LESSON MAKER PRO

# Solve the Shape

*Use equations to find missing lengths and angles.*

**HIGH SCHOOL · A1.A.1.1**

**A1.A.1.1** "Use knowledge of solving equations with rational values to represent, use and apply mathematical models (e.g., angle measures, geometric formulas, dimensional analysis, Pythagorean theorem, science, statistics)..."

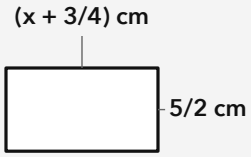
NAME _____ DATE _____

## FROM FIGURE TO EQUATION

Choose a formula or angle rule that fits the figure, then substitute the measurements shown. Solve using fraction operations and check that your answer makes sense as a length or angle.

### WORKED EXAMPLE

The rectangle has a perimeter of 17 cm. Find x and the length of the side labeled with x.

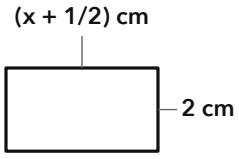



1. 2(x + 3/4) + 2(5/2) = 17
2. 2x + 13/2 = 17
3. 2x = 21/2
4. x = 21/4, so x + 3/4 = 6.

**Answer: x = 21/4; the labeled side is 6 cm.**

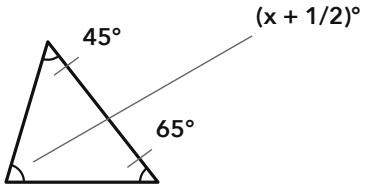
## PRACTICE 6 problems

**1** The rectangle has a perimeter of 15 cm. Find x.



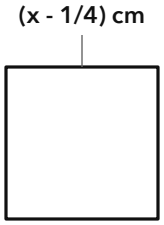

ANSWER _____

**2** Find x using the angles shown in the triangle.



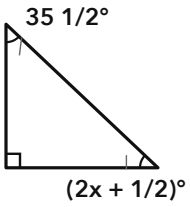

ANSWER _____

**3** The square has a perimeter of 19 cm. Find x.



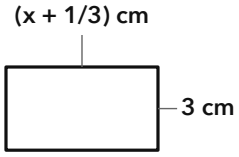

**ANSWER** _____

**4** Find x using the angles shown in the right triangle.



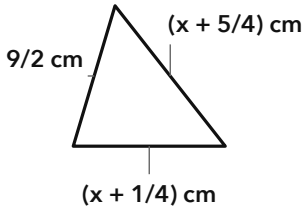

**ANSWER** _____

**5** The rectangle has an area of 22 $cm^2$. Find x.




**ANSWER** _____

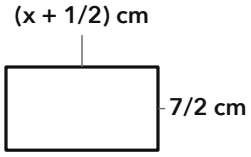
**6** The triangle has a perimeter of 16 cm. Find x.




**ANSWER** _____

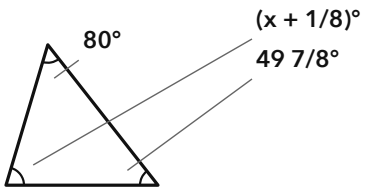
## APPLY IT Show your work

**1** You use 19 cm of trim to outline a rectangular sticker for your laptop. Find x and the length of the side labeled with x.




**ANSWER** _____

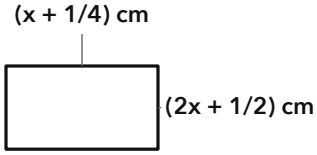
**2** You design a triangular pennant for a school club. Find x and the measure of the angle labeled with x.




**ANSWER** _____

## CHALLENGE One step up

The rectangle has a perimeter of 19 1/2 cm. Write a perimeter equation, then find x and both side lengths.




WORK SPACE AND ANSWER

**ANSWER KEY**

# Solve the Shape



## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | The rectangle has a perimeter of 15 cm. Find x. | **x = 5** |
| 2 | Find x using the angles shown in the triangle. | **x = 69 1/2** |
| 3 | The square has a perimeter of 19 cm. Find x. | **x = 5** |
| 4 | Find x using the angles shown in the right triangle. | **x = 27** |
| 5 | The rectangle has an area of 22 $cm^2$. Find x. | **x = 7** |
| 6 | The triangle has a perimeter of 16 cm. Find x. | **x = 5** |

## PART 2 · APPLY IT

1. **x = 11/2; the labeled side is 6 cm.** Use the perimeter equation 2(x + 1/2) + 2(7/2) = 19 to get x = 11/2. Then x + 1/2 = 6 cm.
2. **x = 50; the labeled angle measures 50 1/8°.** The three angles sum to 180°, so x + 1/8 + 49 7/8 + 80 = 180. Thus x = 50, and the labeled angle is 50 1/8°.

## CHALLENGE

**2(x + 1/4) + 2(2x + 1/2) = 19 1/2; x = 3. The side lengths are 13/4 cm and 13/2 cm.**

Accept equivalent fractions or mixed numbers. For the challenge, accept any equivalent perimeter equation that uses both pairs of equal sides.