PROGRESS SELF-TEST

recall
notation ⇓

r = reflection
R = rotation
T = translation
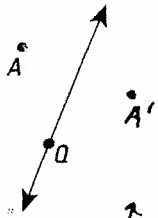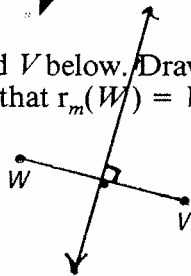
Directions: Take this test as you would take a test in class. Use a ruler, compass, and graph paper. Then check your work with the solutions in the Selected Answers section in the back of the book.
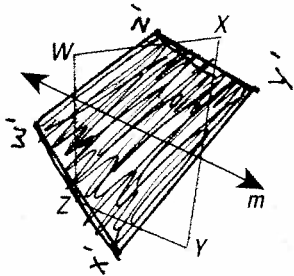
1. Trace the figure below.
   a. Draw $r_\ell(A)$.   b. Draw $r_\ell(Q)$.

2. Trace W and V below. Draw the reflecting line m such that $r_m(W) = V$.

3. Trace the figure below. Draw the reflection image of $WXYZ$ over line m.

In 4 and 5, given $r_m(A) = B$ and $r_m(C) = D$. Justify each conclusion.

4. $AC = BD$ ABCD Theorem   5. $m \perp \overline{AB}$ def'n of reflection

D 6. The composite of three reflections can be which of the following?
   (a) reflection   (b) translation
   (c) rotation   (d) glide reflection

7. Give the image of $(4, -11)$ when translated by the vector $(3, -1)$. $(7, -12)$

8. Name five properties preserved by rotations.
   angles, betweenness, collinearity, distance and orientation

9. $\triangle MNP$ below has vertices $M = (-2, 0)$, $N = (5, -1)$, and $P = (-3, 4)$. Give the vertices of the reflection image of $\triangle MNP$ over the x-axis.

$$\begin{bmatrix} -2 & 5 & -3 \\ 0 & 1 & -4 \end{bmatrix}$$
$$\;\; m \;\; N \;\; P$$

$P = (-3, 4)$
$M = (-2, 0)$
$N = (5, -1)$
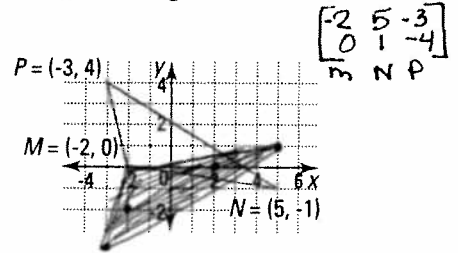
10. $\triangle ABC$ below was reflected over line m, then its image was reflected over line n. What angle of $\triangle JKL$ has the same measure as $\angle C$? $\angle L$

$R_{110°}$
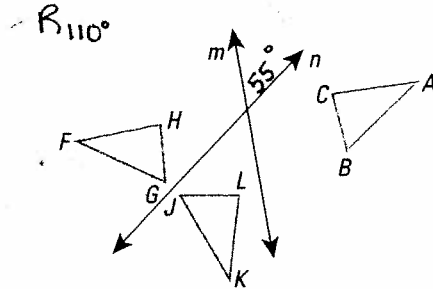
11. In the figure below, $\triangle X'Y'Z'$ is the image of $\triangle XYZ$ under a glide reflection. Line m is the glide-reflecting line. Trace the figure and draw the translation vector.
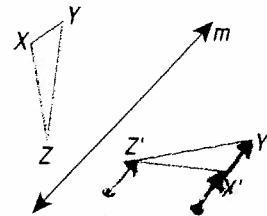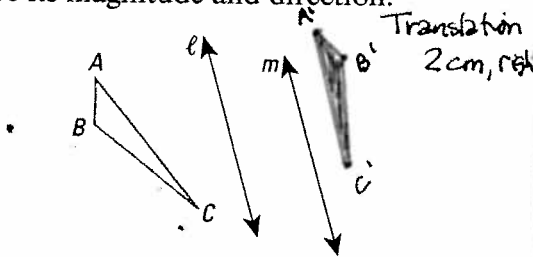
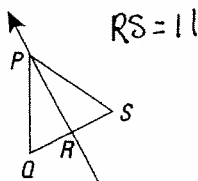12. Trace the figure below. Draw the image and describe the transformation $r_t \circ r_s(\triangle PQR)$.

$R_{-150°}$
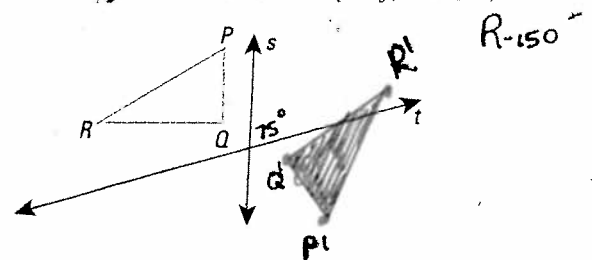
PROGRESS SELF-TEST

13. In the drawing below, $\ell \parallel m$.
   a. Draw $r_\ell \circ r_m(\triangle ABC)$.
   b. Name the composite transformation and describe its magnitude and direction.

Translation 2cm, right

14. To rotate $\triangle WIN$ -50° about a point Q, you can successively reflect it over two lines that form an angle of __25__ whose vertex is __Q__.

15. In the figure below, $\ell \parallel m$ and $\ell \perp n$. Describe the transformation $r_\ell \circ r_m$.

translation 10cm

5 cm
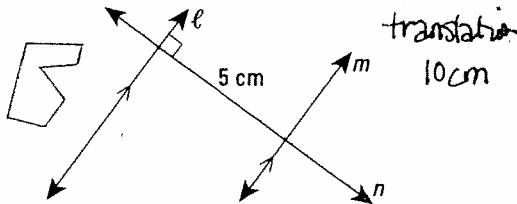
16. In the figure below, $r_{\overrightarrow{PR}}(Q) = S$. If $QR = 11$, find RS.
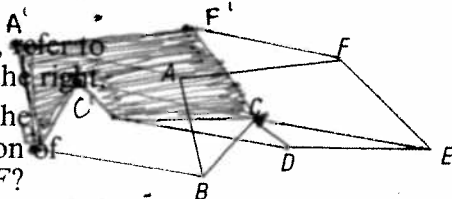
RS = 11

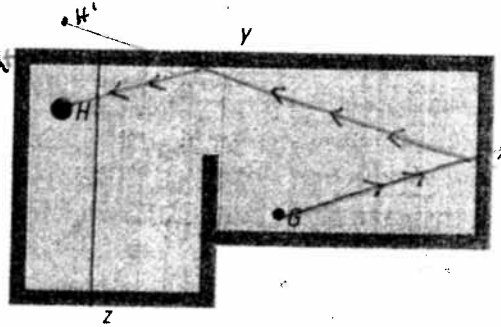In 17 and 18, refer to the figure at the right.

17. What is the orientation of $ABCDEF$?
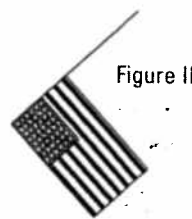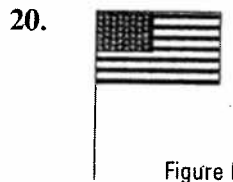
Counterclockwise

18. Trace the figure. Draw the translation image of $ABCDEF$ determined by vector $\overrightarrow{EC}$.
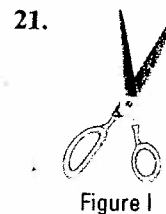
19. Trace the diagram of the miniature-golf hole below. Draw the path a ball at G must take if it is to bounce off of x and then y and go into the hole at H.

In 20 and 21, name the type of isometry that maps Figure I onto Figure II.

20.

Figure I

Figure II

21.

Figure I

Figure II

reflection of rotation

glide reflection

22. a. Draw and label a figure so that $r_p(MILD) = COLD$.   *Answers vary*
   b. From your figure give another name for p.

23. *Multiple choice.* Which letter below is not congruent to the others?

$\curlyvee$ Y y $\curlyvee$

(a)   (b)   (c)   (d)

wrong orientation