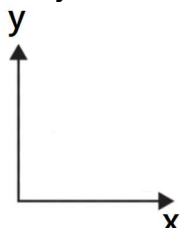


# DIRECT AND INVERSE PROPORTION

## 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  $x$ .



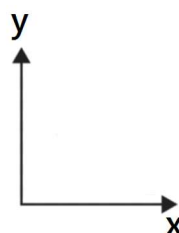
- 12)  $m$  is directly proportional to  $n$ .  
 $m$  is given by the formula:

$$m = 3.2n$$

- 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?