

2-7 Literal Equations

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Solving for a specific variable

When equations have multiple variables you will need to solve for a variable *in terms of other variables.*

Ex. 1

$$4m - 3n = 8 \quad \text{Solve for } m.$$

$$+ 3n \quad + 3n$$

$$\frac{4m}{4} = \frac{8 + 3n}{4}$$

$$m = \frac{8}{4} + \frac{3}{4}n$$



$$\boxed{m = 2 + \frac{3}{4}n}$$

The value of m ,
in terms of n ,
is solved for.

Ex. 2

$$5b + 12c = 9 \quad \text{Solve for } b.$$

$$- 12c \quad - 12c$$

$$\frac{5b}{5} = \frac{9 - 12c}{5}$$

$$\boxed{b = \frac{9}{5} - \frac{12c}{5} \quad \text{or} \quad b = \frac{9 - 12c}{5}}$$

The value of b , *in terms of c ,* is solved.

Ex. 3

$$3x - 2y = xz + 5 \quad \text{Solve for } x.$$

$$+ 2y \qquad + 2y$$

$$3x = xz + 5 + 2y$$

$$-xz \quad -xz$$

$$x(3x - xz) = 5 + 2y$$

$$x \frac{(3 - z)}{3 - z} = \frac{5 + 2y}{3 - z}$$

$$x = \frac{5 + 2y}{3 - z}$$

The value of x ,
in terms of y and z ,
is solved for.

Ex. 4

$$7x - 2z = 4 - xy \quad \text{Solve for } x.$$

$$+ 2z \qquad + 2z$$

$$7x = 4 - xy + 2z$$

$$+ xy \qquad + xy$$

$$x(7x + xy) = 4 + 2z$$

$$x \frac{(7 + y)}{7 + y} = \frac{4 + 2z}{7 + y}$$

$$x = \frac{4 + 2z}{7 + y}$$

The value of x ,
in terms of y and z ,
is solved for.