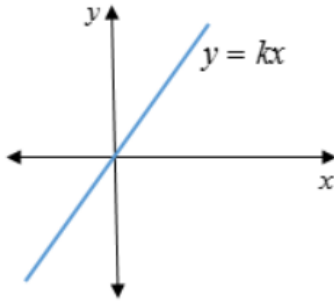
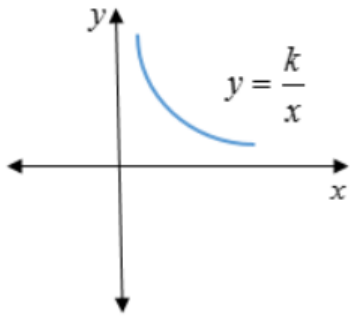


Higher Topic: Fractions, Decimals, Percentages and Ratio 2

Topic/Skill	Definition/Tips	Example
Compound interest	Interest calculated as a percentage of the current amount. Find the multiplier for the increase/decrease and raise it to the power of the number of years. Then multiply the original value by this.	£1000 invested for 3 years at 10% compound interest. Multiplier for 10% increase is 1.1 $£1000 \times 1.1^3 = 1331$
Depreciation	Find the multiplier for the decrease and raise it to power of the number of years.	A car is bought for £2000. It loses 25% of it's value each year. What is it worth after 3 years? Multiplier is 0.75 $2000 \times 0.75^3 = £843.75$
Unitary method	Finding the value of a single unit and then find the necessary value by multiplying the single unit value.	3 cakes require 450g of sugar to make. Find how much sugar is needed to make 5 cakes. 3 cakes = 450g So 1 cake = 150g ($\div$ by 3) So 5 cakes = 750 g ($\times$ by 5)
Best buys	Find the unit cost by dividing the price by the quantity . The lowest number is the best value.	8 cakes for £1.28 $\rightarrow$ 16p each ($\div$ by 8) 13 cakes for £2.05 $\rightarrow$ 15.8p each ($\div$ by 13) Pack of 13 cakes is best value.
Direct proportion	If two quantities are in direct proportion, as one increases , the other increases by the same percentage.	For example, speed and distance travelled are directly proportional.
Inverse proportion	If two quantities are inversely proportional, as one increases , the other decreases by the same percentage.	For example, travel time and speed are inversely proportional.
Inverse proportion problems	Work out the total person hours of work required and divide by the number of people.	If it takes 4 people 3 hours to complete a task, how long would it take 6 people? Total hours of work = $4 \times 3 = 12$ $12 \div 6 = 2$ hours
Direct proportion graph	If x and y are directly proportional, their graph will be a straight line with a positive gradient which passes through the origin (0,0).	

Inverse proportion graph	If two quantities are inversely proportional, the graph will be a curve which never quite meets either axis.	
Constant of proportionality	k is the constant of proportionality . The symbol $\propto$ means “is proportional to”	
Direct proportion relationship	If y is directly proportional to x , this can be written as $y \propto x$ An equation of the form $y = kx$ represents direct proportion, where k is the constant of proportionality .	
Inverse proportion relationship	If y is inversely proportional to x , this can be written as $y \propto \frac{1}{x}$ An equation of the form $y = \frac{k}{x}$ represents inverse proportion, where k is the constant of proportionality .	
Using proportionality formulae	Direct: $y \propto x$ or $y = kx$ Inverse: $y \propto \frac{1}{x}$ or $y = \frac{k}{x}$ 1. Solve to find k using the pair of values in the question. 2. Rewrite the equation using the k you have just found. 3. Substitute the other given value from the question in to the equation to find the missing value .	p is directly proportional to q . When $p = 12$, $q = 4$. Find p when $q = 20$. 1. $p = kq$ $12 = k \times 4$ so $k = 3$ 2. $p = 3q$ 3. $p = 3 \times 20 = 60$, so $p = 60$
Other proportional relationships	y can be directly or inversely proportional to powers or roots of x . $y \propto x^3 \rightarrow y = kx^3$ $y \propto \frac{1}{x^2} \rightarrow y = \frac{k}{x^2}$ $y \propto \sqrt{x} \rightarrow y = k\sqrt{x}$	A is proportional to the square of B . If $A = 20$ when $B = 2$, find A when $B = 3$. 1. $A \propto B^2 \rightarrow A = kB^2$ $20 = k \times 2^2$ $20 = 4k$ So $k = 5$ 2. $A = 5B^2$ 3. When $B = 3$ $A = 5 \times 3^2 = 5 \times 9 = 45$

Where else is the FDP topic used:

Algebra Probability

Ratio and Proportion

Links to other subjects: