

CHAPTER 7

the graph of the transformation below. (Lesson 7.1)

Name the image of Q . Z

Name and describe the transformation.

90° clockwise rotation about the origin

Name two sides with the same length.

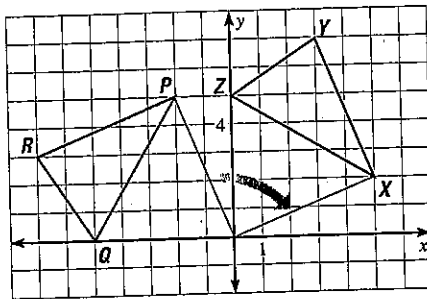
Sample answers: $QR \cong ZY$; $RP \cong YX$; $PQ \cong XZ$

Name two angles with the same measure.

Sample answers: $\angle R \cong \angle Y$; $\angle P \cong \angle X$; $\angle Q \cong \angle Z$

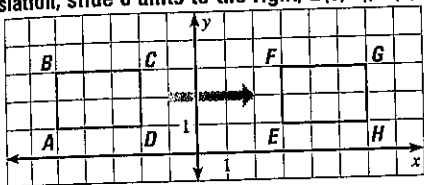
Name the coordinates of the preimage of point Y .
(-7, 3)

Show two corresponding sides have the same length, using the Distance Formula. See margin.

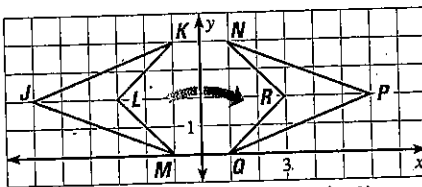


Name and describe the transformation. Then name the coordinates of the image. (Lesson 7.1)

translation; slide 8 units to the right; E(3, 1), F(3, 3), G(6, 3), H(6, 1)

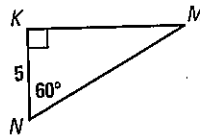
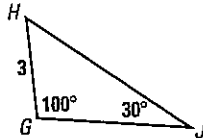
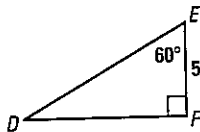
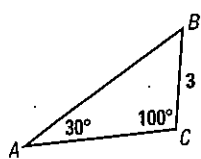


8.



reflection in the y -axis; $Q(1, 0)$, $R(3, 2)$,
 $N(1, 4)$, $P(6, 2)$

Use the diagrams to complete the statement. (Lesson 7.1)



9. $\triangle CBA \rightarrow ? \triangle GHJ$

10. $\triangle DEF \rightarrow ? \triangle MNK$

11. $? \rightarrow \triangle KNM \triangle FED$

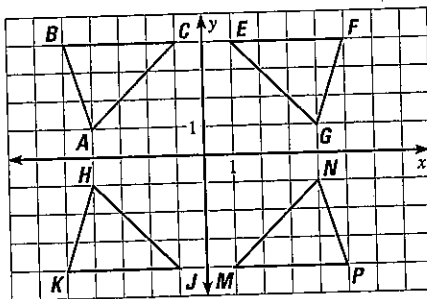
Use the diagram at the right to name the image of ABC after the reflection. If the reflection does not appear in the diagram, write *not shown*. (Lesson 7.2)

2. Reflection in the x -axis $\triangle HKJ$

3. Reflection in the y -axis $\triangle GFE$

4. Reflection in the line $y = x$ *not shown*

5. Reflection in the x -axis, followed by a reflection in the y -axis $\triangle NPM$



Find the coordinates of the reflection without using a coordinate plane. Then check your answer by plotting the image and preimage on a coordinate plane. (Lesson 7.2)

16. $M(5, 2)$ reflected in the x -axis $(5, -2)$

17. $N(-2, 4)$ reflected in the y -axis $(2, 4)$

18. $P(1, -8)$ reflected in the y -axis $(-1, -8)$

19. $Q(1, 12)$ reflected in the x -axis $(1, -12)$

6. Sample Answers:

$RQ = \sqrt{(-7 - (-5))^2 + (3 - 0)^2} = \sqrt{4 + 9} = \sqrt{13}$

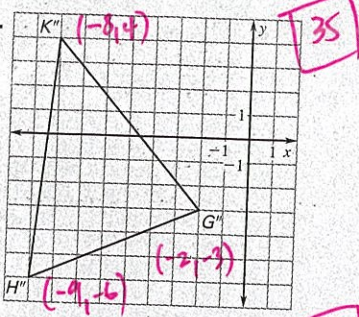
$YZ = \sqrt{(3 - 0)^2 + (7 - 5)^2} = \sqrt{9 + 4} = \sqrt{13}$

$RP = \sqrt{(-7 - (-2))^2 + (3 - 5)^2} = \sqrt{25 + 4} = \sqrt{29}$

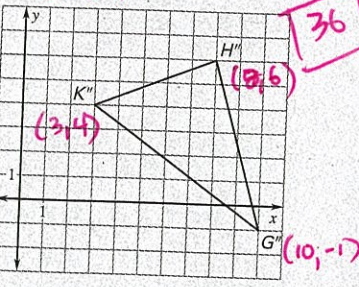
$YX = \sqrt{(3 - 5)^2 + (7 - 2)^2} = \sqrt{4 + 25} = \sqrt{29}$

$PQ = \sqrt{(-2 - (-5))^2 + (5 - 0)^2} = \sqrt{9 + 25} = \sqrt{34}$

$XZ = \sqrt{(5 - 0)^2 + (2 - 5)^2} = \sqrt{25 + 9} = \sqrt{34}$



35



36

(32)

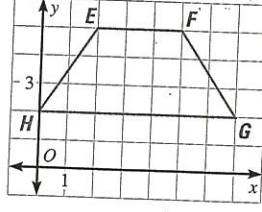
- S'(-1, -4)
- T'(C, -4)
- R'(-3, 8)
- V'(4, -8)

Find point C on the x -axis so $AC + BC$ is a minimum. (Lesson 7.2)

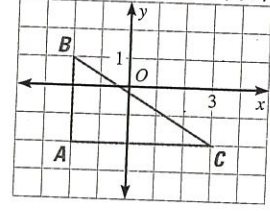
- 20. $A(1, 2), B(12, 5)$ (4, 0)
- 21. $A(3, 7), B(11, 7)$ (7, 0)
- 22. $A(-2, 7), B(-9, 5)$ (-6, 0)

Name the coordinates of the vertices of the image after a clockwise rotation of the given number of degrees about the origin. (Lesson 7.3)

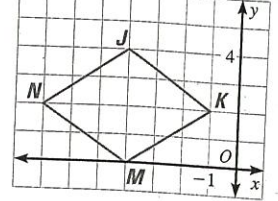
- 23. 90° $H'(2, 0), E'(5, -2), F'(5, -5), G'(2, -7)$



- 24. 270° $A'(2, -2), B'(-1, -2), C'(2, 3)$

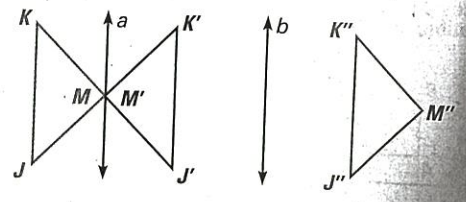


- 25. 180° $J'(4, -4), K'(1, -2), M'(4, 0), N'(7, -1)$



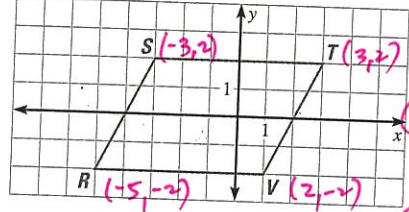
In the diagram, $a \parallel b$, $\triangle JKM$ is reflected in line a and $\triangle J'K'M'$ is reflected in line b . (Lesson 7.4)

- 26. A translation of $\triangle JKM$ maps onto which triangle? $\triangle J''K''M''$
- 27. Which lines are perpendicular to $\overleftrightarrow{KK''}$? a, b
- 28. Name two segments parallel to $\overleftrightarrow{MM''}$. $\overleftrightarrow{KK''}, \overleftrightarrow{JJ''}$



Copy figure $RSTV$ and draw its image after the translation. Then describe the translation using a vector in component form. (Lesson 7.4) Check sketches.

- 29. $(x, y) \rightarrow (x - 3, y + 5)$
- 30. $(x, y) \rightarrow (x + 1, y - 4)$
- 31. $(x, y) \rightarrow (x - 7, y + 7)$
- 32. $(x, y) \rightarrow (x + 2, y - 6)$



- (29) $S'(-6, 7), T'(0, 7)$
 $R'(-4, 3), V'(-1, 3)$
- (30) $S'(-2, -2), T'(4, -2)$
 $R'(-4, -6), V'(3, -6)$
- (31) $S'(-10, 9), T'(-4, 9)$
 $R'(-12, 5), V'(-5, 5)$

Sketch the image of $A(-6, -2)$ after the described glide reflection. (Lesson 7.5)

- 33. Translation: $(x, y) \rightarrow (x + 1, y + 3)$
Reflection: in the x -axis $(-5, -1)$
- 34. Translation: $(x, y) \rightarrow (x + 4, y - 3)$
Reflection: in $x = -4$ $(-6, -5)$

Sketch the image of $\triangle GHK$ after a composition using the given transformations in the order they appear. (Lesson 7.5) 35, 36. See margin.

- 35. $G(5, 3), H(-2, 6), K(-1, -4)$
Translation: $(x, y) \rightarrow (x - 7, y)$
Reflection: in the x -axis
- 36. $G(2, 1), H(0, -6), K(-5, -4)$
Translation: $(x, y) \rightarrow (x + 8, y)$
Reflection: in the x -axis

Describe each frieze pattern according to the following seven categories: T, TR, TG, TV, THG, TRVG, and TRHVG. (Lesson 7.6)

