DIRECT AND INVERSE PROPORTION

Task 1

1) The cost of 6 pencils is £3. Work out the cost of 4 pencils.

2) 5 apples cost £2.50. How much do 8 apples cost?

3) A car travels 120 km in 2 hours. How far does the car travel in 5 hours at the same speed?

4) 3 hours of TV takes 12 hours of battery life. How much battery life does 7 hours of TV take?

5) A machine produces 240 bottles in 4 hours. How many bottles can it produce in 7 hours?

6) 10 pens cost £15. How much do 3 pens cost, after they are marked down 20% in a sale?

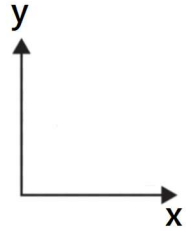
7) A train travels 75 km in 1.5 hours. How far does the train travel in 4 hours?

8) 4 miles of driving in a ride share app cost £10. Work out the cost of 9 miles of driving in the ride share app. State one assumption you've made.

9) A car uses 8 litres of petrol to travel 120 km. How much petrol is needed for 210 km?

10) 1 pencil and 5 pens cost £4.20. 12 pencils cost £5.40. Work out the cost of 2 pens.

11) Sketch a graph on the axes below to show that y is directly proportional to x.



12) m is directly proportional to n.
m is given by the formula:

$$m = 3.2n$$

a. Find the value of m when n = 15.
b. Find the value of n when m = 16.

Task 2

13) 8 workers take 12 hours to complete a job. How long will 4 workers take to complete the same job?

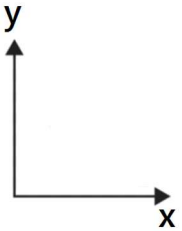
14) 5 painters take 15 days to paint a house. How long will 10 painters take to complete the same job? State one assumption you've made.

15) 6 taps fill a tank in 20 minutes. How long will it take 4 taps to fill the tank?

16) 12 workers build an extension in 18 days. How long will 9 workers take to build the extension? State one assumption you've made.

17) A machine takes 8 hours to produce 240 items. If the machine produced 360 items, how long did it take?

18) Sketch a graph on the axes below to show that y is inversely proportional to x.



19) a is inversely proportional to b.
a is given by the formula:

$$a = \frac{80}{b}$$

a. Find the value of a when b = 40.
b. Find the value of b when a = 160.

Challenge

20) **12 students must each work 2 hours a day to complete 180 research assignments.**

    If only 9 students are available, each working 4 hours a day, how many assignments can they complete?

21) **It takes 6 bakers, working 5 hours a day, 4 days to bake 360 cupcakes for a wedding.**

    How long would it take 8 bakers, working 6 hours a day, to bake 540 cupcakes?