10-2 Solve It!

Getting Ready!

Rearranging figures into familiar shapes is an example of the Solve a Simpler Problem strategy.
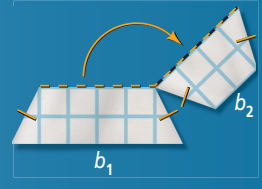
Draw a trapezoid on a sheet of graph paper. Label the bases b_1 and b_2. Draw its midsegment. Cut out the trapezoid, and then cut it along the midsegment. Rotate the top part of the trapezoid 180° so that b_1 and b_2 now form one long base. How can you use this new figure to find the area of the trapezoid? Explain your reasoning.
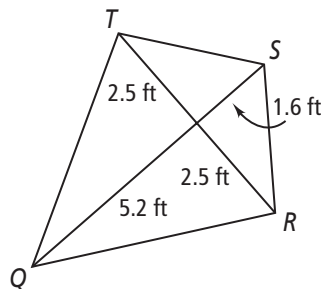
10-2 Lesson Quiz

1. What is the area of the trapezoid below?

3.2 cm

4.6 cm

7.5 cm
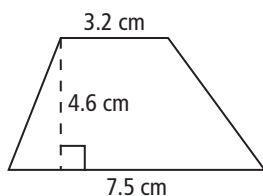
2. What is the area of kite $QRST$?

T
S
2.5 ft
1.6 ft
2.5 ft
5.2 ft
R
Q

3. Suppose the area of a trapezoid is 126 yd^2. If the bases of the trapezoid are 17 yd and 11 yd long, what is the height?

4. Do you UNDERSTAND? Suppose a square has side length s. How could you use the formula for the area of a trapezoid to find the area of the square?

Answers

Solve It!

The new figure is a ▱ with base $b_1 + b_2$ and height $\frac{1}{2}h$.
$A = (b_1 + b_2) \cdot \frac{1}{2}h$ or
$A = \frac{1}{2}h(b_1 + b_2)$.

Lesson Quiz

1. 24.61 cm^2

2. 17 ft^2

3. 9 yd

4. For a square,
$h = b_1 = b_2 = s$.

Substituting into the trapezoid area formula, you get $A = \frac{1}{2}s(s + s) = \frac{1}{2}s(2s) = s^2$. This result is consistent with the formula for the area of a square.