6. Answers will vary.

Rectangle E:

a. Any rectangle with dimensions $6k$ by $12k$, where $k$ is any positive number, is similar to rectangle E, because the ratio of the corresponding sides will be the same.

b. The scale factor from rectangle E to the new rectangle is $k$.

Rectangle F:

a. Any rectangle with dimensions $4k$ by $10k$, where $k$ is any positive number, is similar to rectangle F, because the ratio of the corresponding sides will be the same.

b. The scale factor from rectangle F to the new rectangle is $k$.

Rectangle G:

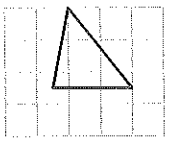
a. Any rectangle with dimensions $6k$ by $4k$, where $k$ is any positive number, is similar to rectangle G, because the ratio of the corresponding sides will be the same.

b. The scale factor from rectangle G to the new rectangle is $k$.

7. a. Rectangles H and P, triangles R and Q, and parallelograms M and N.

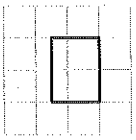
b. The scale factor from H to P is 2, from R to Q is $\frac{3}{2}$, and from N to M is $\frac{3}{2}$.

8. a.



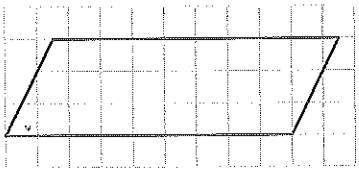
**base: 2.5**
**height: 2.5**

b.



**base: 1.5**
**height: 2**

c.



**base: 9**
**height: 3**

9. angle $A = 67°$ 10. angle $Q = 64°$

11. angle $P = 67°$ 12. side $AB = 38$ in.

13. side $AC = 45$ in.

14. perimeter $ABC = 129$ in.

15. C 16. F 17. C 18. H

19. 192 $cm^2$ 20. 10 21. 10 cm by 14 cm

## Connections

22. a. $a = 120°, b = 60°, c = 60°, d = 120°, e = 60°, f = 120°, g = 60°$

b. Student may list any combination of angles as long as the pairs sum to 180°. See answer in Question A. For example: angles $a$ and $b$, $a$ and $c$, $a$ and $e$ are all pairs of supplementary angles.

23. a. 20° b. 90° c. $180° - x$

24. a. 6 m; since the scale factor from the smaller to the larger is 2, side $RS$ is 6 m.

b. 10 m; 10 m = 5 m × 2.

c. 50°

d. 50°; since the sum of the angles in triangle $STR$ is 180° and two angles are known, 80° and angle $y = 50°$, we know that angle $R$ must be $180° - (80° + 50°) = 50°$. Since the triangles are similar angle $C$ is also 50° since it corresponds to angle $R$.

e. Angles $R$ and $Q$, angles $C$ and $B$, angles $R$ and $B$, and angles $Q$ and $C$ are all complementary.

25. Students may have a couple of ways of solving these problems. Below is one possible solution for part (d). Similar thinking can apply to all parts.

The scale factor that takes 8 to 2 is $\frac{1}{4}$.

Therefore, I need $\frac{1}{4}$ of 12, which is 3.

a. 6 b. 20 c. 8

d. 3 e. 60 f. 15

26. a. 2 b. 0.5 c. 1.5

d. 1.25 e. 0.75 f. 0.25