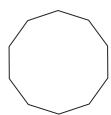## Lesson 10.3   Area of Other Polygons

Give the minimum number of identical triangles you could divide each regular polygon into so that you could find the area of the polygon.
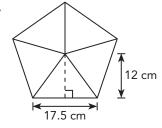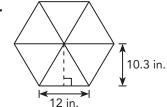
1.

2.

Use the given information to find the area of each regular polygon.
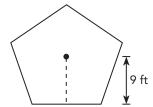
3.

12 cm

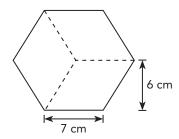17.5 cm

4.

10.3 in.

12 in.

Solve.

5. A playground in the shape of a regular pentagon has an area of 292.5 square feet. Find the length of each side of the playground.
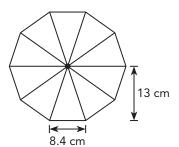
9 ft

6. A wooden frame in the shape of a regular hexagon is 93.6 square inches. The length of each side of the hexagon is 6 inches. Find the height of the hexagon.
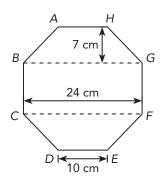
6 in.

7. A regular hexagon is formed by 3 identical rhombuses. The height of each rhombus is 6 centimeters and its base is 7 centimeters. Find the area of the hexagon.

6 cm

7 cm
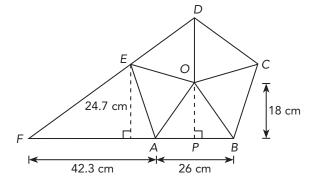
8. Find the area of the regular polygon.
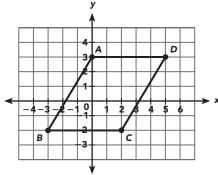
13 cm

8.4 cm

9. Use the given information to find the area of the regular polygon *ABCDEFGH*.

10. The figure is formed by a regular pentagon and a triangle. Find the area of the figure.
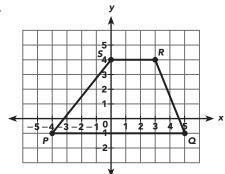
15.

The coordinates of point *C* are (2, −2).
Base = 5 units, height = 5 units
Area of parallelogram *ABCD*
= 5 · 5 = 25 square units

16.

RS = 3 units, *PQ* = 9 units,
height = 5 units
Area of trapezoid *PQRS*
= $\frac{1}{2}$ · 5(3 + 9) = 30 square units

17. $\frac{1}{2}$ · 8(*JN* + 20) = 136

4(*JN* + 20) = 136
JN = 136 ÷ 4 − 20 = 14 miles

18. $\frac{1}{2}$ · *h*(20 + 28) = 312

h = 312 · 2 ÷ 48
  = 13 yards
Area of triangle *ABC*
= $\frac{1}{2}$ · 20 · 13 = 130 square yards

Lesson 10.3
 1. 7 triangles
 2. 10 triangles
 3. Area of a triangle
   = $\frac{1}{2}$ · 17.5 · 12
   = 105 cm²
   Area of the pentagon
   = 5 · 105
   = 525 square centimeters

 4. Area of a triangle
   = $\frac{1}{2}$ · 12 · 10.3
   = 61.8 in.²
   Area of the hexagon
   = 6 · 61.8
   = 370.8 square inches
 5. The pentagon is made up of 5 identical
   triangles.
   Area of each triangle
   = 292.5 ÷ 5 = 58.5 ft²
   1 side of the pentagon
   = $\frac{58.5 \cdot 2}{9}$ = 13 feet
 6. The hexagon is made up of
   6 identical triangles.
   Area of each triangle
   = 93.6 ÷ 6 = 15.6 in.²
   Height of each triangle
   = $\frac{15.6 \cdot 2}{6}$ = 5.2 in.
   Height of the hexagon
   = 5.2 · 2 = 10.4 inches
 7. Area of the hexagon
   = 3 · (7 · 6)
   = 126 square centimeters
 8. Area of a triangle
   = $\frac{1}{2}$ · 8.4 · 13
   = 54.6 cm²
   Area of the polygon
   = 54.6 · 10
   = 546 square centimeters
 9. Area of trapezoid *ABHG*
   = Area of trapezoid *CDEF*
   = $\frac{1}{2}$(10 + 24) · 7
   = 119 cm²
   Area of rectangle *BCGF*
   = 24 · 10
   = 240 cm²
   Area of the polygon
   = 119 + 119 + 240
   = 478 square centimeters
 10. Area of triangle *OAB*
   = $\frac{1}{2}$ · 18 · 26
   = 234 cm²
   Area of the pentagon
   = 234 · 5
   = 1,170 cm²
   Area of triangle *AEF*
   = $\frac{1}{2}$ · 42.3 · 24.7
   = 522.405 cm²
   Area of the figure
   = 1,170 + 522.405
   = 1,692.405 square centimeters