

## 1.1 - Linear Equations

### Review problems

#### 1. Operations on fractions.

Evaluate and simplify:

$$(a) 2 - \frac{5}{9} \cdot \frac{12}{5} \quad (b) \frac{6}{25} \div \frac{12}{20} \quad (c) \frac{1 + \frac{1}{2}}{3 - \frac{3}{4}}$$

### Basic knowledge

#### 2. Solve for $x$ :

$$(a) 3(x - 2) + 2(3 - x) = 1 \quad (b) \frac{2 - x}{3} + \frac{x}{6} = \frac{3x + 1}{4} \quad (c) \frac{3x}{x + 2} - 1 = \frac{1}{3x + 6}$$

- A circle has a circumference of  $40\pi$  in. Find the radius and area of this circle.
- Find the dimensions of a rectangle whose length is double the width, and the perimeter is 60in.
- Find the surface area and the volume of a box with dimensions 3 inches by 4 inches by 10 inches.
- Bob invests \$15,000, some in stocks and the rest in bonds. If he invests three times as much in stocks as in bonds, how much does he invest in each?

### Intermediate knowledge

- Alice and Bob earned together \$105,000 last year. If Alice earned 75% of what Bob earned, how much did each earn?
- If  $P$  dollars are invested at a simple interest rate  $r$  (in decimals), the amount  $A$  that will be available after  $t$  years is  $A = P + Prt$ .
  - If \$200 are invested at the rate of 5%, how much money will be collected after 10 years?
  - How much money was invested at the rate 10% if after 4 years, \$700 was collected?
  - At what rate was \$100 invested if \$400 was collected after 6 years?
- A cylindrical can has a volume of 64 cubic inches and a radius of  $1\frac{1}{3}$  inches. Find the height of the can.

### Advanced knowledge

- Solve for  $x$  assuming that  $a$  and  $b$  are nonzero real numbers:

$$(a) ax = \frac{a + bx}{a - b} \quad (b) a(a + x) = b^2 - bx$$

- Rick bought a stock at a certain price. The price first decreased 10% and then increased 8%. Now the price of this stock is \$487. How much did Rick pay initially for this stock?