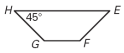
8.6 Area of Trapezoids

Goal: To be able to find the area of trapezoids

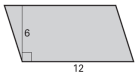
Warm Up

In Exercises 1–3, use isosceles trapezoid *EFGH*.

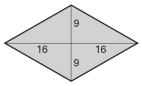


1. Name the bases of trapezoid *EFGH*.
2. Name the legs of trapezoid *EFGH*.
3. Find the missing angle measures.

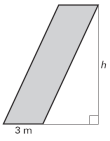
1. Find the area of the parallelogram.



2. Find the area of the rhombus.



3. The area of the parallelogram is 27 square meters. Find the height.



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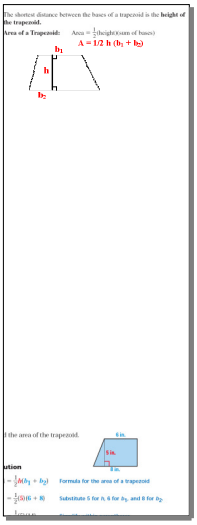

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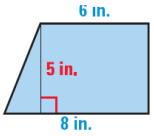
Find the Area of a Trapezoid

Find the area of the trapezoid.



Solution

$A = \frac{1}{2}h(b_1 + b_2)$ Formula for the area of a trapezoid

$= \frac{1}{2}(5)(6 + 8)$ Substitute 5 for h, 6 for b_1, and 8 for b_2.

$= \frac{1}{2}(5)(14)$ Simplify within parentheses.

$= 35$ Simplify.

The area of the trapezoid is 35 square inches.

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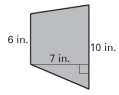
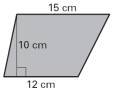
Find the area of the trapezoid.

1.

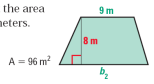


2.



Use the Area of a Trapezoid

Find the value of b_2 given that the area of the trapezoid is 96 square meters.



Solution

$A = \frac{1}{2}h(b_1 + b_2)$ Formula for the area of a trapezoid

$96 = \frac{1}{2}(8)(9 + b_2)$ Substitute 96 for A, 8 for h, and 9 for b_1.

$192 = 8(9 + b_2)$ Multiply each side by 2.

$192 = 72 + 8b_2$ Use the distributive property.

$120 = 8b_2$ Subtract 72 from each side.

$15 = b_2$ Divide each side by 8.

ANSWER The value of b_2 is 15 meters.

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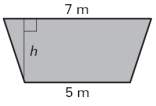
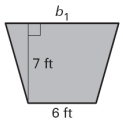
Exercises for Example 2

***A* gives the area of the trapezoid. Find the missing measure.**

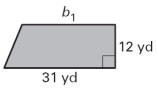
4. $A = 18\ m^2$



5. $A = 56\ ft^2$



6. $A = 342\ yd^2$



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