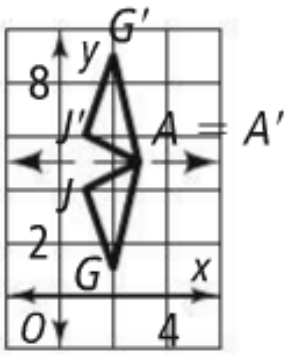
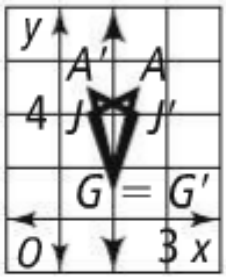
1. $(-5, -3)$ **2.** $(1, -1)$

3. $J'(1, 6), A'(3, 5), G'(2, 9)$



4. $J'(3, 4), A'(1, 5), G'(2, 1)$

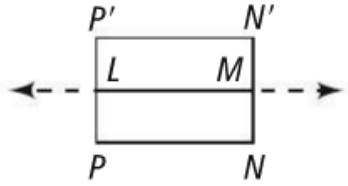


5. **a.** Figure 3 = R_j (Figure 1) because line j is the perpendicular bisector of the line segments between corresponding vertices of Figures 1 and 3.

b. Figure 2 = R_n (Figure 4) because line n is the perpendicular bisector of the line segments between corresponding vertices of Figures 2 and 4.

c. Figure 4 = R_n (Figure 2) because line n is the perpendicular bisector of the line segments between corresponding vertices of Figures 4 and 2.

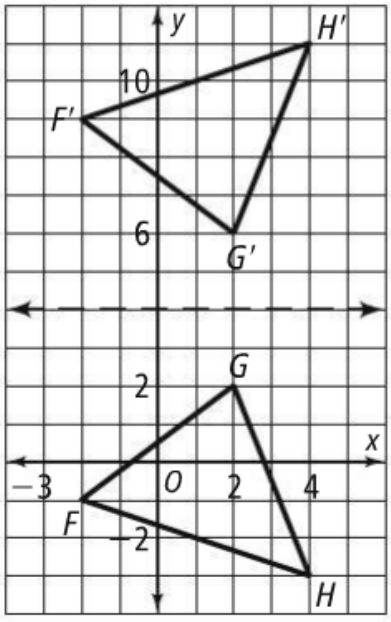
6. **a.**



b. square; Since $R_{\overline{LM}}(M) = M$, $R_{\overline{LM}}(N) = N'$, and reflections preserve distance, $R_{\overline{LM}}(\overline{MN}) = \overline{MN'}$. So, $MN = MN'$ and $NN' = 2MN$. Since $LM = 2MN$ and $NN' = 2MN$, by substitution $LM = NN'$. Therefore, in the new figure $PNN'P'$ the length equals the width, so the figure is a square.

7. $(-4, -3)$ **8.** $(4, 2)$

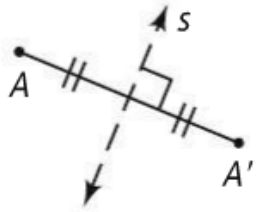
9.



10. The line of reflection is the ⊥ bis. of any seg. whose endpts. are corresp. pts. of the preimage and image.

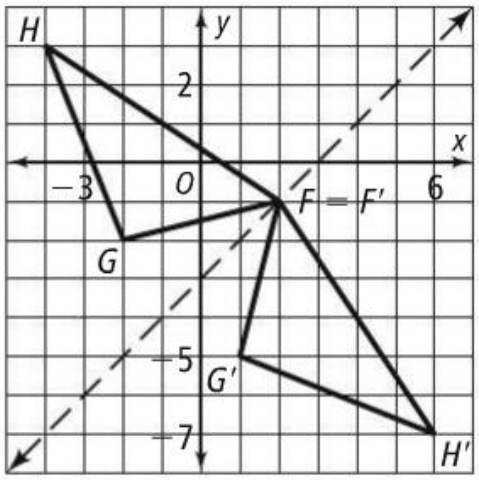
11. **a.** $\overline{AA'}$ should be ⊥ to r.

b.



12. $R_{y\text{-axis}}(x, y) = (-x, y)$; $R_{x\text{-axis}}(x, y) = (x, -y)$

15.

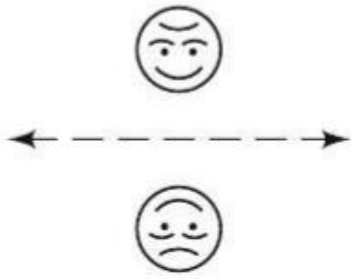


16. **a.** (3, 5), (1.5, 3.5)

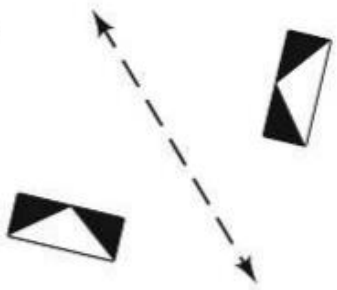
b. $y = x + 2$

c. $R_{y=x+2}(ABCDE) = A'B'C'D'E'$

17.



18.



21. (0, −6)

22. (4, 0)

23. (0, 0)