

LESSON
13-4

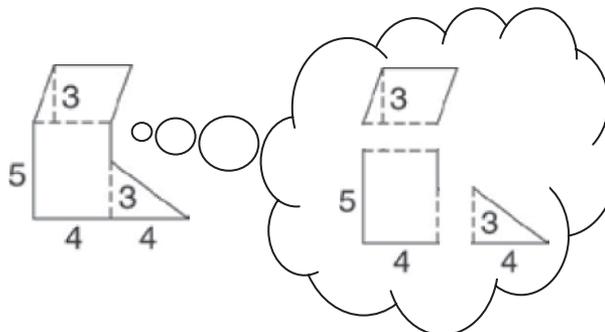
Area of Polygons

Reteach

Sometimes you can use area formulas you know to help you find the area of more complex figures.

You can break a polygon into shapes that you know. Then use those shapes to find the area.

The figure at right is made up of a triangle, a parallelogram, and a rectangle.



Triangle

$$\begin{aligned}
 A &= \frac{1}{2}bh \\
 &= \frac{1}{2}(3 \times 4) \\
 &= 6 \text{ square units}
 \end{aligned}$$

Parallelogram

$$\begin{aligned}
 A &= bh \\
 &= 3 \times 4 \\
 &= 12 \text{ square units}
 \end{aligned}$$

Rectangle

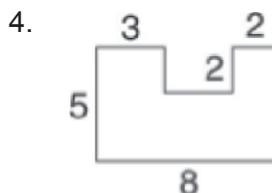
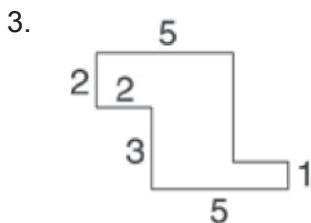
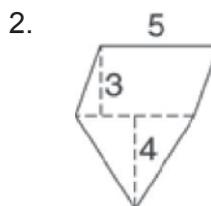
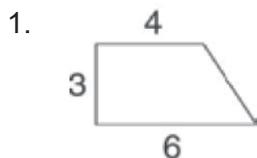
$$\begin{aligned}
 A &= lw \\
 &= 4 \times 5 \\
 &= 20 \text{ square units}
 \end{aligned}$$

Finally, find the sum of all three areas.

$$6 + 12 + 20 = 38$$

The area of the whole figure is 38 square units.

Find the area of each figure.



LESSON 13-4

Practice and Problem Solving: A/B

1. 5 in^2
2. 7 cm^2
3. 12 ft^2
4. 6 m^2
5. 24 yd^2
6. 17 mi^2
7. $109,600 \text{ mi}^2$
8. $63,800 \text{ mi}^2$

Practice and Problem Solving: C

1. 106 in^2
2. 13.4 m^2
3. 107 ft^2
4. 322 yd^2
5. $48\frac{3}{4} \text{ m}^2$
6. 85.5 mi^2
7. 7 ft by 3 ft
8. $99\frac{7}{16}$ or 99.4375 yd^2

Practice and Problem Solving: D

1. 18 ft^2
2. 13 in^2
3. 30 ft^2
4. 68 m^2
5. 8 ft^2
6. 18 m^2

Reteach

1. 15 square units
2. 25 square units
3. 21 square units
4. 34 square units

Reading Strategies

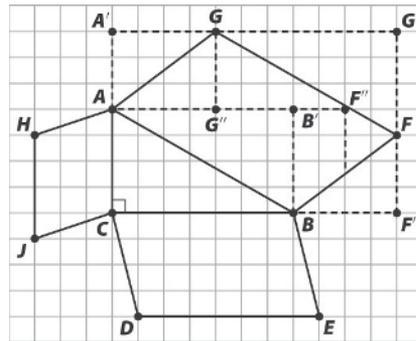
1. length: 7 cm; width: 5 cm
2. $A = l \cdot w$
3. 35 cm^2
4. 18 cm^2
5. Add them.
6. 53 cm^2

Success for English Learners

1. $1,650 \text{ ft}^2$

MODULE 13 Challenge

1. 12 and 28 square units
2. 40 square units
3. Answers may vary, depending on how the triangles are drawn inside $ABFG$.



As shown, the triangles and the trapezoid inside $ABFG$ have a total area of about $36\frac{1}{2}$ square units. The area of the large rectangle $A'G'F'C$ is 77 square units; the triangles $AA'G$, $GG'F$, ABC , and BFF' have areas of 6, 6, 14, and 14 square units for a total of 40 square units, which gives an area for $ABFG$ of 37 square units. The area of $ABFG$ is about 37 square units, so there is a small difference between the areas of $ABFG$ and the sum of the areas of $ACHJ$ and $BCDE$.

4. The measure of AB is $\sqrt{65}$ units.
5. Answers will vary, but students should infer that the area of $ABFG$ may not be a whole number like 37 because at least one of the two quantities used to compute the area is irrational. Students might also question whether the sum of the areas of the smaller parallelograms equals the area of the larger parallelogram.