

Activity
4.3

Warm Up

For use before Activity 4.3

Find the area of the figure.

1. triangle with $b = 3$ and $h = 6$
2. square with $s = 12$
3. parallelogram with $b = 5$ and $h = 20$
4. rectangle with $b = 4$ and $h = 11$
5. triangle with $b = 8$ and $h = 5$
6. square with $s = 21$

Lesson 4.3

January 13, 2014

Essential Question

How can you derive the formula for the area of a trapezoid?

Lesson 4.3

January 13, 2014

Lesson Target

To be able to:

- derive and use the formula to find the areas of several trapezoids.

Self-Evaluation Rubric

Score	Description
4	I can teach other students how to derive and use the formula to find the areas of several trapezoids.
3	I can derive and use the formula to find the areas of several trapezoids.
2	I recognize how to derive and use the formula to find the areas of several trapezoids.
1	I do not know how to derive and use the formula to find the areas of several trapezoids.

Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

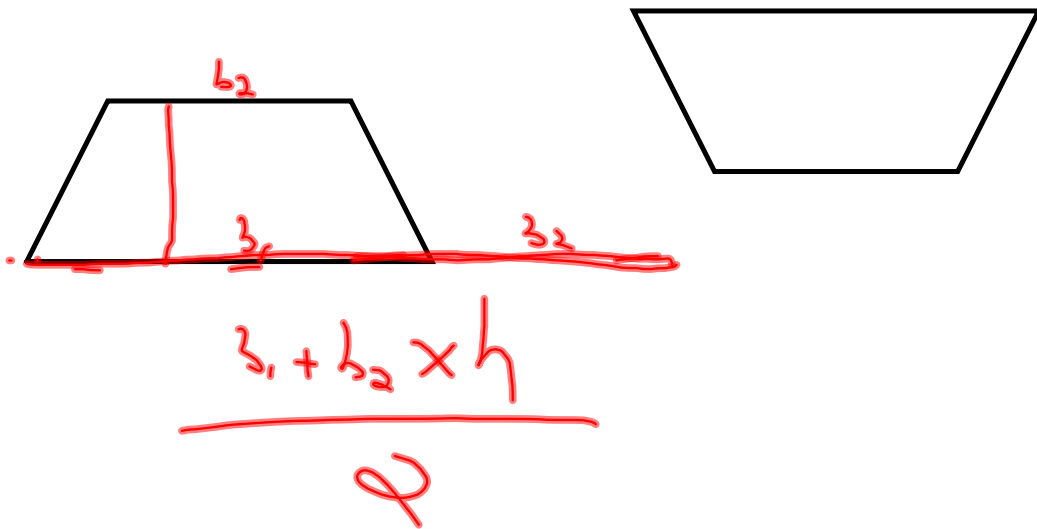
Activity 1

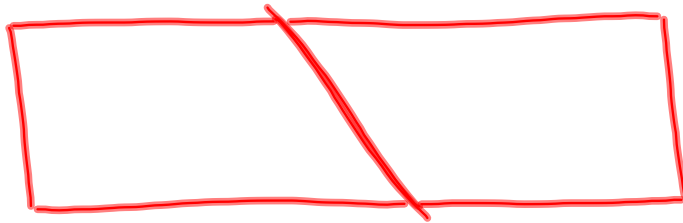
With a partner(s) work on
Activity 1 on page **85** in the so
cover Big Ideas and Pracce
Journal.

Activity 2

With a partner(s) work on
Activity 2 on page **86** in the so
cover Big Ideas and Pracce
Journal.

$$A = \frac{1}{2}h(b_1 + b_2)$$





$$2^1 \cdot 2 \cdot 4$$

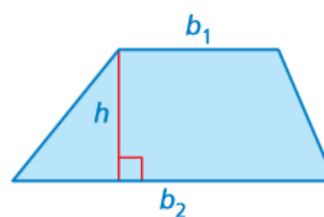
Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

Key Idea

Area of a Trapezoid

Words The area A of a trapezoid is one-half the product of its height h and the sum of its bases b_1 and b_2 .

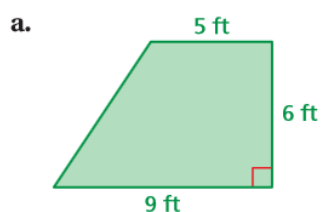
Algebra $A = \frac{1}{2}h(b_1 + b_2)$



Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

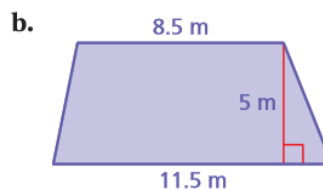
1 Finding Areas of Trapezoids

Find the area of each trapezoid.



$$\begin{aligned}
 A &= \frac{1}{2}h(b_1 + b_2) && \text{Write formula.} \\
 &= \frac{1}{2}(6)(5 + 9) && \text{Substitute.} \\
 &= \frac{1}{2}(6)(14) && \text{Add.} \\
 &= 42 && \text{Multiply.}
 \end{aligned}$$

❖ The area of the trapezoid is 42 square feet.



$$\begin{aligned}
 A &= \frac{1}{2}h(b_1 + b_2) \\
 &= \frac{1}{2}(5)(8.5 + 11.5) \\
 &= \frac{1}{2}(5)(20) \\
 &= 50
 \end{aligned}$$

❖ The area of the trapezoid is 50 square meters.

$$\begin{array}{cc} b_1 & b_2 \\ 2b & b^2 \end{array}$$

Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

$$\frac{8 \cdot 4}{2} = \frac{8}{2} \cdot \frac{4}{1} = \frac{8}{1} \cdot \frac{4}{2}$$

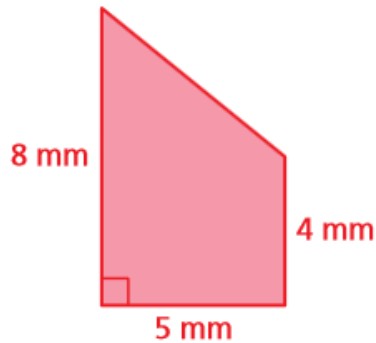
Try it!

$$A = \frac{h(b_1 + b_2)}{2}$$

On Your Own

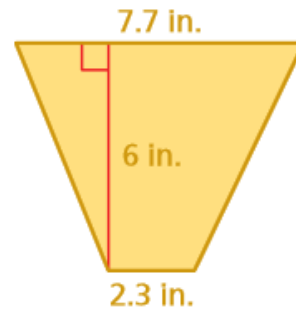
Find the area of the trapezoid.

1.



$$A = 22 \text{ ft}^2$$

2.

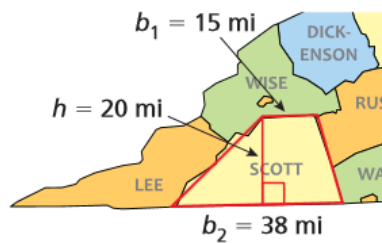


$$A = 110 \text{ m}^2$$

Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

3 Real-Life Application

You can use a trapezoid to approximate the shape of Scott County, Virginia. The population is about 23,200. About how many people are there per square mile?



Find the area of Scott County.

$$\begin{aligned}
 A &= \frac{1}{2}h(b_1 + b_2) && \text{Write formula for area of a trapezoid.} \\
 &= \frac{1}{2}(20)(15 + 38) && \text{Substitute 20 for } h, 15 \text{ for } b_1, \text{ and } 38 \text{ for } b_2. \\
 &= \frac{1}{2}(20)(53) = 530 && \text{Simplify.}
 \end{aligned}$$

The area of Scott County is about 530 square miles. Divide the population by the area to find the number of people per square mile.

So, there are about $\frac{23,200 \text{ people}}{530 \text{ mi}^2} \approx 44$ people per square mile.

Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

Assignment

Do numbers:

4, 6, 8, 10, 13, 14, 15, 17, 20, 22

on pages 170 & 171 of your (hard cover)
Big Ideas Text Book.

Lesson Target: To be able to derive and use the formula to find the areas of several trapezoids.

Homework

Big Ideas Record and
Pracce Journal
(so cover)
Page 88

