

Understanding direct proportion

Two quantities are in **direct proportion** when they increase or decrease in the **same ratio**. For example, you could **increase** something **by doubling** it or **decrease** it **by halving**.

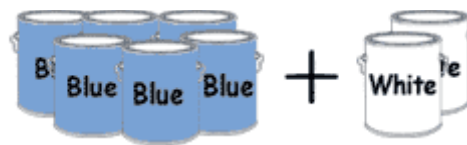
If we look at the example of mixing paint, the ratio is 3 pots blue to 1 pot white, or 3:1.



But this amount of paint will only decorate 2 walls of a room. What if you wanted to decorate the whole room, 4 walls? You have to **double** the amount of paint and **increase** it in the **same ratio**.

If we **double** the amount of blue paint we need 6 pots.

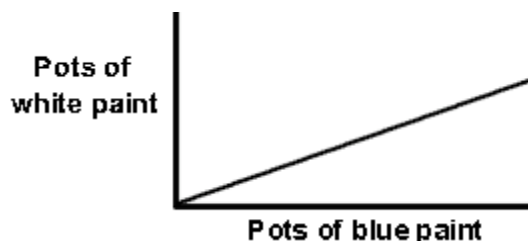
If we **double** the amount of white paint we need 2 pots.



The amount of blue and white paint we need increases in direct proportion to each other. Look at the table to see that as you use more blue paint you need more white paint:

| | | | | |
|---------------------|---|---|---|----|
| Pots of blue paint | 3 | 6 | 9 | 12 |
| Pots of white paint | 1 | 2 | 3 | 4 |

Take a look at this graph:



Two quantities that are in **direct proportion** will always produce a graph on which all the points can be joined to form a **straight line**.