

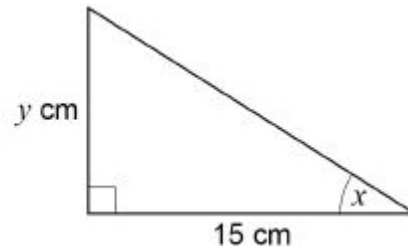
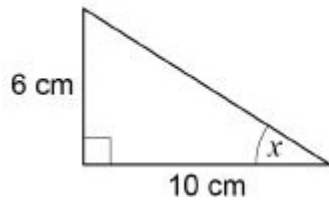
GCSE
MATHEMATICS (8300)
HIGHER
Ratio, proportion and rates of change

Total number of marks: 37 per optional item

Q1

Here are two right-angled triangles.

Not drawn accurately



Circle the value of y .

11

7.5

9

4

(Total 1 mark)

Q11

Ed and Fay shared £330 in the ratio 7 : 4

Ed gives Fay some of his money.

Fay now has the same amount as Ed.

How much does Ed give Fay?

Answer £ _____

(Total 3 marks)

Q11

Joe and Kyle share an amount of money in the ratio $7 : n$
Joe gets 35% of the money.

Work out the value of n .

(Total 2 marks)

Q11

The value of a house is £120 000

The value is expected to increase by 5% each year.

Work out the expected value after 4 years.

Give your answer to 2 significant figures.

You **must** show your working.

Answer £ _____

(Total 4 marks)

Q10

y is inversely proportional to x .

Complete the table.

x	12	6	
y		4	8

(Total 2 marks)

Q6

The height of Zak is 1.86 metres.

The height of Fred is 1.6 metres.

Write the height of Zak as a fraction of the height of Fred.

Give your answer in its simplest form.

(Total 3 marks)

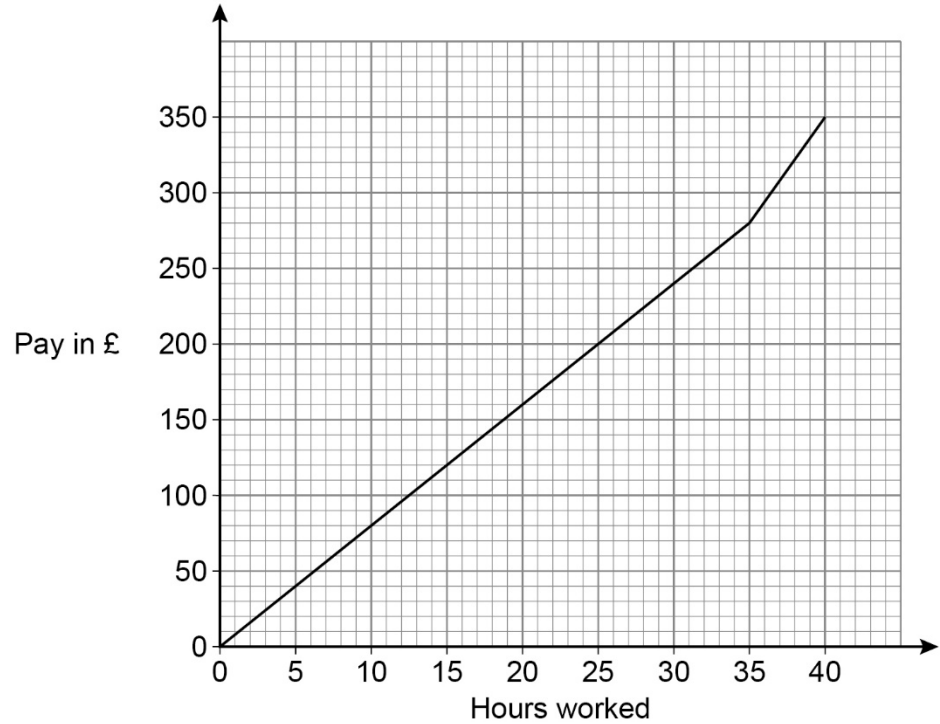
Q12

The graph shows how much Molly is paid for working for up to 40 hours.

She receives

a basic rate of pay for the first 35 hours worked

a higher rate of pay for the next 5 hours worked.



Work out the difference between the higher rate of pay and the basic rate of pay.

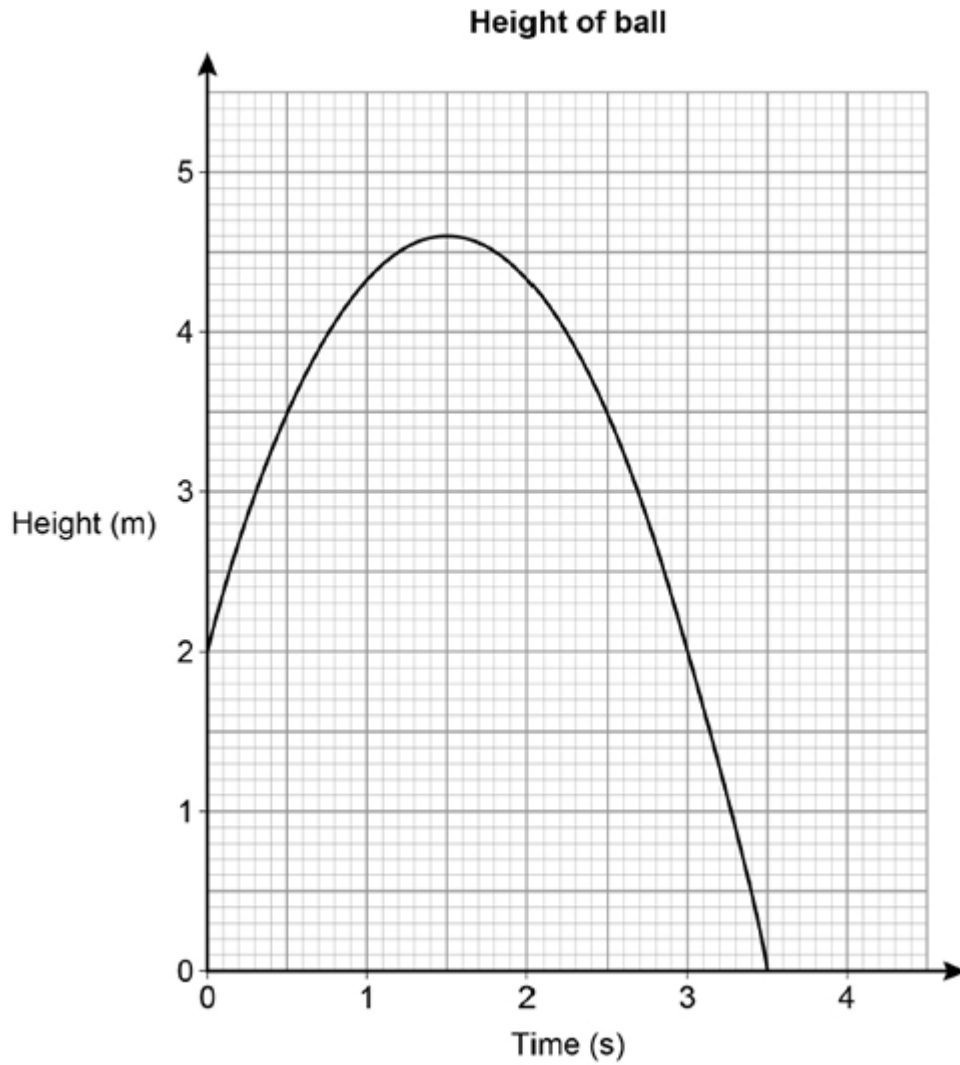
Give your answer in £ per hour.

Answer £ _____ per hour
(Total 3 marks)

Q17b

A ball is thrown vertically upwards.

The graph shows the height of the ball above the ground after it is thrown.



- (b) After how many seconds is the ball at instantaneous rest when it is in the air?

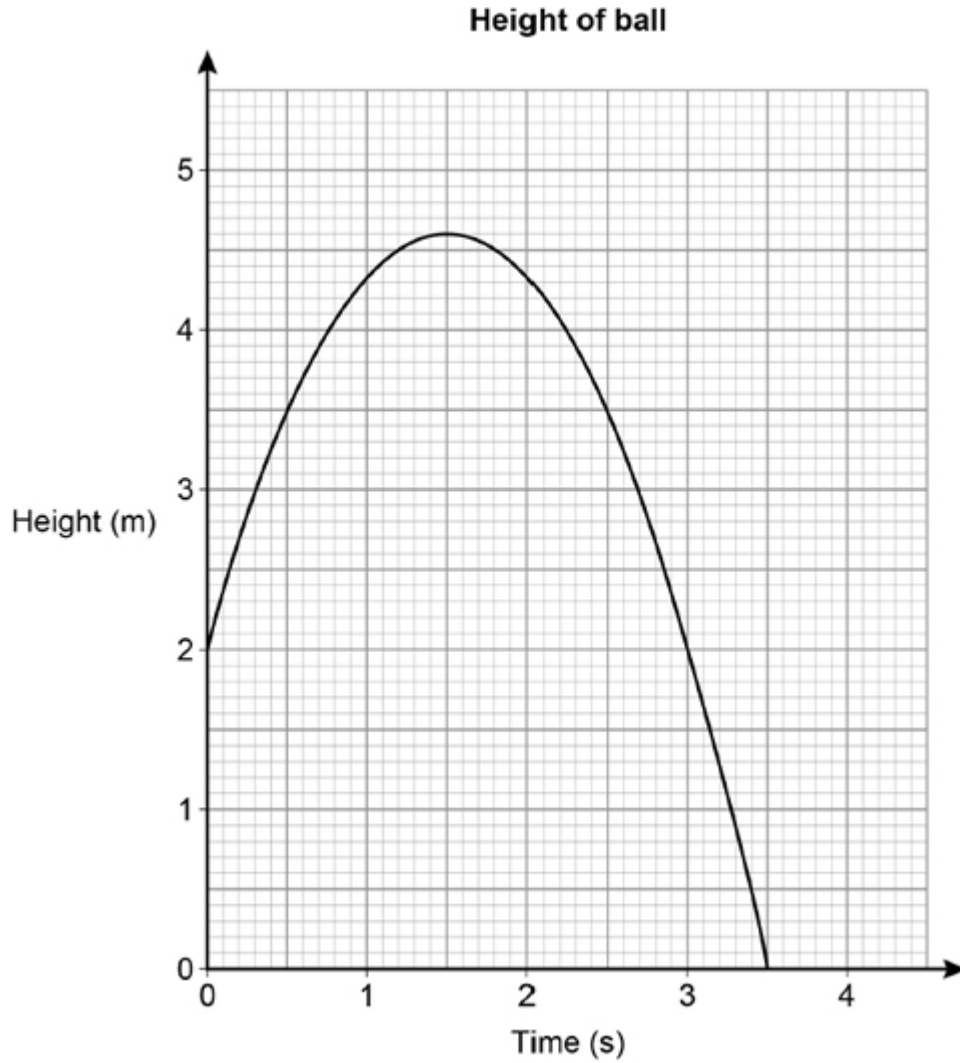
Answer _____ s

(Total 1 mark)

Q17c

A ball is thrown vertically upwards.

The graph shows the height of the ball above the ground after it is thrown.



- (c) Work out the average speed of the ball when it is moving downwards.

Answer _____ m/s

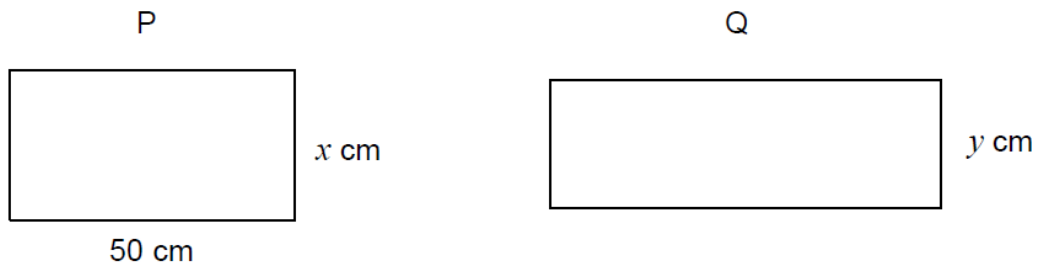
(Total 2 marks)

Q17

P is a rectangle with length 50 cm and width x cm

Q is a rectangle with width y cm

Not drawn
accurately



The length of Q is 20% **more** than the length of P.

The area of Q is 10% **less** than the area of P.

Work out the ratio $x : y$

Give your answer in its simplest form.

Answer _____ : _____

(Total 4 marks)

Q23

A shopkeeper compares the income from sales of a laptop in March and April.

April

Price	$\frac{1}{5}$ more than March
Number sold	$\frac{1}{4}$ less than March

By what fraction does the income from these sales decrease in April?

(Total 3 marks)

Q2

How many millimetres are there in a kilometre?

Circle your answer.

10^3

10^5

10^6

10^9

(Total 1 mark)

Q21a

y is inversely proportional to \sqrt{x}

$$y = 4 \text{ when } x = 9$$

- (a) Work out an equation connecting y and x .

(Total 3 marks)

Q21b

y is inversely proportional to \sqrt{x}

$$y = 4 \text{ when } x = 9$$

- (b) Work out the value of y when $x = 25$

(Total 2 marks)

Q26

b is two thirds of c .

$$5a = 4c$$

Work out the ratio $a : b : c$

Give your answer in its simplest form where a , b and c are integers.

Answer _____ : _____ : _____

(Total 3 marks)