

What is a ratio? What is a proportion? Explain in words & give an example.

Ratio - comparison of 2 numbers

$$\frac{1}{2} \quad 1:2 \quad 1 \text{ is to } 2$$

Proportion - is an equation with 2 ratios.

$$\frac{x}{3} = \frac{10}{50} \quad x:3 = 10:50$$

x is to 3 as 10 is to 50

example

$$\frac{x}{3} = \frac{10}{50}$$

cross products  
cross multiplication

$$\frac{30}{50} = \frac{50x}{50}$$

$$\boxed{\frac{3}{5} = x}$$

example

$$\frac{-4}{y} = \frac{7}{8}$$

$$\frac{y}{7} = -32$$

$$y = -4\frac{1}{7}$$

example

$$\frac{3(4x+6)}{2} = \frac{x-9}{4}$$

$$\frac{12x+18}{2} = \frac{x-9}{4} \quad \text{OR} \quad \frac{12x+18}{2} = \frac{x-9}{4}$$

$$2(x-9) = 4(12x+18)$$

$$6x+9 = x-9$$

$$2x-18 = 48x+72$$

$$1 = 4$$

$$-48x \quad -48x$$

$$x-9 = 4(6x+9)$$

$$-46x - 18 = 72$$

$$x-9 = 24x+36$$

$$-46x = 90$$

$$-23x - 9 = 36$$

$$-46 \quad -46$$

$$-23x = 45$$

$$x = -\frac{90}{46}$$

$$x = -\frac{22}{23}$$

$$-23 \quad -23$$

example

$$\frac{1}{3} = \frac{4}{x}$$

you have to choose to put the negative in numerator or denominator

$$\frac{-1}{3} = \frac{4}{x}$$

A1

$$(12 = -x) - 1$$

$$-12 = x$$

$$-12 = x$$

What percent of 80 is 18?

$$\frac{18}{80} = \frac{x}{100}$$

$$\frac{9\%}{100} = \frac{18}{80}$$

last year

$$\frac{80x}{80} = \frac{1800}{80}$$

$$x = 22\frac{1}{2}\%$$

$$x = 22.5\%$$

# Algebra

## Percent Equation

$$\%(\text{of}) = \text{is}$$

60% of what number is 42?

$$\%(\text{of}) = \text{is}$$

$$\cancel{.6}x = 42$$

$$x = 70$$

change your % to a decimal before you plug it in your formula

What percent of 40 is 20?

$$\%(\text{of}) = \text{is}$$

$$\frac{x(40)}{40} = 20$$

$$\frac{40x}{40} = 20$$

$x = \frac{1}{2}$  solving for a % so change it by multiplying by 100

$$x = \frac{1}{2} (.5)$$

$$x = 50\%$$

never have a # to the left of a variable or an exponent.   
 coefficient is in front of the variable

What is 80% of 20?

% (of) = is

$$.8(20) = x$$

$$16 = x$$

Pg 185-186 proportions

#23, 24, 30, 32-35 All

Pg 200 percent equation

#20-25 All