Substituting into a Formula – Homework

Substitution is replacing letters with numbers.

> **Remember:**
>
> $5a$ means $5 \times a$
>
> ab means $a \times b$
>
> a^2 means $a \times a$
>
> Always use BIDMAS when substituting into a formula or expression

For example,

The formula to convert temperature in degrees Fahrenheit (°F) to degrees Celsius (°C) is

$$C = \frac{5}{9}(F - 32)$$

a. Find the temperature in degrees Celsius when it is 59°F

$C = \frac{5}{9}(59 - 32)$

$C = \frac{5}{9} \times 27$

$C = 15°C$

b. Find the temperature in degrees Fahrenheit when it is 4°C

$4 = \frac{5}{9}(F - 32)$

You'll need to rearrange this formula to solve for F

$36 = 5(F - 32)$

$36 = 5F - 160$

$5F = 196$

$F = 39.2°F$

Your Turn:

1. An approximate solution for the circumference of a circle with diameter d is given by

$$C = 3d$$

a. Find the approximate circumference of a circle with diameter 8.5cm.

b. Find the approximate diameter of a circle with circumference 27cm.

2. The formula for the volume of a cube with side length $x$cm is given by

$$V = x^3$$

a. Find the volume of a cube with side length 5cm.

b. Find the side length of a cube with volume 64cm^3.

3. The formula for the sum, S, of the interior angles of an n-sided polygon is given by

$$S = 180(n - 2)$$

a. Find the sum of the interior angles of a polygon with 18 sides.

b. Find the number of sides of a polygon whose interior angles add to 720°.

4. The formula for average speed in miles per hour is given by

$s = \frac{d}{t}$ where d is distance travelled in miles and t is time in hours.

a. Find the average speed of a car which has travelled 105 miles in 2 hours.

b. Find the distance travelled by a car travelling at 30 miles per hour for 1.5 hours.

Substituting into a Formula – Homework **Answers**

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For example,

The formula to convert temperature in degrees Fahrenheit (°F) to degrees Celsius (°C) is

$$C = \frac{5}{9}(F - 32)$$

a. Find the temperature in degrees Celsius when it is 59°F

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$C = \frac{5}{9} \times 27$

$C = 15°C$

b. Find the temperature in degrees Fahrenheit when it is 4°C

$4 = \frac{5}{9}(F - 32)$

You'll need to rearrange this formula to solve for F

$36 = 5(F - 32)$

$36 = 5F - 160$

$5F = 196$

$F = 39.2°F$

Your Turn:

1. An approximate solution for the circumference of a circle with diameter d is given by

$$C = 3d$$

a. Find the approximate circumference of a circle with diameter 8.5cm

$C = 25.5cm$

b. Find the approximate diameter of a circle with circumference 27cm

$d = 9cm$

2. The formula for the volume of a cube with side length $x$cm is given by

$$V = x^3$$

   a. Find the volume of a cube with side length 5cm.

   V = 125cm^3

   b. Find the side length of a cube with volume 64cm^3.

   x = 4cm

3. The formula for the sum, S, of the interior angles of an n-sided polygon is given by

$$S = 180(n - 2)$$

   a. Find the sum of the interior angles of a polygon with 18 sides.

   S = 2880°

   b. Find the number of sides of a polygon whose interior angles add to 720°.

   n = 6 sides

4. The formula for average speed in miles per hour is given by

$s = \frac{d}{t}$ where d is distance travelled in miles and t is time in hours.

   a. Find the average speed of a car which has travelled 105 miles in 2 hours.

   s = 52.5mph

   b. Find the distance travelled by a car travelling at 30 miles per hour for 1.5 hours.

   d = 45 miles