

Direct Proportionality

Table of Values, Graph and Rule

Table of Values:

When looking at a table of values, you can determine if it represents a directly proportional situation by using either:

- 1) Cross-product method throughout the table to verify that your calculations match the values given.

Ex.:

Time (hours)	1	5	7	12
Distance (km)	80	400	560	960

$$1 \times 400 \div 80 = 5, \quad 5 \times 560 \div 400 = 7, \quad 7 \times 960 \div 560 = 12$$

2) The *coefficient of proportionality can be determined and then you must make sure that the same coefficient was used for all ordered pairs in the table.

Ex.: In the previous table the coefficient of proportionality = **x 80**

5 hours x 80 = 400 km

7 hours x 80 = 560 km

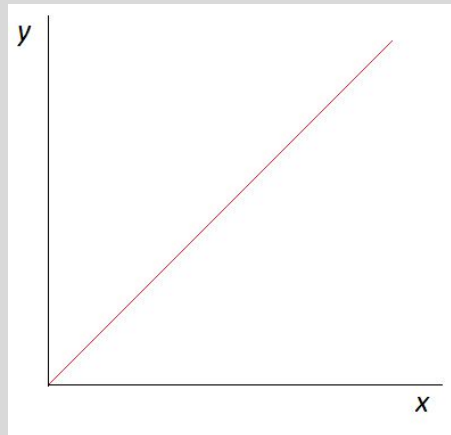
*This refers to the mathematical relationship between the number of hours and the distance travelled (from x to y), in other words, between the independent and dependent variables.

Graphs:

All graphs representing directly proportional situations must have both of the following characteristics:

- Must display a straight line
- This line must pass through the origin of the graph (0,0)

Ex.:



Algebraic Rule:

If the rule of a situation is directly proportional, it will be in the form of **$y = ax$**

This means, that the dependent variable (y) is calculated by multiplying a certain rate of change/slope (a) by the independent variable (x).

Ex.: $y = 4x$

Time (hours)	1	3	5	10
Amount of Water (ml)	4	12	20	40