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 |  |  |  |  |

$\frac{Number of Words}{Time}$ = \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_ =

The ratios are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

The common ratio is \_\_\_\_\_\_\_\_\_\_.

So, the relationship is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. 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 |

$\frac{Distance }{Time}$ ? \_\_\_\_\_\_\_ ? \_\_\_\_\_\_\_\_ ? \_\_\_\_\_\_\_\_ ? \_\_\_\_\_\_\_\_\_ ? \_\_\_\_\_\_\_\_\_

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

1. 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 ($) |  |  |  |

$\frac{Cost }{Time}$ ? \_\_\_\_\_\_\_ ? \_\_\_\_\_\_\_\_ ? \_\_\_\_\_\_\_\_

1. 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?

1. 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?
2. To convert a temperature in degrees Celsius to degree Fahrenheit, multiply the Celsius temperature by 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 \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.