

Proportional and Non-Proportional Relationships

A _____ is a relationship between two quantities in which the _____ of one quantity to the other is _____.

In the activity you just completed, the tortoise maintained a _____ speed; therefore the relationship between time and distance for the tortoise is _____.

More Examples:

1. Alberto types 45 words per minute. Is the relationship between the number of words and the number of minutes a proportional relationship? Why or why not?

Time (min)	1	2	3	4	5
Number of Words	45				

$$\frac{\text{Number of Words}}{\text{Time}} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}} = \underline{\hspace{1cm}} =$$

The ratios are _____.

The common ratio is _____.

So, the relationship is _____.

2. The table shows the distance Allison drove on one day of her vacation. Is the relationship between the distance and the time a proportional relationship? Why or why not?

Time (h)	1	2	3	4	5
Distance (mi)	65	120	195	220	300

$$\frac{\text{Distance}}{\text{Time}} \quad ? \quad \underline{\hspace{1cm}} \quad ? \quad \underline{\hspace{1cm}} \quad ? \quad \underline{\hspace{1cm}} \quad ? \quad \underline{\hspace{1cm}} \quad ? \quad \underline{\hspace{1cm}} \quad ? \quad \underline{\hspace{1cm}}$$

Do you think Allison drove at a constant speed for the entire trip? Why or why not?

3. The Vista Marina rents boats for \$25 per hour. In addition to the rental fee, there is a \$12 charge for fuel. Is the number of hours you can rent the boat proportional to the cost? Why or why not?

Rental Time (h)	1	2	3
Cost (\$)			

$\frac{\text{Cost}}{\text{Time}}$? _____ ? _____ ? _____

4. Which situation represents a proportional relationship between the hours worked and amount earned for Matt and Jane?

Time (h)	1	2	3
Matt's Earnings (\$)	12	20	31

Time (h)	1	2	3
Jane's Earnings (\$)	12	24	36

Which person, Matt or Jane, has a constant rate of pay, and what is it?

5. Plant A is 18 inches tall after one week, 36 inches tall after two weeks, 56 inches tall after three weeks. Plant B is 18 inches tall after one week, 36 inches tall after two weeks, 54 inches tall after three weeks. Which situation represents a proportional relationship between the plants' height and number of weeks?

6. To convert a temperature in degrees Celsius to degree Fahrenheit, multiply the Celsius temperature by $\frac{9}{5}$ and then add 32. Is a temperature in degrees Celsius proportional to its equivalent temperature in degrees Fahrenheit? (complete and use the table below to help you)

Degrees Celsius	0	10	20	30
Degrees Fahrenheit				

**Making Connections – when you calculate the ratios between the quantities in the tables or problems, you are actually calculating the _____.