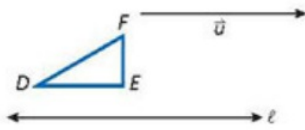


HW 9.4 p630 online

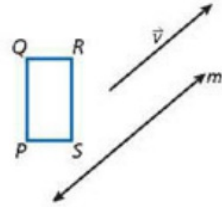
#2-10, 12-13, 15-19, 23-25

Draw the result of each composition of isometries.

2. Translate $\triangle DEF$ along \vec{u} and then reflect it across line ℓ .

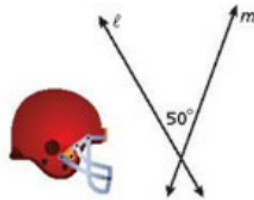


3. Reflect rectangle PQRS across line m and then translate it along \vec{v} .



4. $\triangle ABC$ has vertices $A(1, -1)$, $B(4, -1)$, and $C(3, 2)$. Reflect $\triangle ABC$ across the y -axis and then translate it along the vector $\langle 0, -2 \rangle$.

5. **Sports** To create the opening graphics for a televised football game, an animator reflects a picture of a football helmet across line ℓ . She then reflects its image across line m , which intersects line ℓ at a 50° angle. Describe a single transformation that moves the helmet from its starting position to its final position.

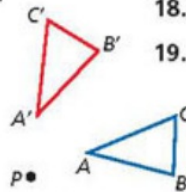


Copy each figure and draw two lines of reflection that produce an equivalent transformation.

6. translation:
 $\triangle EFG \rightarrow \triangle E'F'G'$

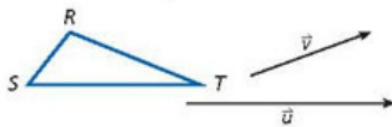


7. rotation with center P :
 $\triangle ABC \rightarrow \triangle A'B'C'$

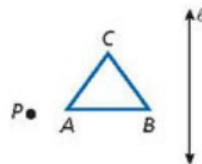


Draw the result of each composition of isometries.

8. Translate $\triangle RST$ along \vec{u} and then translate it along \vec{v} .



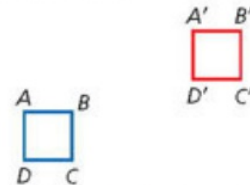
9. Rotate $\triangle ABC$ 90° about point P and then reflect it across line ℓ .



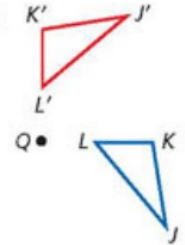
10. $\triangle GHJ$ has vertices $G(1, -1)$, $H(3, 1)$, and $J(3, -2)$. Reflect $\triangle GHJ$ across the line $y = x$ and then reflect it across the x -axis.

Copy each figure and draw two lines of reflection that produce an equivalent transformation.

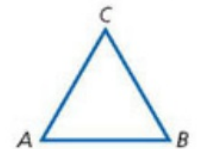
12. translation:
 $ABCD \rightarrow A'B'C'D'$



13. rotation with center Q :
 $\triangle JKL \rightarrow \triangle J'K'L'$



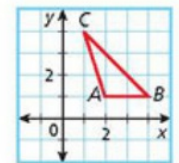
15. Equilateral $\triangle ABC$ is reflected across \overline{AB} . Then its image is translated along \overline{BC} . Copy $\triangle ABC$ and draw its final image.



Tell whether each statement is sometimes, always, or never true.

16. The composition of two reflections is equivalent to a rotation.
17. An isometry changes the size of a figure.
18. The composition of two isometries is an isometry.
19. A rotation is equivalent to a composition of two reflections.

23. $\triangle ABC$ is reflected across the y -axis. Then its image is rotated 90° about the origin. What are the coordinates of the final image of point A under this composition of transformations?
(A) $(-1, -2)$ (B) $(-2, 1)$ (C) $(1, 2)$ (D) $(-2, -1)$



24. Which composition of transformations maps $\triangle ABC$ into the fourth quadrant?
(F) Reflect across the x -axis and then reflect across the y -axis.
(G) Rotate about the origin by 180° and then reflect across the y -axis.
(H) Translate along the vector $\langle -5, 0 \rangle$ and then rotate about the origin by 90° .
(J) Rotate about the origin by 90° and then translate along the vector $\langle 1, -2 \rangle$.

25. Which is equivalent to the composition of two translations?
(A) Reflection (B) Rotation (C) Translation (D) Glide reflection

