GCSE
MATHEMATICS (8300)
COMMON GRADES 4 & 5
Algebra

Total number of marks: 34 per optional item

Q20

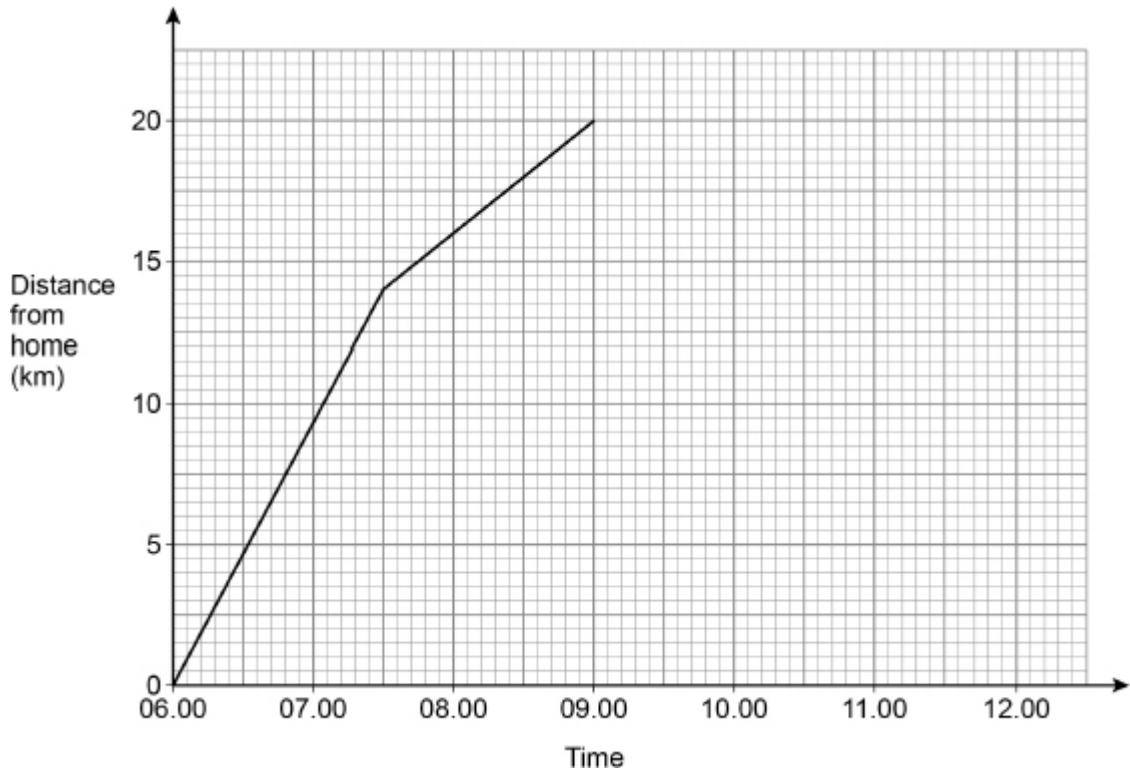Solve $3x - 8 = 19$

$x =$ _____

(Total 2 marks)

Q19

$a = 7$ and $b = 2$

Work out the value of $\dfrac{a}{b} - a^b$

(Total 3 marks)

Q18a

Jenny leaves home at 06.00

She runs for 3 hours.

Here is a distance-time graph of her run.

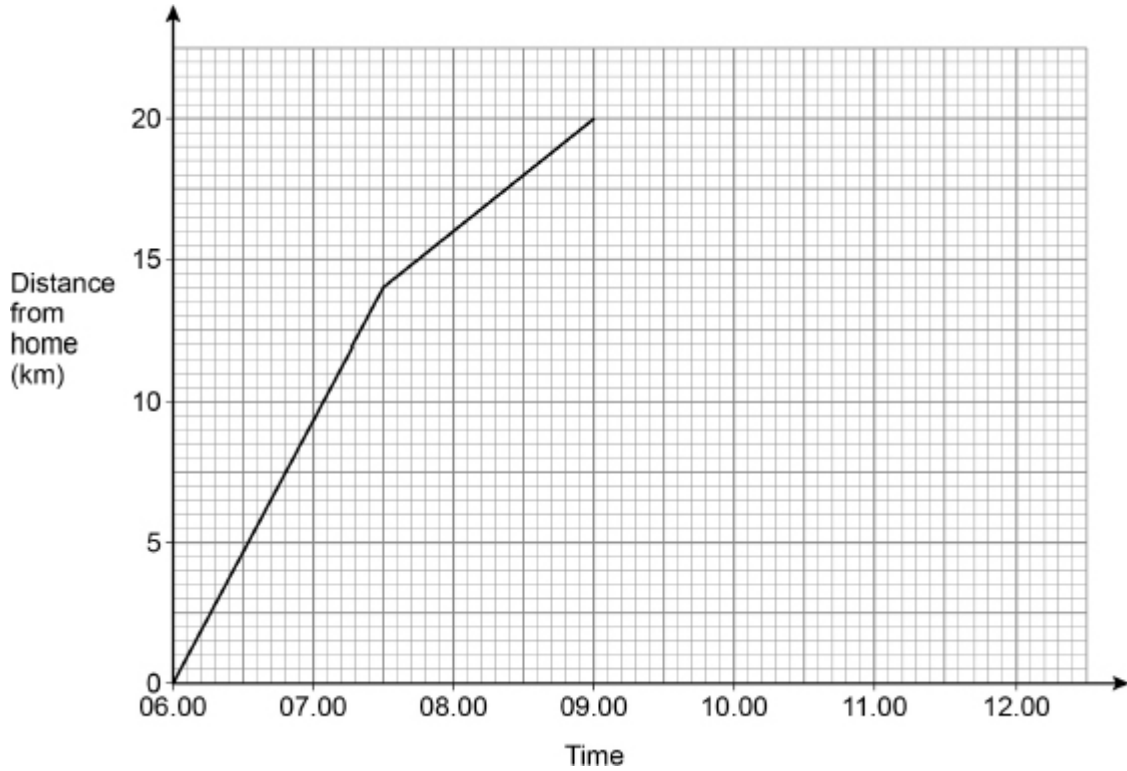(a) How far from home is she after 3 hours?

Answer _____ km

(Total 1 mark)

Q18b

Jenny leaves home at 06.00

She runs for 3 hours.

Here is a distance-time graph of her run.

(b)   For the next hour she rests.

She then gets a bus home.

She arrives home at 11.30

Complete the distance-time graph.

Assume the bus travels at a constant speed.

(Total 2 marks)

Q19a

The value of x can be 2 or 5

The value of y can be 3 or 12

(a) List the possible values of xy

(Total 2 marks)

Q19b

The value of x can be 2 or 5

The value of y can be 3 or 12

(b) Work out the **least** possible value of $\dfrac{x-y}{x}$

You **must** show your working.

(Total 2 marks)

Q15a

A line has the equation $y = x + 3$

(a) Write down the coordinates of the point where the line intersects the y-axis.

Answer (_____ , _____)

(Total 1 mark)

Q15b

A line has the equation $y = x + 3$**)**

(b) Write down the coordinates of the point where the line intersects the x-axis.

Answer (_____ , _____)

(Total 1 mark)

Q10

Work out the next term of this quadratic sequence.

5   8   14   23   ……

(Total 2 marks)

Q23

Match each sequence to its description.

One has been done for you.

1 1 2 3 5 8		Arithmetic progression
1 2 4 8 16 32		Geometric progression
1 2 3 4 5 6		Fibonacci sequence
1 3 6 10 15 21		Triangular numbers
1 4 9 16 25 36		Cube numbers
1 8 27 64 125 216		Square numbers

(Total 4 marks)

Q17

In a bag there are 10p coins, 20p coins and 50p coins.

There are two **fewer** 20p coins than 10p coins.

There are five **more** 50p coins than 10p coins.

(a)

Complete the table.

[1 mark]

Coin	Number of coins
10p	n
20p	$n - 2$
50p	

(b)   Altogether, there are 60 coins.

Work out the total **value** of the 20p coins.

Answer £ _____

(4 marks)

Q27

Solve the simultaneous equations

$7x + 2y = 36$

$3x + 2y = 16$

$x =$ _____ $y =$ _____

(Total 3 marks)

Q16a

Factorise fully $9y^3 - 6y$

(Total 2 marks)

Q12

A straight line

has gradient 4

and

passes through the point (5, 23)

Work out the equation of the line.

Give your answer in the form $y = mx + c$

(Total 3 marks)

Q17

$w = \dfrac{3}{5\sqrt{x}}$

Circle the expression for w^2

$\dfrac{6}{10x^2}$ $\dfrac{9}{25x^2}$ $\dfrac{6}{10x}$ $\dfrac{9}{25x}$

(Total 1 mark)