

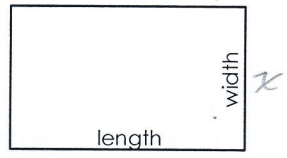
Notes: PERIMETER WORD PROBLEMS
 Created for you by Ms. Nhotsoubanh

Steps to solve Perimeter Word Problems

- Write a "let" statement/draw a diagram
- Write the formula
- Solve for x algebraically
- Substitute to find the dimensions

Perimeter is the distance around a shape. To find the perimeter of a shape, just add up the sides.

Example 1: The length of a rectangle is 1 cm less than three times the width. If the perimeter of the rectangle is 46 cm, find each dimension.



$$\begin{aligned}
 &3x - 1 \\
 &3(6) - 1 \\
 &18 - 1 \\
 &17
 \end{aligned}$$

Formula: $P = 2(\text{length}) + 2(\text{width})$

$$\begin{aligned}
 46 &= 2(3x - 1) + 2(x) \\
 46 &= 6x - 2 + 2x \\
 46 &= 8x - 2 \\
 + 2 & \qquad \qquad + 2 \\
 \hline
 48 &= 8x \\
 \frac{48}{8} &= \frac{8x}{8} \\
 x &= 6
 \end{aligned}$$

check

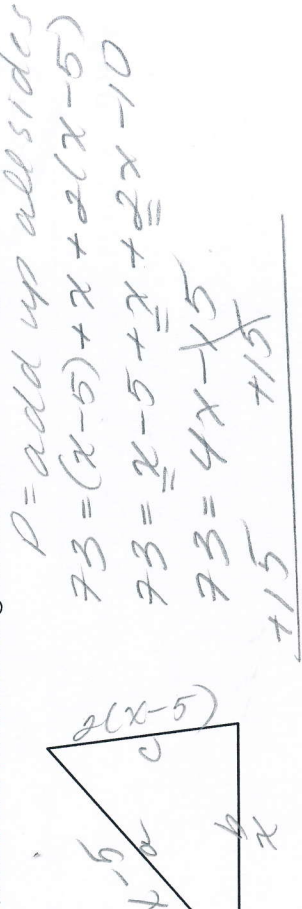
$$\begin{aligned}
 &6 + 6 + 17 + 17 \\
 &12 + 34 \\
 &46 \checkmark
 \end{aligned}$$

Answer:
 width = 6 cm
 length = 17 cm

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Glue on page 77

Example 2: The perimeter of a triangle is 73 cm. Side a is 5 cm shorter than side b. Side c is twice as long as side a. Find the length of each side.



$P = \text{add up all sides}$
 $73 = (x-5) + x + 2(x-5)$
 $73 = x-5 + x + 2x-10$
 $73 = 4x-15$
 $+15$
 $\frac{88}{4} = \frac{4x}{4}$
 $x = 22$
 $x-5 = 17$
 $2(17) = 34$

Answer:
 side a is 17 cm
 side b is 22 cm
 side c is 34 cm

Example 3: The length of a rectangle is 6 ft longer than the width. If the length is increased by 9 ft and the width by 5 ft, the perimeter will be 160 ft. Find the dimensions of the ORIGINAL rectangle.

$P = 2l + 2w$
 $160 = 2(x+15) + 2(x+5)$
 $160 = 2x+30 + 2x+10$
 $160 = 4x+40$
 -40
 $\frac{120}{4} = \frac{4x}{4}$
 $x = 30$

Answer:
 width = 30 ft
 length = 36 ft

Your turn Example 4: The perimeter of a rectangle is 400 meters. The length is 15 meters less than 4 times the width. Find the length and width.

$P = 2l + 2w$
 $400 = 2(4x-15) + 2x$
 $400 = 8x-30 + 2x$
 $400 = 10x-30$
 $+30$
 $\frac{430}{10} = \frac{10x}{10}$
 $x = 43$

Answer:
 width = 43 m
 length = 157 m

Homework - Perimeter Word Problems

Nov. 5

Directions: Show work on page 78 & 79.

- 1) The length of a rectangle is 7 centimeters greater than the width. The perimeter is 54 centimeters. Find the length and width.
- 2) The length of a rectangle is 5 centimeters more than twice the width. The perimeter is 82 centimeters. Find the length and width.
- 3) The length of a rectangle is seven inches less than 3 times the width. The perimeter of the rectangle is 146 inches. Find the dimensions.
- 4) The second side of a triangle is four less than twice the first side. The third side of a triangle is 8 less than three times the first side. The perimeter is 24 inches. Find each side.
- 5) The first side of a triangle is 7 cm shorter than twice the second side. The third side is 4 cm longer than the first side. The perimeter is 80 cm. Find the length of each side.
- 6) The length of a rectangle is 2 meters less than twice the width. If the length is increased by 6 and the width is decreased 3, the perimeter will be 92 meters. Find the measures of the dimensions of the original rectangle.