

Ratio, proportion and rate of change – GCSE Mathematics Paper 1

1. No.7

	Cost of 100 grams
Cereal	49p
Pasta	14p

Leah buys 400 grams of cereal and 250 grams of pasta.

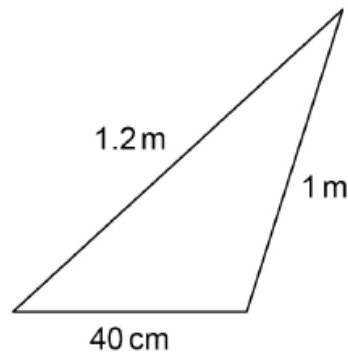
Work out the **total** cost in £

[4 marks]

Answer £ _____

2. No.10

(a) Here is a triangle.

Not drawn
accurately

Work out $\frac{\text{length of shortest side}}{\text{length of longest side}}$

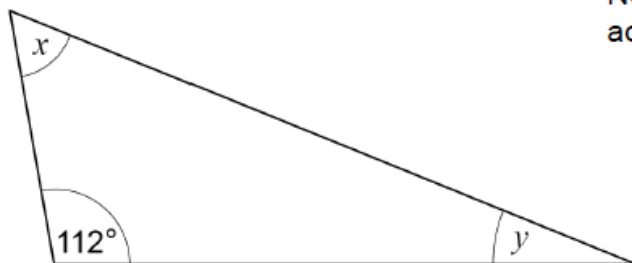
Give your answer as a fraction in its simplest form.

[2 marks]

Answer

(b) Here is a different triangle.

Not drawn
accurately



$$x = 3y$$

Work out the size of angle y .

[3 marks]

$$y = \underline{\hspace{4cm}}^\circ$$

3. No.11

Companies A and B sell insurance for mobile phones.

The table shows the **monthly** costs for two types of cover, Damage and Loss.

Company	Damage	Loss
A	£8.65	£12.20
B	£7.25	£14.10

- (a) Work out the difference in monthly cost for the two types of cover with **Company A**.

[2 marks]

Answer £ _____

- (b) Ben wants Damage cover with **Company B**.

How much in total will he pay for one year?

[3 marks]

Answer £ _____

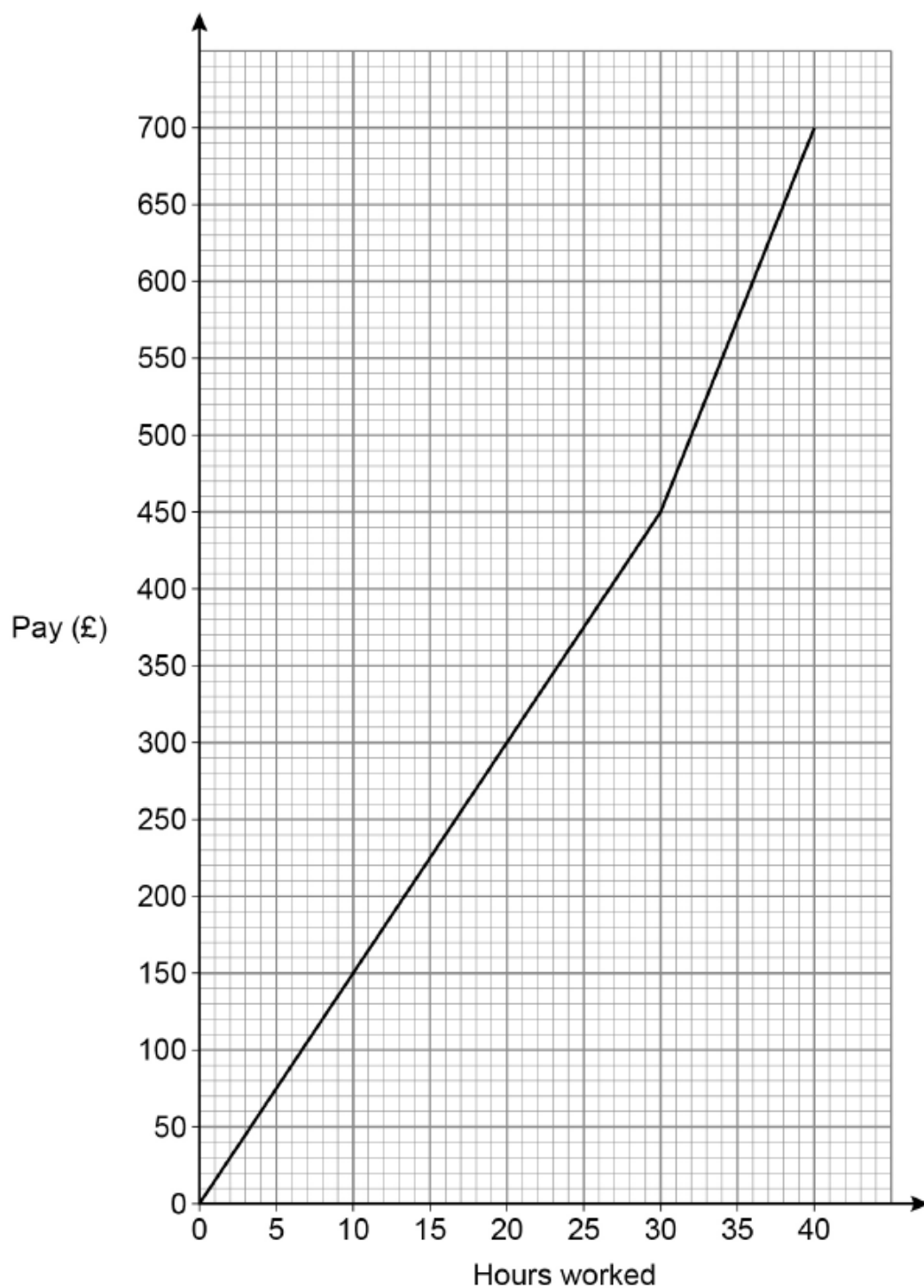
4. No.22

In a week, Samir is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

Answer _____ : _____

- (a) In each box, write a fraction **less** than 1 to make a correct calculation.

[1 mark]

$$\boxed{\frac{\quad}{\quad}} \times \boxed{\frac{\quad}{\quad}} = \frac{3}{10}$$

- (b) In each box, write a decimal **less** than 1 to make a correct calculation.

[1 mark]

$$\boxed{} \times \boxed{} = 0.06$$

5. No.28

$x:y$ is $9:5$

Circle the value of $\frac{2x}{y}$

[1 mark]

$$\frac{5}{18}$$

$$\frac{18}{5}$$

$$\frac{9}{10}$$

$$\frac{10}{9}$$

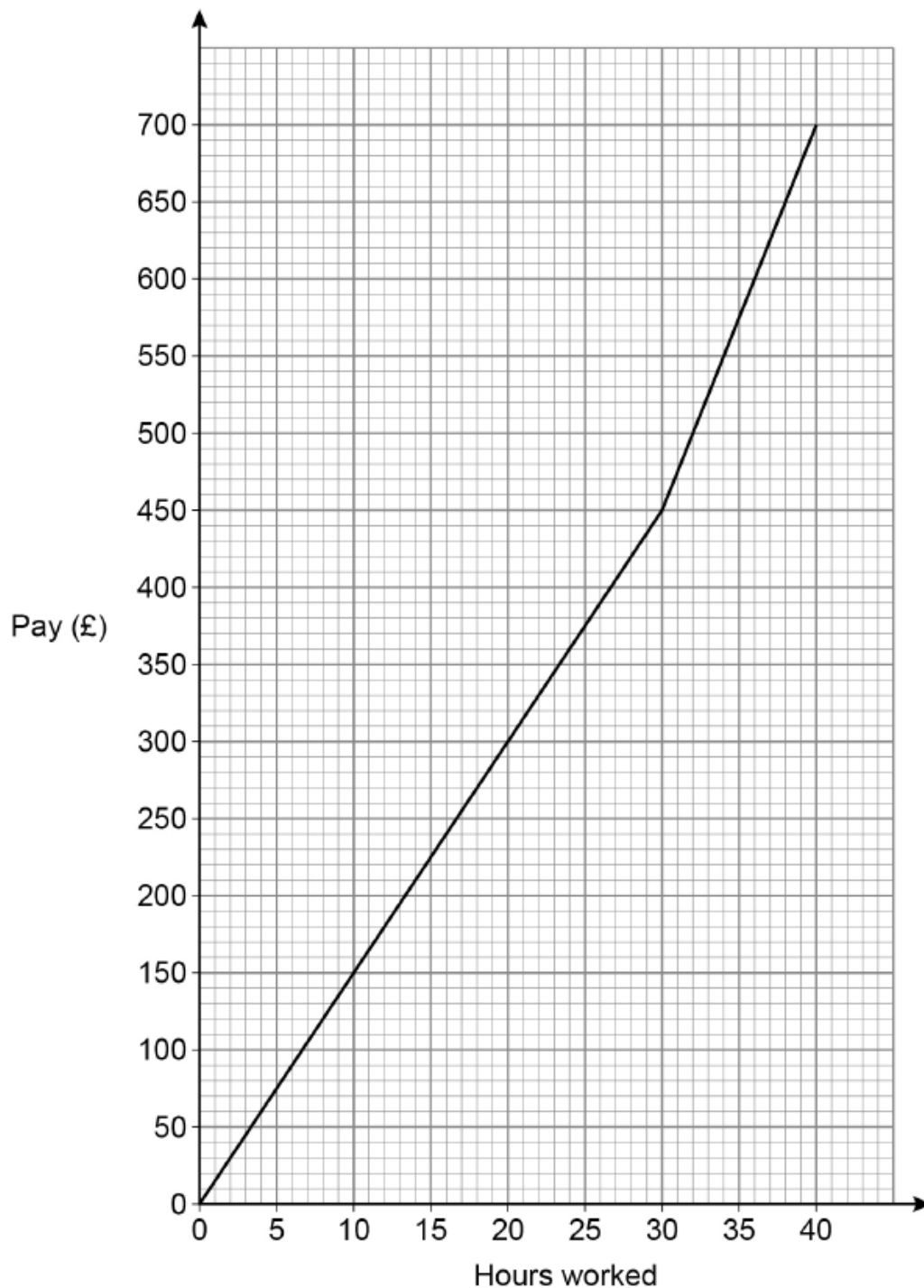
6. No.8

In a week, Samir is paid

a basic hourly rate for the first 30 hours worked

an overtime hourly rate for any extra hours worked.

The graph shows his pay for working up to 40 hours in a week.



Work out the ratio basic hourly rate : overtime hourly rate

Give your answer in its simplest form.

[3 marks]

Answer _____ : _____

7. No.14

15 workers can complete a job in 8 days.

How many **more** workers are needed to complete the job in 6 days?

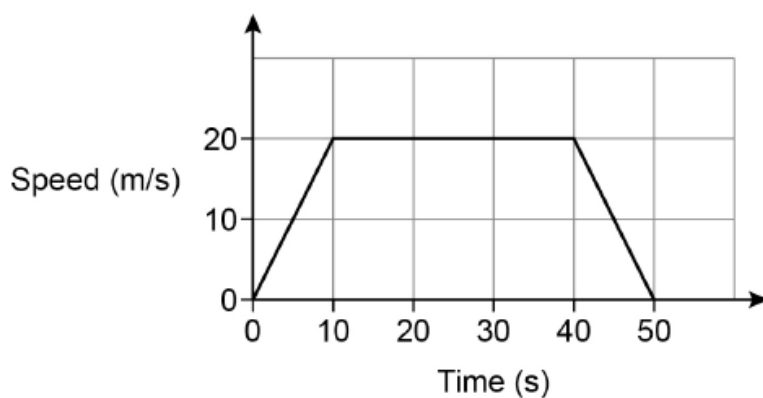
Assume that all of the workers work at the same rate.

[3 marks]

Answer _____

8. No.25

Here is the speed-time graph for a 50-second journey.



- (a) Circle the acceleration, in m/s^2 , halfway through the journey.

[1 mark]

0 2 20 25

- (b) Work out the total distance travelled.

[2 marks]

Answer _____ m

9. No.16

A password has 30 characters.

It is made up of 5 numbers, 15 letters and some symbols.

Work out the ratio numbers : letters : symbols

Give your answer in its simplest form.

[2 marks]

Answer _____ : _____ : _____

10. No.24

Working alone, it takes Kevin 4 hours to paint an area of 12 m^2

Kevin and Steve are going to paint an area of 24 m^2

Kevin says,

“Working together at the same rate it will take us 8 hours, because 24 is 2×12 ”

Is he correct?

Tick a box.

☐

Yes

☐

No

Give a reason for your answer.

[1 mark]

11. No.20

Which **one** of these is a unit of density?

Circle your answer.

[1 mark]

 cm^2/g cm^3/g g/cm^2 g/cm^3

12. No.26

$$d = 2f$$

$$\frac{e-f}{d-e} = \frac{1}{4}$$

Work out the ratio $e : f$

[3 marks]

Answer _____ : _____