

# Perimeter & Algebra - Triangle Lengths



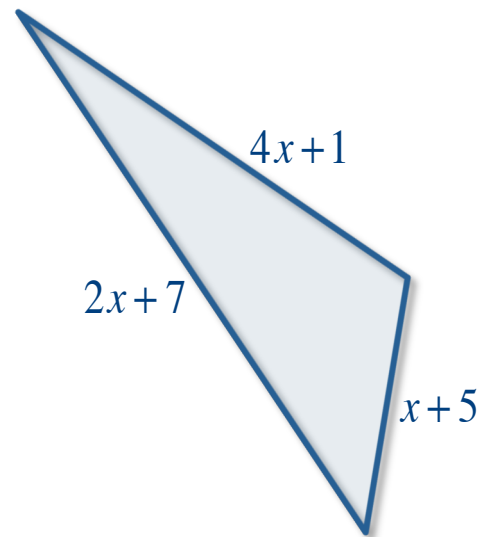
Algebra problems can relate to any area of math. In this tutorial, I'll use my algebra knowledge to calculate the unknown side lengths of a triangle.

- The perimeter of the triangle is 27cm.
- The measure of each side of the triangle is represented with an algebraic expression.
- Calculate the measure for each side of the triangle in centimeters.

A student begins their solution by writing the following multi-step equation.

$$2x + 7 + 4x + 1 + x + 5 = 27$$

- How would I explain the information shown on each side of this equation?
- How does the equation help to explain or define perimeter?

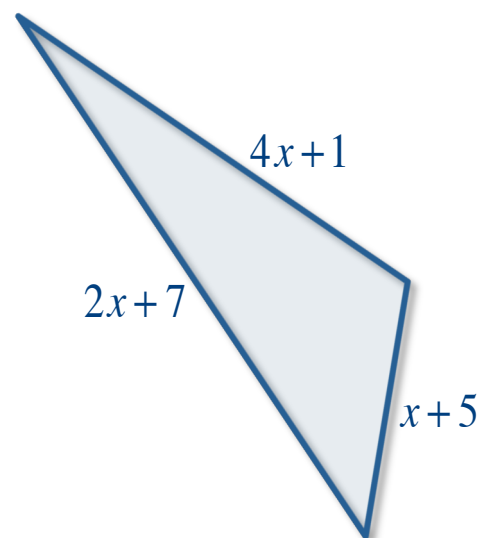


The student performs their next solution step.

$$2x + 7 + 4x + 1 + x + 5 = 27$$
$$7x + 13 = 27$$



- How would I describe or explain this step?
- How would I demonstrate performing this step?
- Having simplified the left side of the equation by combining like terms, how would I describe the equation at this step in the solution path?



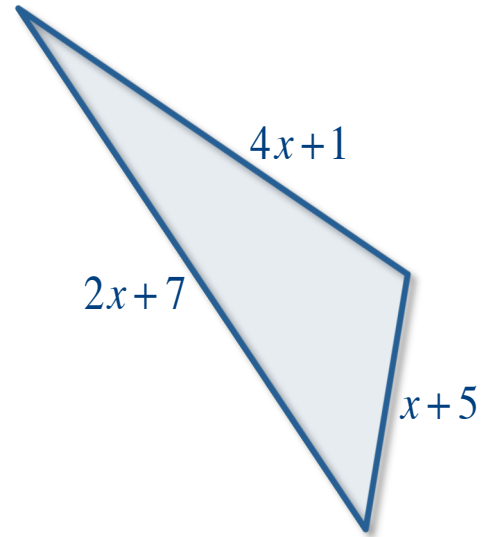


The student continues their solution path by performing the following calculation.

$$\begin{array}{r}
 2x + 7 + 4x + 1 + x + 5 = 27 \\
 7x + 13 = 27 \\
 \begin{array}{r}
 -13 \quad -13 \\
 \hline
 7x \quad = 14
 \end{array}
 \end{array}$$



- How would I describe or explain this step?
- How would I demonstrate performing this step?
- Why did the student subtract thirteen from both sides of the equation?

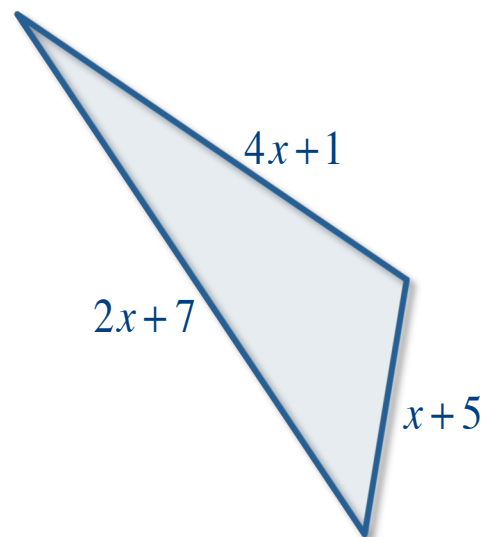


Next, the student divides both sides of the equation by 7.

$$\begin{array}{r}
 2x + 7 + 4x + 1 + x + 5 = 27 \\
 7x + 13 = 27 \\
 \begin{array}{r}
 -13 \quad -13 \\
 \hline
 7x \quad = 14 \\
 \frac{7x}{7} \quad = \frac{14}{7}
 \end{array}
 \end{array}$$



- How would I explain the student's thinking in performing this calculation?
- How would I show my work when performing this calculation?





The student has solved for the value of the variable.

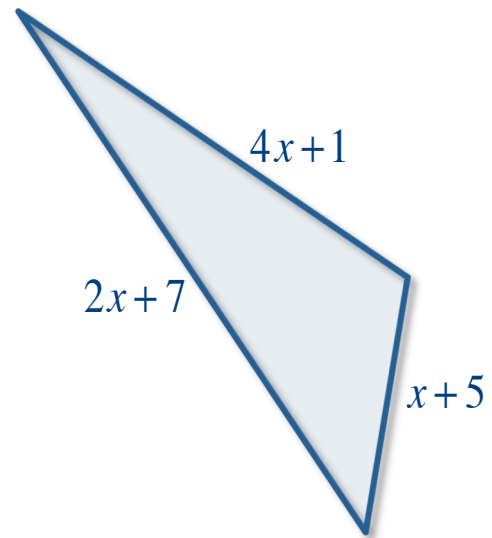
$$2x + 7 + 4x + 1 + x + 5 = 27$$

$$7x + 13 = 27$$

$$\begin{array}{r} -13 \\ \hline \end{array} \quad \begin{array}{r} -13 \\ \hline \end{array}$$

$$\frac{7x}{7} = \frac{14}{7}$$


$$x = 2$$



- Is their solution complete?
- How will you know?
- What does the value of the variable  $x$  represent?
- How would I demonstrate using the value of  $x$  to calculate the measure of each side of the triangle?
- How could I verify that my centimeter measures are correct?

## Perimeter & Algebra- Triangle Lengths - Skills Checklist



☑ I can write an equation to represent the perimeter of a shape

☑ I can simplify an equation by combining Like Terms

☑ I can isolate the variable in an equation by performing the inverse or opposite operations

☑ I can explain and demonstrate how I substitute the value of a variable into an expression and evaluate to determine an unknown dimension of a shape

# Perimeter & Algebra - Triangle Lengths - Worksheet



$2ab + 6k$   
 $2ab + 6k$

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