Warm Up

Write the equation of the line that passes through the following points:

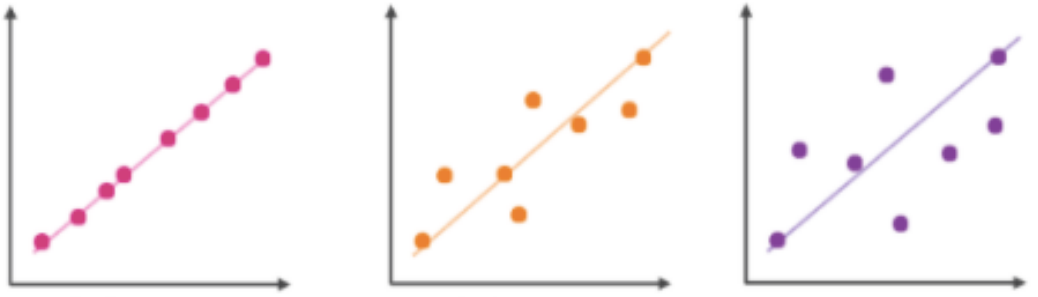
(5, 0) and (–2, 21)

$y = -3x + 15$

Correlation

How strongly two variables are related to each other.

Positive Correlation



Strong Positive

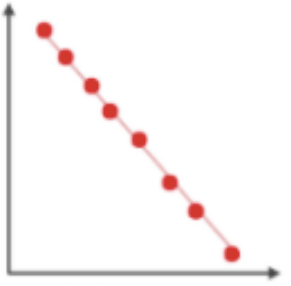
Positive

Weak Positive

Negative Correlation

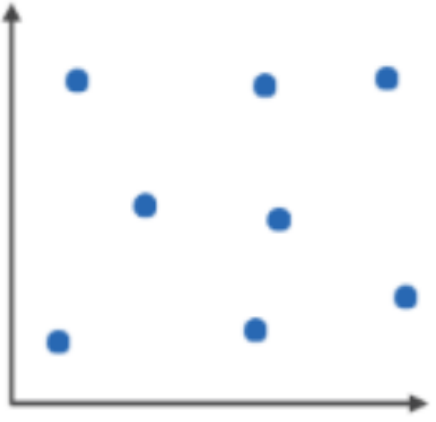
Weak Negative

Negative



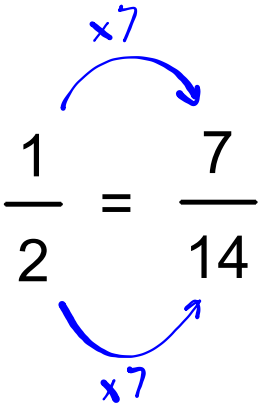
Strong Negative

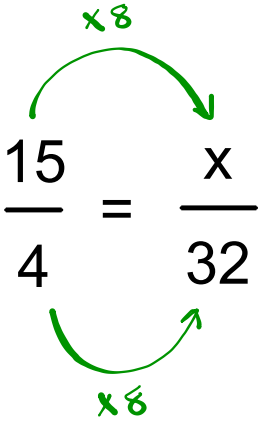
No Correlation



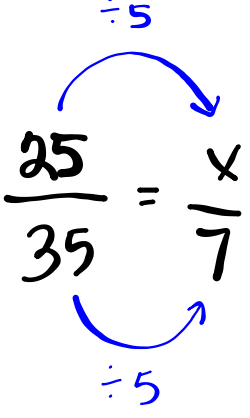
(All about setting up equivalent fractions.)

Proportion is an equation where two ratios are equal!



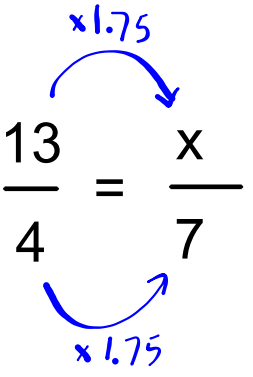


$x = 120$



$x = 5$

What if it's not so easy to scale up or down?



x = 22.75

$\frac{7}{1} \cdot \frac{13}{4} = \frac{x}{7} \cdot \frac{7}{1}$

22.75 = x

OR

$\frac{7}{1} \cdot \frac{13}{4} = \frac{x}{7} \cdot \frac{7}{1}$

22.75 = x

7 x 13 ÷ 4 = 22.75

How do we set up a proportion?

12 inches in one foot, how many feet is 90 inches?

Key

$\frac{\text{inches}}{\text{feet}}$

$\frac{12}{1} = \frac{90}{x}$

we don't like having our variable in the denominator

New Key

$\frac{\text{feet}}{\text{inches}}$

what we know

what we're looking for

$\frac{1}{12} = \frac{x}{90}$

$\frac{(90)}{1}\frac{1}{12} = \frac{x}{90}\frac{(90)}{1}$

$7.5 = x$

Using our calculator

90 x 1 ÷ 12 =

Ms. L-C regularly makes 40 ounces of lemonade, which is 10 servings.

She needs 21 servings for her son's Cub Scout meeting. How many ounces of lemonade does she need to make?

Key

ounces / servings

we know

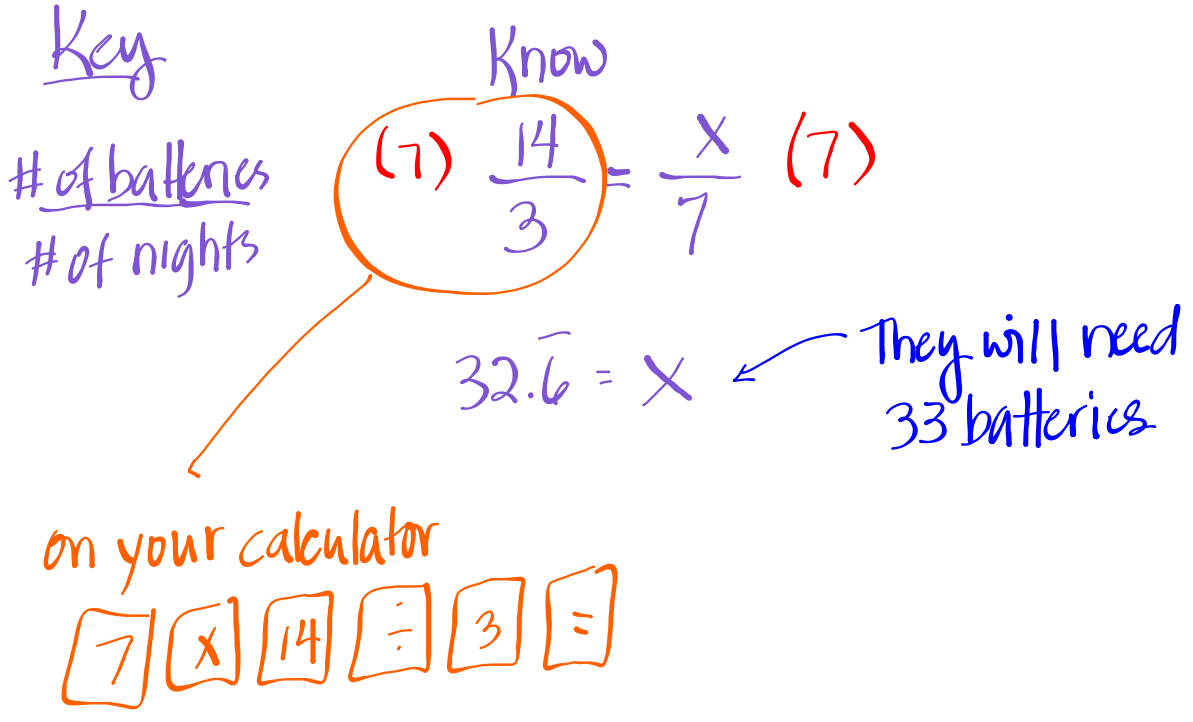
$(21)\frac{40}{10} = \frac{x}{21}(21)$

$84 = x$

Ms. L-C needs to make 84 oz of lemonade

A girl scout troop uses 14 flashlight batteries on a three-night camping trip.

If they are planning a seven-night trip, how many batteries should they bring?



More Practice

Three pumps can remove a total of 1700 gallons of water per minute from a flooded mineshaft. If engineers want to remove at least 5500 gallons per minute, how many pumps will they need operating?

Key

$\frac{\#\text{ of pumps}}{\#\text{ of gallons}}$

$\frac{(5500)}{1}\frac{3}{1700} = \frac{x}{5500}\frac{(5500)}{1}$

$9.7 = x$

They will need 10 pumps

Geologists in Antarctica find an average of 7 meteorite fragments in every 500 tons of gravel they sift through.

How much gravel must they sift through in order to get 100 fragments?

$$\frac{\text{fragments}}{\text{tons of gravel}}$$

$$\frac{7}{500} = \frac{100}{x}$$

New Key

$$\frac{\text{tons of gravel}}{\text{fragments}}$$

$$\frac{(100)}{1}\frac{500}{7} = \frac{x}{100}\frac{(100)}{1}$$

$$7142.9 = x$$

The ratio of boys to girls in Ms. Alper's math classes is 5 : 7. If there are 60 students in all of her classes, how many are boys?

boys girls

5 boys / 12 total Kids

$$\frac{\#\text{ Boys}}{\text{Total Kids}}$$

$$\frac{(60)}{1}\frac{5}{12} = \frac{x}{60}(60)$$

$$25 = x$$

Homework

Finish classwork