Types of Proportion

There are three types of proportions:

Direct

Inverse

Partitive.

1. Direct Proportion

Example problem:

There are 100 families in the evacuation center who consumed 1000 kilos (kgs) of donated rice for 4 weeks. If there were only 500 kilos (k) of NFA rice, how long will the families consume this volume of rice?

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From the given situation, you can see that the more kilos of rice there is, the longer it will last for 100 families. So, this is one example of a **direct proportion**.

1. Direct Proportion

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Thus, we have;

$$\frac{No.\ of\ kilos\ of\ rice}{No.\ of\ weeks} = \frac{No.\ of\ kilos\ of\ rice}{No.\ of\ weeks}$$

$$\frac{1000}{4} = \frac{500}{n} \longrightarrow 1000n = 2000 \longrightarrow n = 2$$

Therefor

1. Direct Proportion

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Therefore, there are 500 kilos of rice consumed in **2 weeks**.

2. Inverse Proportion

Example problem:

It takes Alfredo 20 minutes to ride his bicycle at 20 kph from home to the grocery store. To shorten his travel time to 16 minutes for the same distance, how fast should he cycle?

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Let the desired speed be x kph.

Speed (kph)	20 x
Time (in minutes)	20 16

The faster the bicycle is driven, the less time is required to reach the destination. So, this is one example of an **inverse proportion.**

2. Inverse Proportion

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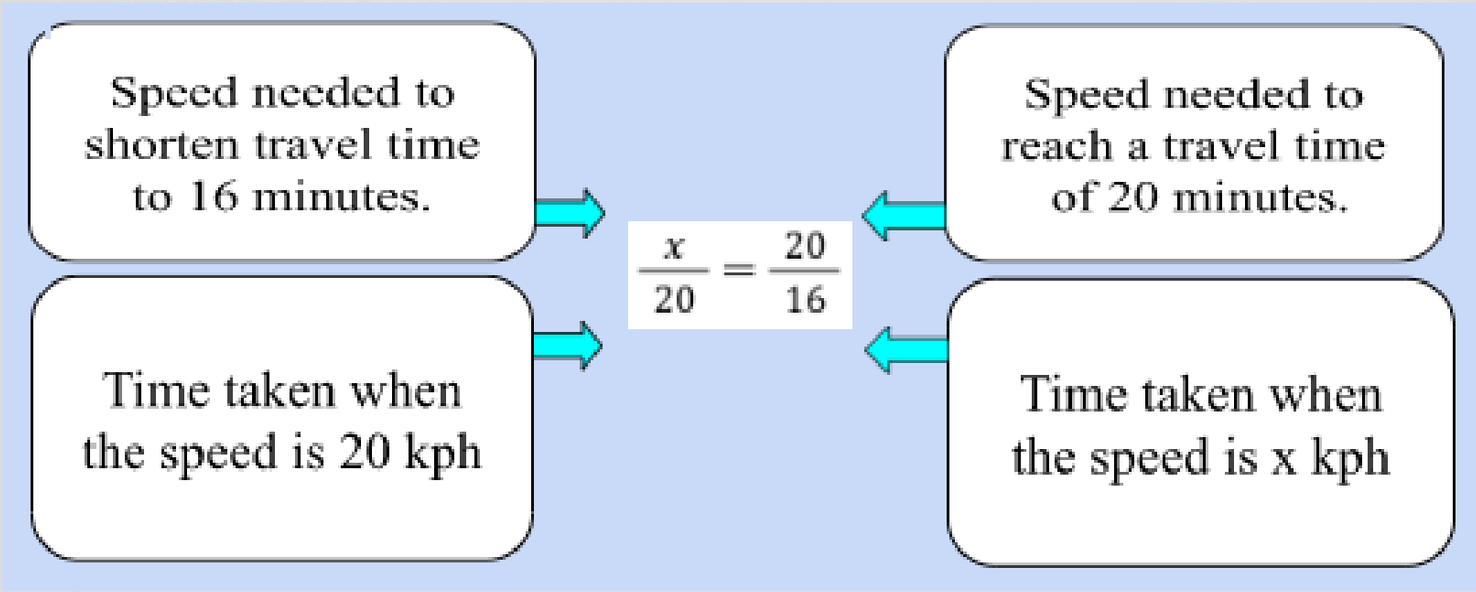

2. Inverse Proportion

Example problem:

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$$16.x \times 20.20$$ **Get the cross products**

$$\frac{16x}{16} \times \frac{400}{16}$$ **Divide both sides by 16.**

$$x = 25$$

Answer: Alfredo should cycle at 25 kph.

3. Partitive Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

2. Inverse Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

Understand

a. What is asked?

- The number of candies that each will get.

b. What are the given facts?

- 100 candies. Candies will be shared in the ratio 1:1:2

2. Inverse Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

Plan

- Strategy: Write a partitive proportion to solve the problem.

2. Inverse Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

Solve

Let n be the number of candies each of them will get.

Let 2n be the number of candies one of them with two parts will get.

2. Inverse Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

Solve

Write the ratio 1:1:2 as n:n:2n.

Adding the numbers; $1 + 1 + 2 = 4$

$$n + n + 2n = 100$$

$$4n = 100$$

$$n = 25$$

Since $2n = 2 \times 25 = 50$, then n:n:2n = **25:25:50**.

2. Inverse Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

Solve

Answer:

Mikay and Shaun will both have 25 candies each, while Keith will have 50 chocolates.

2. Inverse Proportion

Example problem:

A glass of jar has 100 candies. Mikay, Shaun, and Keith will share the candy in the ratio 1:1:2. How many candies will each one of them get?

Check

Add all the candies received by Mikay, Shaun, and Keith.

$$25 + 25 + 50 = 100$$

$$100 = 100$$

In **Direct proportion**, when one quantity increases, the other quantity increases at the same rate and vice versa.

In **Inverse proportion**, when one quantity increases, the other quantity decreases vice versa.

In **Partitive proportion**, a whole is divided into parts that are proportional to the given ratio.