Classify the lines represented by the equations $-x + 2y = 8$ and $-3x + y = -1$ as perpendicular, parallel, or neither. Explain.

_____

_____

For 8–10, use the figure below where
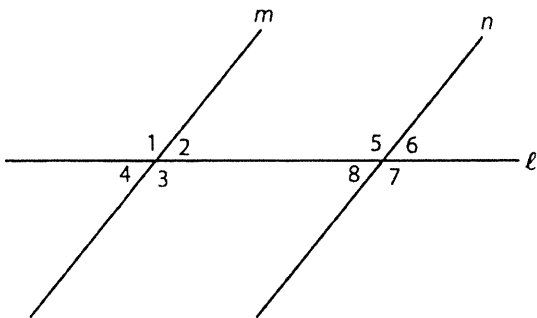**$m \parallel n$.**

8. What is the value of *y*?

_____

9. What is the value of *x*?

_____

10. What is the value of *z*?

_____

11. Find the image of *ABC* after it is reflected across the line $y = x$.

Name _____ Date _____ Class_____
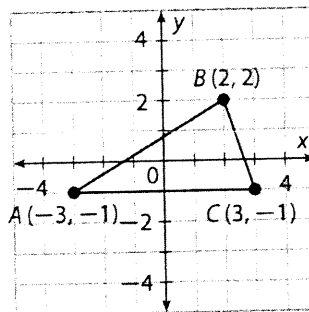
Response to Intervention

Pre-Test: Skills 7, 12, 17, 18, 19

1. In the figure below, $m \parallel n$.
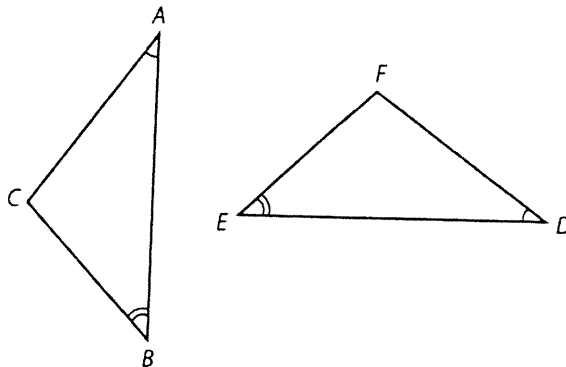

Choose True or False for each statement.

A	$\angle 1 \cong \angle 2$	○ True ○ False
B	$\angle 5 \cong \angle 7$	○ True ○ False
C	$\angle 2 \cong \angle 6$	○ True ○ False
D	$\angle 2 \cong \angle 5$	○ True ○ False

2. Find the image of $\triangle ABC$ after the translation $(x, y) \rightarrow (x + 3, y + 1)$ is applied.
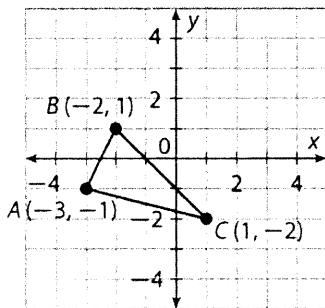
3. What is the image of the point $P(-5, 1)$ after it is rotated about the origin by $180°$?

_____

4. In the figure below, $\triangle ABC \cong \triangle DEF$.

Choose True or False for each statement.

A	$\angle A \cong \angle F$	○ True ○ False
B	$\angle B \cong \angle E$	○ True ○ False
C	$\overline{AB} \cong \overline{DE}$	○ True ○ False
D	$\overline{CA} \cong \overline{FD}$	○ True ○ False

5. Write the rule for a transformation that translates any point 4 units down and 1 unit to the left.

_____

6. A figure $ABCD$ lies completely within Quadrant II of the coordinate plane. If the figure is rotated about the origin by $90°$ counterclockwise, in which quadrant does its image $A'B'C'D'$ lie?

_____

7. In the coordinate plane, $\triangle ABC$ is rotated about the origin by $270°$. Is it true that $\triangle ABC \cong \triangle A'B'C'$? Why or why not?
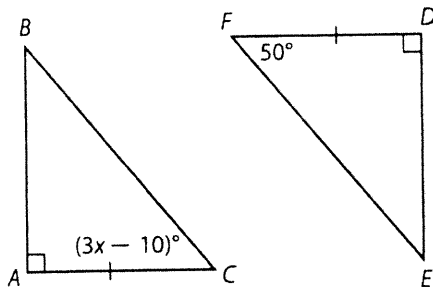
_____

_____

_____

MODULE 6

Response to Intervention

Pre-Test: Skills 3, 7, 12

1. The measures of the angles in a triangle are x, $2x$, and $2x - 20$. What is the measure of the largest angle?

_____

For 2–4, use the triangles below where
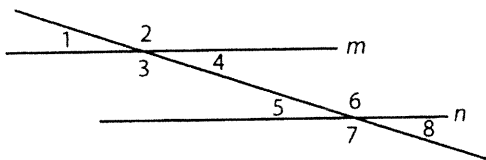$\triangle ABC \cong \triangle DEF$.

2. What is the value of x?

_____

3. What is m$\angle B$?

_____

4. What is m$\angle E$?

_____

For 5–8, use the figure below where
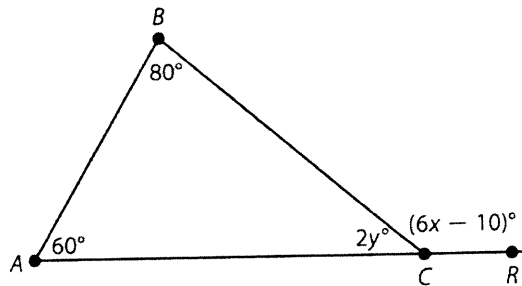$m \parallel n$ and m$\angle 1 = 20°$.

5. What is m$\angle 2$?

_____

6. What is m$\angle 4$?

_____

7. What is m$\angle 6$?

_____

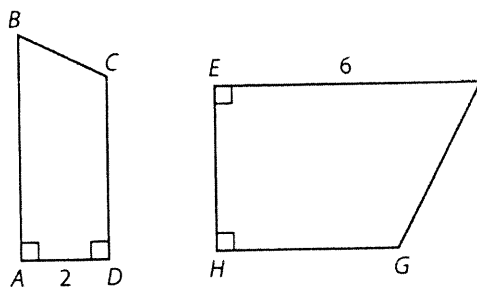8. Classify $\angle 5$ and $\angle 6$ as complementary, supplementary, or neither.

_____

For 9–10, use the figure below.

9. What is the value of x?

_____

10. What is the value of y?

_____

11. In the figure below, $ABCD \cong EFGH$.

Choose True or False for each statement.

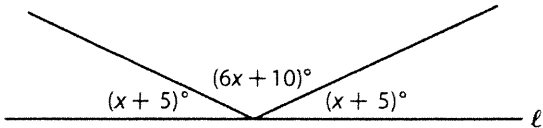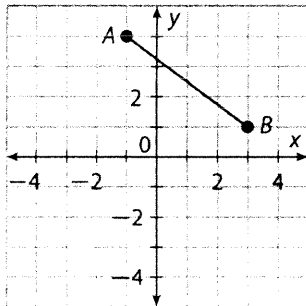|		
A	$\angle B \cong \angle F$	○ True ○ False
B	$HG = 2$	○ True ○ False
C	$AB = 6$	○ True ○ False
D	$\angle C \cong \angle G$	○ True ○ False

MODULE 7 **Response to Intervention**

Pre-Test: Skills 2, 3, 9

1. The measures of the angles in a triangle are 2*x*, 4*x*, and 6*x*. What is the measure of the smallest angle?

_____

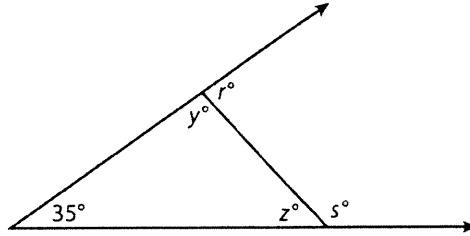2. In the figure below, all of the labeled angles lie along the line ℓ. What is the value of *x*?

For 3–4, use the graph below.

3. What is the length of $\overline{AB}$?

_____

4. If *M* is the midpoint of $\overline{AB}$, then what are its coordinates?

_____

5. Given the triangle below, choose True or False for each statement.

A 35 + *y* = 180	○ True	○ False
B *r* = 35 + *z*	○ True	○ False
C *s* = *z*	○ True	○ False
D *z* + *s* = 180	○ True	○ False

6. In the coordinate plane, what is the distance between the points (−3, 1) and (−5, −4)?

_____

7. Is it possible that a triangle has interior angles of 35°, 55°, and 80°? Explain.

_____

_____

8. If *C* is the midpoint of $\overline{PQ}$ and *CP* = 6, then what is the length of $\overline{PQ}$?

_____

9. Two lines intersect at point *P* and form four angles: ∠1, ∠2, ∠3, and ∠4. If ∠1 = ∠3 = 48°, then what is m∠2?

_____

10. A triangle has two angles with equal measures and one angle with a measure of 70°. What is the measure of the other two angles?
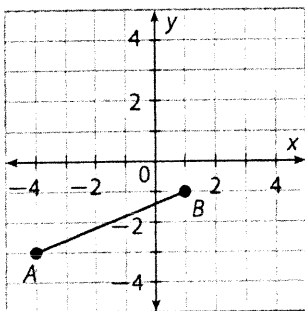
_____

MODULE 8

Response to Intervention

Pre-Test: Skills 3, 9, 10

1. Each of the following represents the interior angles of a triangle. Choose True or False for each statement.

   A 45°, 45°, 90°   ○ True ○ False

   B 110°, 80°, 10°   ○ True ○ False

   C 25°, 125°, 30°   ○ True ○ False

   D 60°, 60°, 60°   ○ True ○ False

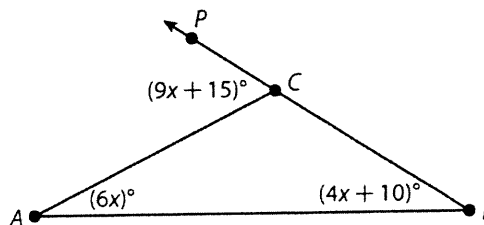**For 2–3, use the graph below and provide exact answers.**

2. What is the length of $\overline{AB}$?

   _____

3. What are the coordinates of the midpoint of $\overline{AB}$?

   _____

4. A triangle has interior angles of $(x+5)°$, $(x-5)°$ and $(2x)°$. What is the measure of the largest interior angle?

   _____

5. If the length of $\overline{QR}$ is 18 units and the midpoint is located at point M, then what is the length of $\overline{MR}$?

   _____

For 6–8, use the figure below.

6. What is $m\angle CAB$?

   _____

7. What is $m\angle ACP$?

   _____

8. What is $m\angle ACB$?

   _____

9. In the space below, use a ruler and a protractor to sketch a triangle ABC where $m\angle A = 60°$ and $m\angle B = 80°$. Label the vertices of your triangle and the measure of each angle including $\angle C$.

10. Is the triangle sketched in Number 9 unique? Explain.

   _____

   _____

   _____

Answer Key

Module Pre-Tests

Pre-Test Module 1

1. $A'(3, 2)$, $B'(6, 6)$, $C'(6, 1)$

2. $A'(1, -2)$, $B'(4, -6)$, $C'(4, 3)$

3. Quadrant IV

4. $(2, -5)$

5. complementary, adjacent angles

6. vertical angles

7. supplementary, adjacent angles

8. adjacent angles

9. 6 units; $\overline{AB}$ is a vertical line segment with endpoints at $(-5, 5)$ and $(-5, -1)$. Therefore, the length is determined by finding the difference between the y-coordinates. So, $5 - (-1) = 6$ units.

10. Using the Midpoint Formula with endpoints $(-3, 4)$ and $(6, 3)$:
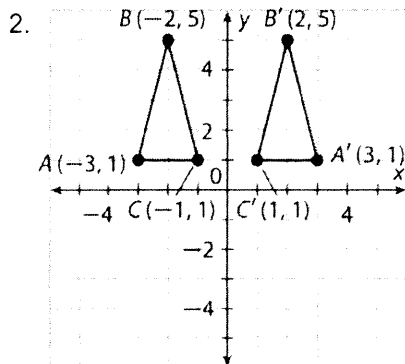
$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

$$\left(\frac{-3 + 6}{2}, \frac{4 + 3}{2} \right)$$

$$\left(\frac{3}{2}, \frac{7}{2} \right) \text{ or } (1.5, 3.5)$$

Pre-Test Module 2

1. $P'(5,6)$

2.

3. $P'(-9, 3)$

4. Quadrant III

5. $(x, y) \rightarrow (x + 3, y - 4)$

6. $A'(1, -1)$, $B'(4, -2)$, $C'(1, -3)$

7. $A'(1, 1)$, $B'(4, 2)$, $C'(1, 3)$

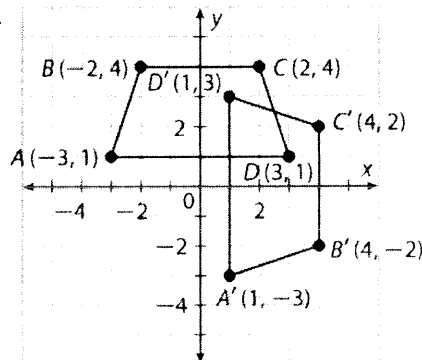8. $A'(-1, 4)$, $B'(0, 7)$, $C'(1, 4)$

9. A True B False C False D True E False

Pre-Test Module 3

1. A False B True C False D False

2. $(x, y) \rightarrow (x - 1, y + 4)$

3.

4. Yes; a rotation does not change the side lengths or the angle measures of the triangle.

5. $P'(-2, 7)$

6. $P'(7, 2)$

7. $62°$

8. $28°$

9. 4

10. 2

Pre-Test Module 4
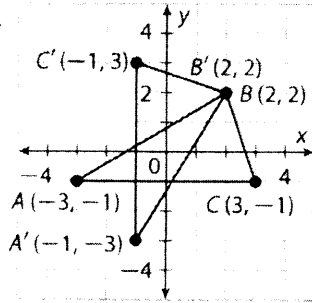
1. $y = -5x + 3$

2. 62

3. $56°$

4. $124°$

5. Supplementary

6. $x = 3$

7. Neither; the slope of the first line is $\frac{1}{2}$ while the slope of the second is 3. These are not the same and do not have a product of −1.
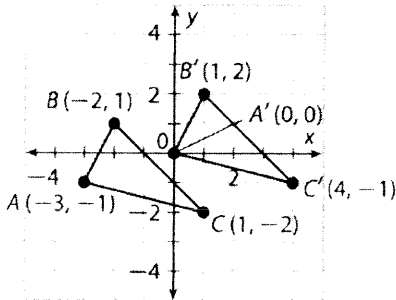
8. 65

9. 125

10. 50

11.

Pre-Test Module 5

1. A False B True C True D False

2.

3. $P'(5,-1)$

4. A False B True C True D True

5. $(x, y) \rightarrow (x - 1, y - 4)$

6. Quadrant III

7. Yes; a rotation will not change the side lengths or the angle measurements of the triangle.

Pre-Test Module 6

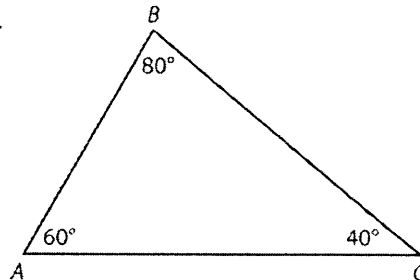1. 80°

2. 20

3. 40°

4. 40°

5. 160°

6. 20°

7. 160°

8. supplementary

9. 25

10. 20

11. A True B False C True D True

Pre-Test Module 7

1. 30°

2. 20

3. 5

4. $\left(1, \frac{5}{2}\right)$

5. A False B True C False D True

6. $\sqrt{29}$

7. No; the sum of the measures of the interior angles must be 180.

8. 12

9. 132°

10. 55°

Pre-Test Module 8

1. A True B False C True D True

2. $\sqrt{29}$

3. $\left(-\frac{3}{2}, -2\right)$

4. 90°

5. 9

6. 30°

7. 60°

8. 120°

9.

10. No; it is possible to draw the triangle with different side lengths (although they will always be proportional to the one drawn).

Pre-Test Module 9

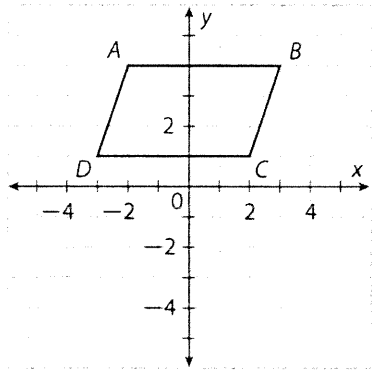1. A False B True C True D False

2. 40°

SKILL 1

Response to Intervention

Post-Test: Algebraic Representations of Transformations

1. $\triangle DEF$ has vertices $D(1, 1)$, $E(2, 4)$, and $F(5, 2)$. What are the coordinates of the vertices of the image after a translation 3 units right and 2 units down?

   _____

2. Describe the translation of point $W(3, 1)$ to $W'(-2, 4)$.

   _____

3. Parallelogram $ABCD$ is graphed below.

   What are the coordinates of the image of point D after a reflection across the y-axis?

   _____

4. A triangle has vertices $J(0, 4)$, $K(2, -4)$, and $L(-4, -2)$. The coordinates of the image after a dilation is $J'(0, 2)$, $K'(1, -2)$, and $L'(-2, -1)$. What is the scale factor of the dilation?

   _____

5. The following transformation represents a reflection over the x-axis or over the y-axis. Choose True or False for each transformation.

   A $(0, 2) \rightarrow (0, -2)$ ○ True   ○ False

   B $(3, 4) \rightarrow (-3, -4)$ ○ True   ○ False

   C $(-2, 5) \rightarrow (2, -5)$ ○ True   ○ False

   D $(1, -6) \rightarrow (-1, -6)$ ○ True   ○ False

6. After a reflection across the x-axis, the image of trapezoid $HIJK$ has vertices $H'(-5, -2)$, $I'(-3, -2)$, $J'(-3, -6)$, and $K'(-5, -5)$. What are the coordinates of the preimage?

   _____

7. Describe the transformation shown in the graph.

   _____
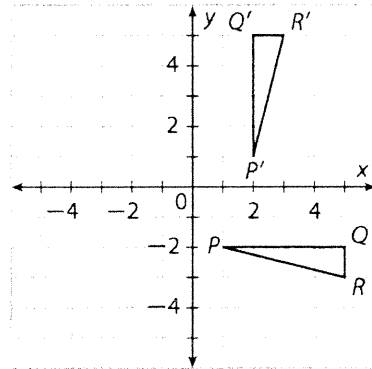
8. Square $ABCD$ has vertices $A(2, 3)$, $B(3, -2)$, $C(-2, 3)$, and $D(-3, 2)$. The square is rotated 90° clockwise about the origin. Which point is located at $(-3, 2)$?

   _____

9. What values for a and b represent a translation 5 units down and 2 units right?

   $(x, y) \rightarrow (x + a, y + b)$

   _____

10. The following scale factor, k, represents a dilation that is an enlargement. Choose True or False for each scale factor.
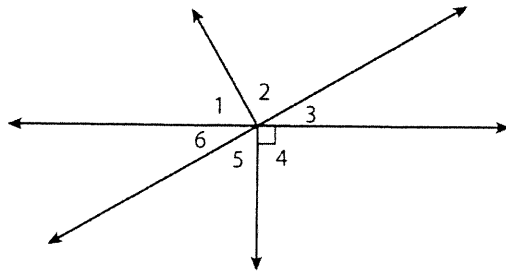
    A $k = 3$ ○ True   ○ False

    B $k = \dfrac{4}{5}$ ○ True   ○ False

    C $k = \dfrac{3}{2}$ ○ True   ○ False

    D $k = 1$ ○ True   ○ False

| SKILL 2 | # Response to Intervention |

Post-Test: Angle Relationships

Use the figure for 1–5.

1. Classify $\angle 2$ and $\angle 5$ as *adjacent angles, vertical angles,* or *neither.*

_____

2. Name a pair of complementary angles.

_____

3. If $m\angle 6 = 30°$, what is $m\angle 3$?

_____

4. If $m\angle 6 = 30°$, what is $m\angle 5$?

_____

5. $\angle 2$ and $\angle 4$ are supplementary angles. What is the measure of $\angle 2$?

_____

6. $\angle J$ and $\angle K$ are adjacent angles. $\angle J$ and $\angle L$ are vertical angles. The measure of $\angle K$ is 52° and the measure of $\angle L$ is 104°. What is the measure of $\angle J$?

_____

7. Are the following pairs of angle measures the measures of supplementary angles? Choose True or False for each pair of angle measures.

   A   42°, 48°   ○ True   ○ False
   B   88°, 92°   ○ True   ○ False
   C   36°, 114°   ○ True   ○ False
   D   75°, 105°   ○ True   ○ False

8. $\angle A$ and $\angle B$ are complementary angles. The measure of $\angle A$ is $2x°$ and the measure of $\angle B$ is 48°. What is the value of x?

_____

9. $\angle S$ and $\angle T$ are vertical angles. The measure of $\angle S$ is $(2x - 8)°$ and the measure of $\angle T$ is 62°. What is the value of x?

_____

Use the figure for 10–11.
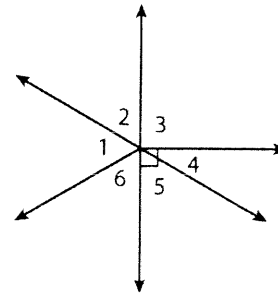
10. The measure of $\angle 4$ is 38°. What is the measure of $\angle 2$?

_____

11. The measure of $\angle 1$ is 75° and the measure of $\angle 5$ is 52°. What is the measure of $\angle 6$?

_____

12. $\angle X$ and $\angle Y$ do not share a side. The measure of $\angle X$ is 45° and the measure of $\angle Y$ is 45°. Which of the following terms could describe $\angle X$ and $\angle Y$. Choose True or False for each term.
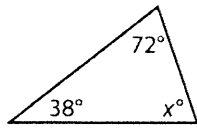
   A   adjacent   ○ True   ○ False
   B   vertical   ○ True   ○ False
   C   complementary   ○ True   ○ False
   D   supplementary   ○ True   ○ False

SKILL 3 Response to Intervention

Post-Test: Angle Theorems for Triangles
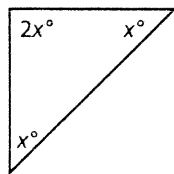
1. What is the value of x in the figure?

   _____

2. The sum of two angles in a triangle is 87°. What is the measure of the third angle?

   _____

3. Find the m∠R in △RST if m∠S = 72° and m∠T = 47°.

   _____

Use the figure for 4–5.
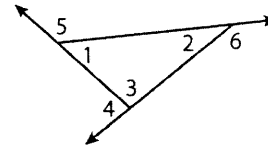

4. What is the value of x?

   _____

5. What are the measures of the angles in the triangle?

   _____

6. What is the measure of the exterior angle whose remote interior angles measure 52° and 70°?

   _____

7. The bottom of a lamp is in the shape of a triangle. The base angles of the triangle have equal measures. If the base angles measure 55°, what is the measure of the third angle?

   _____

8. The measures of the angles in △DEF are represented by 2x, 3x, and 4x. What are the measures of the angles?
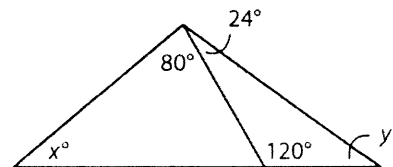
   _____

Use the figure for 9–11.

9. What are the two remote interior angles for ∠6?

   _____

10. What angle has the same measure as m∠1 + m∠2?

    _____

11. If m∠5 = 122° and m∠2 = 34°, what is m∠3?

    _____

12. Find the values of x and y in the figure.

    _____

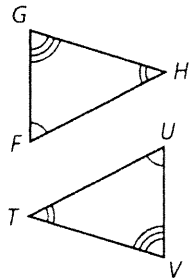13. The following angle measures are the measures of the interior angles of a triangle. Choose True or False for each set of angle measures.

    A 35°, 55°, 90°   ○ True   ○ False

    B 60°, 60°, 60°   ○ True   ○ False

    C 42°, 72°, 76°   ○ True   ○ False

    D 24°, 31°, 125°   ○ True   ○ False

SKILL 7 Response to Intervention

Post-Test: Congruent Figures

Use the figures for 1–3.

1. List the corresponding angles.

   _____

2. List the corresponding sides.

   _____

3. Write a congruence statement for the triangles.

   _____

For 4–5, use △JKM ≅ △PQR.

4. If m∠P = 86° and m∠R = 21°, what is m∠J?

   _____

5. If JM = 14 inches and MK = 25 inches, what is the length of RQ?

   _____
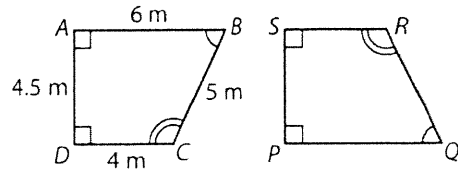
6. The following congruence statement represents the corresponding parts of two congruent triangles.

   △BCD ≅ △RST

   Choose True or False for each statement.

   A $\overline{BC} \cong \overline{ST}$ ○ True   ○ False

   B $\overline{CB} \cong \overline{SR}$ ○ True   ○ False

   C ∠C ≅ ∠S   ○ True   ○ False

   D △DBC ≅ △TRS   ○ True   ○ False

Use the following information for 7–9. The trapezoids below are congruent.

7. What is the length of $\overline{SP}$?

   _____

8. Which angle is congruent to ∠B?

   _____

9. Which side is longer, QR or RS?

   _____

For 10–13, use the figure and the congruence statement △JKM ≅ △PQR.
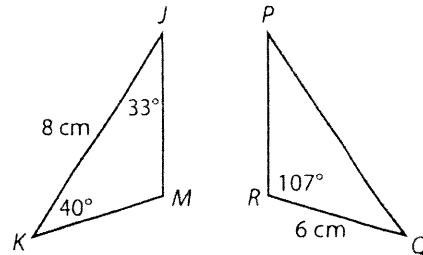
10. What is the measure of ∠Q?

    _____

11. What is the measure of ∠M?

    _____

12. What is the length of $\overline{PQ}$?
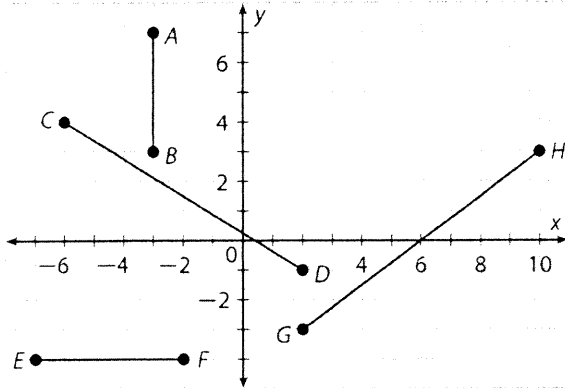
    _____

13. If the perimeter of triangle PQR is 20 centimeters, what is the perimeter of triangle JKM?

    _____

SKILL
9

Response to Intervention

Post-Test: Distance and Midpoint Formulas

Use the figure for 1–4.

1. What is the midpoint of $\overline{AB}$?

_____

2. What is the midpoint of $\overline{CD}$?

_____

3. What is the midpoint of $\overline{EF}$?

_____

4. What is the midpoint of $\overline{GH}$?

_____

5. A segment has coordinates (–4, 9) and (0, 7). What is the midpoint of the segment?

_____

6. A segment has coordinates (8, –5) and (8, 4). What is the midpoint of the segment?

_____

7. A segment $\overline{ST}$ is graphed on a coordinate plane. The endpoint S is at (–3, 2). The midpoint is at (–3, –2). What are the coordinates of the other endpoint T?

_____

_____

Use the following information for 8–10.

A map is drawn on a coordinate grid. Each unit is equal to 1 mile.
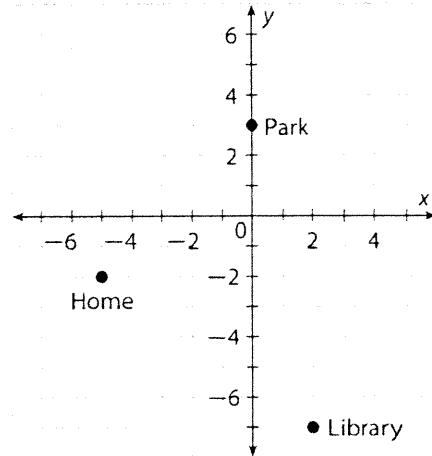
8. David would like to meet a friend at the halfway point between his home and the library. What is the location of the midpoint between David's home and the library?

_____

9. What is the distance between the park and the library?

_____

_____

10. What is the distance between David's home and the park?

_____

_____
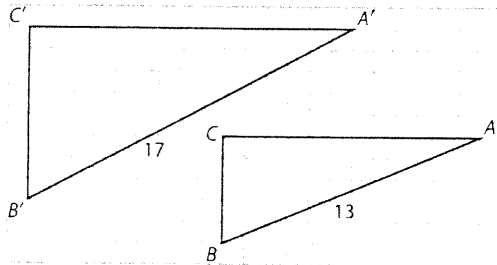
11. A segment measures 10 units. One end of the segment has an endpoint at (3, –6). What is another possible endpoint to this segment?

_____

SKILL
16

Response to Intervention

Post-Test: Properties of Dilations

Use the grid for 1–2.


1. Find the ratios of the corresponding side lengths.

   _____

2. Is the image a dilation of the preimage? Explain.

   _____

   _____

3. △J'K'L is the image of △JKL. What is the scale factor k of the dilation?

   $J\left(0, \dfrac{2}{3}\right)$, $K\left(\dfrac{1}{2}, -2\right)$, $L(-3, -1)$

   $J'(0, 2)$, $K'\left(\dfrac{3}{2}, -6\right)$, $L'(-9, -3)$

   _____

4. Kylie enlarges a photo that measures 4 in. by 6 in. The new image measures 6 in. by 9 in. Is the new image a dilation of the original photo? Explain.

   _____

   _____

5. A figure has vertex A(4, 6). The figure is dilated by a scale factor of $\dfrac{1}{2}$. The resulting image is then dilated by a factor of 5. What are the coordinates of vertex A" of the final image?

   _____

Use the following information for 6–8.
Isosceles triangle FGH is the preimage of a dilation with a scale factor of $\dfrac{3}{4}$.
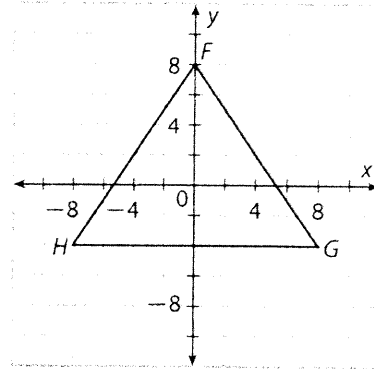
6. What shape is the image?

   _____

7. Find the coordinates of the image.

   _____

8. Is the dilation an enlargement or a reduction?

   _____

9. The coordinates of the image after a dilation with a scale factor of $\dfrac{1}{4}$ are P'(1, 3), Q'(1, 5), R'(4, 8). What are the coordinates of the preimage?

   _____

10. The following rule represents a dilation. Choose True or False for each rule.

    A $(x, y) \rightarrow (2x, y)$ ○ True ○ False

    B $(x, y) \rightarrow \left(\dfrac{3}{8}x, \dfrac{5}{8}y\right)$ ○ True ○ False

    C $(x, y) \rightarrow (4x, 4y)$ ○ True ○ False

    D $(x, y) \rightarrow (-x, y)$ ○ True ○ False

SKILL 17

Response to Intervention

Post-Test: Properties of Reflections

1. If a point *P* lies on line *m*, then what is the image of point *P* when it is reflected across line *m*?

_____

2. Point *P* is reflected across line *m* to its image point *P'*. What angle is at the intersection of line *m* and $\overline{PP'}$?

_____

For 3–4, find the image of the given figure when it is reflected across the line shown and sketch it on the given graph.

3.


4.
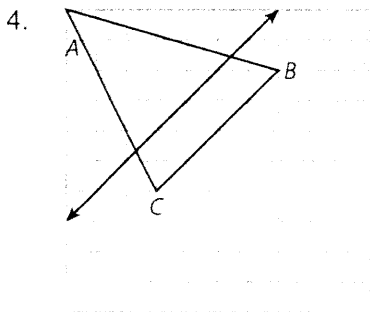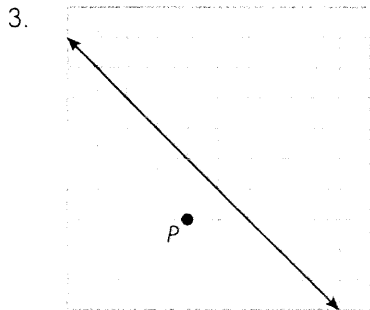
Use the following information to answer 5–7.

The points *A*(1, 1), *B*(1, 4), and *C*(3, 1) define a triangle in the coordinate plane.

5. If △*ABC* is reflected across the *x*-axis, find the coordinates of its image.

_____

6. If △*ABC* is reflected across the *y*-axis, find the coordinates of its image.

_____

7. If △*ABC* is reflected across the line *y* = *x*, find the coordinates of its image.

_____

8. In the figure below, △*A'B'C'* is the result of reflecting △*ABC* across a line. Find three points on the line of reflection and sketch the line on the figure.
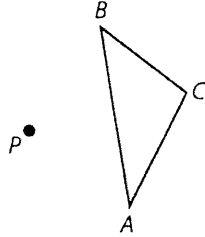

_____

_____
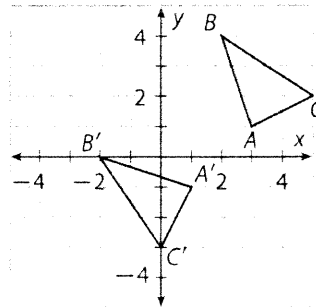
SKILL
18

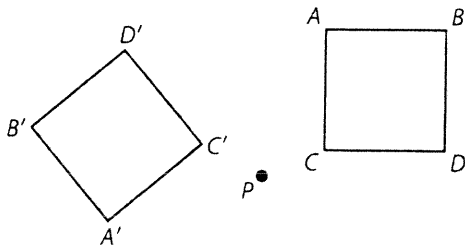# Response to Intervention

Post-Test: Properties of Rotations

1. Find the image of △ABC when it is rotated 100° counterclockwise around point P.

2. Square ABCD was rotated counterclockwise around point P. What was the angle of rotation?

Angle of rotation: _____

3. Point A is rotated around point P and its image is point A'. If the length of $\overline{AP}$ is 5 units, what is the length of $\overline{A'P}$?

_____

4. Point A(−3, 5) in the coordinate plane is rotated 270° about the origin. What are the coordinates of its image?

_____

5. Find the image of △ABC after it is rotated 180°.
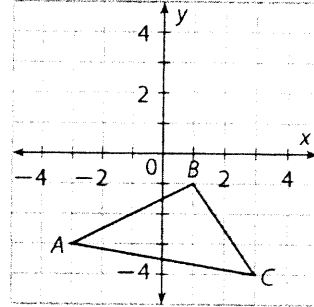
6. Give an example of three rotations in the coordinate plane that would map a figure onto itself.

_____

_____

For 7–8, determine which quadrant would contain the image of the figure.

7. Figure located in Quadrant I and rotated 180°

_____

8. Figure located in Quadrant IV and rotated 450°
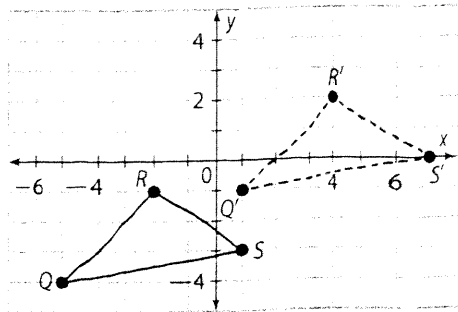
_____

Response to Intervention

SKILL
19

Post-Test: Properties of Translations

1. What is a translation?

   _____

2. How does a translation affect the figure? Explain.

   _____

   _____

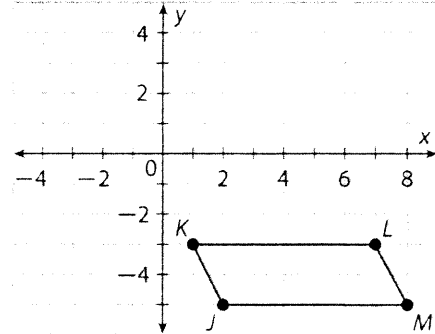3. Is it possible to shift a figure diagonally? Explain.

   _____

   _____

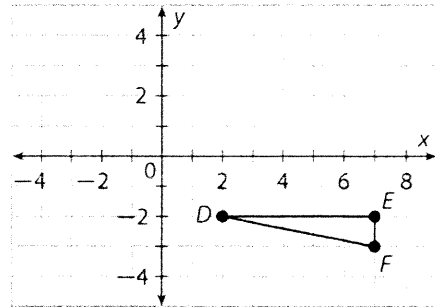4. Write the rule for the transformation shown.

   _____

5. Write the rule for an image that is translated 2 units down and 9 units to the left.

   _____

6. Describe in words the translation that is indicated by (x + 4, y − 7).

   _____

   _____

7. Translate the image 4 units left and 1 unit up.

8. Use the rule (x − 5, y + 7) to write new coordinates for the figure shown.

   _____

   _____

9. Now, graph the translated figure on the graph above.

Answer Key

Post-Test: Skill 1

1. $D'(4, -1)$, $E'(5, 2)$, $F'(8, 0)$
2. 5 units left and 3 units up
3. $D'(3, 1)$
4. $\dfrac{1}{2}$
5. A True B False C False D True
6. $H(-5, 2)$, $I(-3, 2)$, $J(-3, 6)$, $K(-5, 5)$
7. 270° clockwise rotation or
   90° counterclockwise rotation
8. point C'
9. $a = 2$, $b = -5$
10. A True B False C True D False

Post-Test: Skill 2

1. neither
2. $\angle 5$ and $\angle 6$
3. 30°
4. 60°
5. 90°
6. 104°
7. A False B True C False D True
8. 21
9. 35
10. 52°
11. 53°
12. A False B True C True D False

Post-Test: Skill 3

1. 70
2. 93°
3. 61°
4. 45
5. 45°, 45°, 90°
6. 122°
7. 70°
8. 40°, 60°, 80°
9. $\angle 1$ and $\angle 3$
10. $\angle 4$

11. 88°
12. $x = 40°$, $y = 36°$
13. A True B True C False D True

Post-Test: Skill 4

1. diameter
2. 4 in.
3. 49π in^2
4. A. 9 ft; B. 18 ft
5. 78.5 in^2
6. 200.96 ft^2
7. 50π cm^2
8. 1 mm
9. 197.92 mm^2
10. A. 12 cm; B. 113.04 cm^2
11. 4 ft

Post-Test: Skill 5

1. a rectangle and a triangle
2. 24 m
3. 96 m^2
4. 240 m^2
5. 336 m^2
6. 4 in.
7. 16 in^2
8. 64 in^2
9. 48 in^2
10. 2 ft
11. 6.28 ft^2
12. 5 ft
13. 20 ft^2
14. 26.28 ft^2

Post-Test: Skill 6

1. 31.4 cm
2. 50.2 in.
3. 66 m
4. 220 yd
5. 20.6 ft
6. 3 in.

7. 5.1 ft

8. No the circumference of a cake with a diameter of 8 inches is 24π inches. This cake is larger than a cake with a circumference of 24 inches. The diameter of a cake with a circumference of 24 inches has to be less than 8 inches, so the writing will not fit.

9. 122.5 mm

Post-Test: Skill 7

1. $\angle F \cong \angle U$, $\angle H \cong \angle T$, $\angle G \cong \angle V$

2. $\overline{FH} \cong \overline{UT}$, $\overline{HG} \cong \overline{TV}$, $\overline{GF} \cong \overline{VU}$

3. $\triangle FHG \cong \triangle UTV$

4. 86°

5. 25 in

6. A False B True C True D True

7. 4.5 m

8. $\angle Q$

9. side QR

10. 40°

11. 107°

12. 8 cm

13. 20 cm

Post-Test: Skill 8

1. triangular prism

2. *ABC* and *EFD*

3. *ABC, EFD, ABFE, BCDF, CDEA*

4. $\overline{AB}$, $\overline{BC}$, $\overline{CA}$, $\overline{EF}$, $\overline{FD}$, $\overline{DE}$, $\overline{AE}$, $\overline{BF}$, $\overline{CD}$

5. *A, B, C, D, E, F*

6. cylinder

7. angled slice

8. trapezoid

9. triangle

10. circle

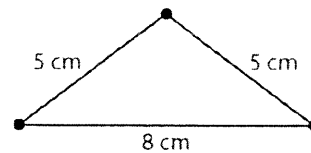11. pentagons and rectangles

12. pentagon

13. rectangle

14. triangular pyramid

15. A True B False C False D False
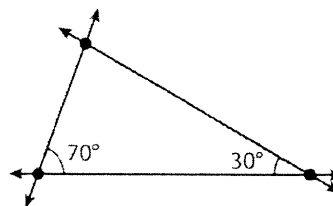
Post-Test: Skill 9

1. (–3, 5)

2. (–2, 1.5)

3. (–4.5, –4)

4. (6, 0)

5. (–2, 8)

6. (8, –0.5)

7. (–3, –6)

8. (–1.5, –4.5)

9. $\sqrt{104} \approx 10.2$ miles

10. $\sqrt{50} \approx 7.1$ miles

11. Answers will vary. Possible answers: (13, –6), (–7, –6), (3, 4), (3, –16)

Post-Test: Skill 10

1. one

2. No. If 20 meters is the base side, then the sides measuring 7 meters and 10 meters are not long enough to intersect.

3. 80°

4. many

5. A Yes B No C Yes

6. A No B Yes C Yes

7. Possible answers: any segment greater than 23 cm or less than 7 cm will result in no triangle

8. Possible answers: 8 cm or 15 cm

9. Possible answers: any length between 7 cm and 23 cm inclusive

4. $\dfrac{2}{11}$

5. $\dfrac{4}{11}$

6. A $\dfrac{2}{30} = \dfrac{1}{15}$ B $\dfrac{8}{30} = \dfrac{4}{15}$ C $\dfrac{4}{30} = \dfrac{2}{15}$

    D $\dfrac{16}{30} = \dfrac{8}{15}$

7. $\dfrac{3}{30} = \dfrac{1}{10}$

8. $\dfrac{6}{30} = \dfrac{1}{5}$

9. $\dfrac{8}{100} = 0.08 = 8\%$

10. $\dfrac{3}{60} = \dfrac{1}{20} = 0.05 = 5\%$

11. Because the percent probability of getting a leaky pen was lower after the machine adjustment was made, the company's improvement worked.

12. A Yes B No

Post-Test: Skill 16

1. $\dfrac{A'B'}{AB} = \dfrac{17}{13}$, $\dfrac{B'C'}{BC} = \dfrac{8}{5}$, $\dfrac{C'A'}{CA} = \dfrac{15}{12} = \dfrac{5}{4}$

2. No; the ratios of the corresponding side lengths are not equal.

3. $k = 3$

4. Yes; $\dfrac{4}{6} = \dfrac{2}{3}$ and $\dfrac{6}{9} = \dfrac{2}{3}$, so the ratios of the corresponding side lengths are equal and the image is a dilation.

5. $A''(10, 15)$

6. Isosceles triangle

7. $F'(0, 6)$, $G'(6, -3)$, $H'(-6, -3)$

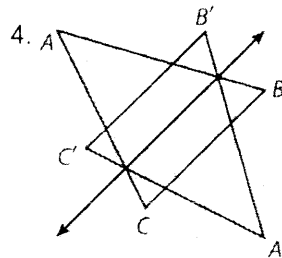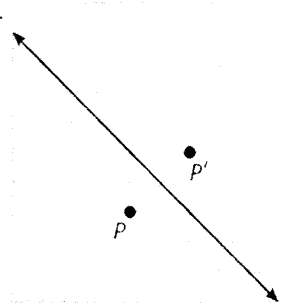8. reduction

9. $P(4, 12)$, $Q(4, 20)$, $R(16, 32)$

10. A False B False C True D False

Post-Test: Skill 17

1. The image is itself since it is on the line of reflection.
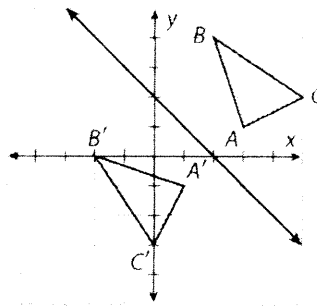
2. $90°$

3.

4.

5. $A'(1, -1)$, $B'(1, -4)$, $C'(3, -1)$
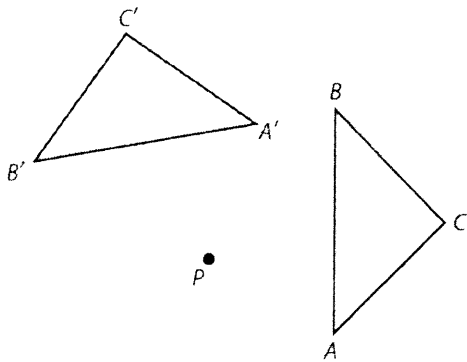
6. $A'(-1, 1)$, $B'(-1, 4)$, $C'(-3, 1)$

7. $A'(1, 1)$, $B'(4, 1)$, $C'(1, 3)$

8. Three points: $(2, 0)$, $(0, 2)$, $\left(\dfrac{5}{2}, -\dfrac{1}{2}\right)$
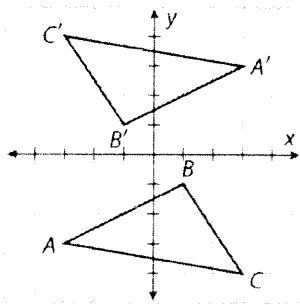
Post-Test: Skill 18

1.

2. 130°

3. 5 units

4. (5, 3)

5.

6. Sample answers: 360°, 720°, 1080°, and any other multiple of 360°

7. Quadrant III

8. Quadrant I

Post-Test: Skill 19

1. A translation is a shift or slide of a figure up or down, left or right.

2. A translation changes only the location of the figure. It does not change the size or shape.
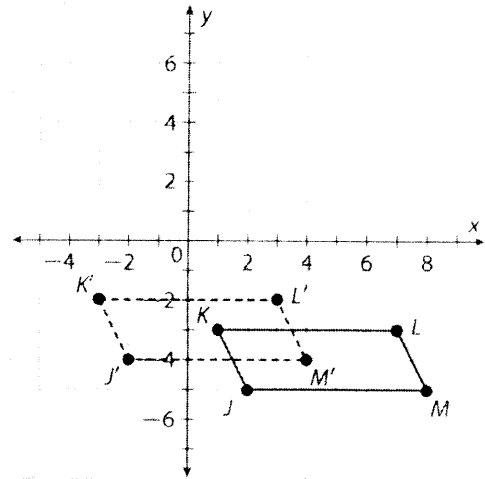
3. Yes. Shift a figure diagonally by shifting right or left, then up or down.
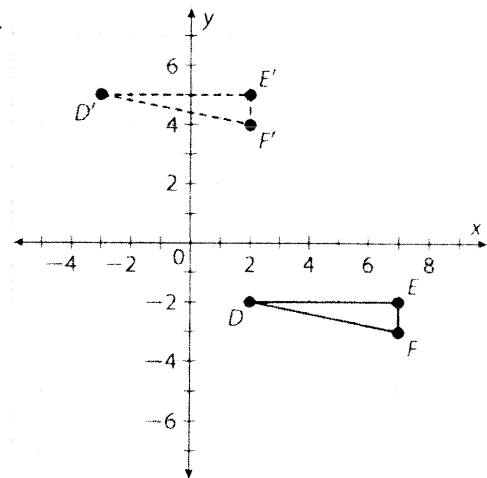
4. $(x + 6, y + 3)$

5. $(x - 9, y - 2)$

6. translate 4 units right and 7 units down

7.

8. $D'(-3, 5)$; $E'(2, 5)$; $F'(2, 4)$

9.

Post-Test: Skill 20

1. Answers will vary. Sample response:
$y = x^2 + 4x + 5$.

2. Because $a = -1$ which is less than 0, the parabola opens down.

3. maximum

4. 12

5. (2, 12)

6. 0 and 4

7. $x = 2$