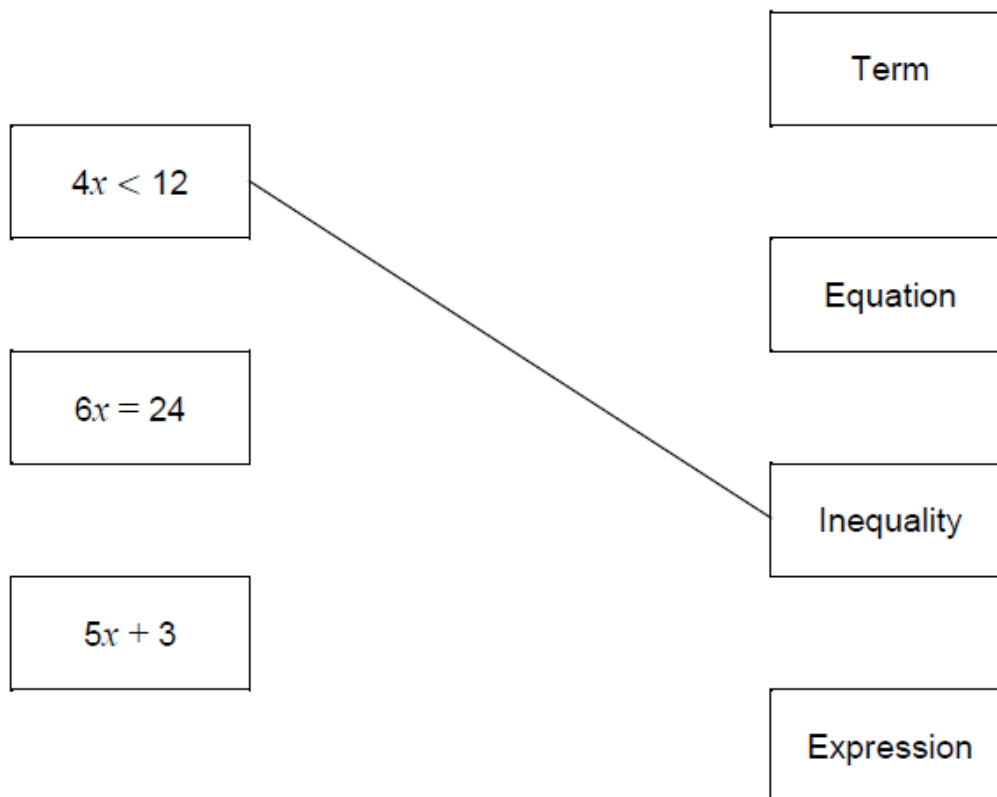**AQA - Algebra – GCSE Mathematics Paper 3**

1. May/2020/Paper_3F/No.7

    Match the algebra to the correct description.

    One has been done for you.

    [2 marks]

$4x < 12$		Term
$6x = 24$		Equation
$5x + 3$		Inequality
		Expression

2. May/2020/Paper_3F/No.15

    n is negative.

    Circle the expression that is **positive**.

    [1 mark]

    $n - 1$ $\qquad\qquad$ n^2 $\qquad\qquad$ n^3 $\qquad\qquad$ $\dfrac{1}{n}$

3. May/2020/Paper_3F/No.18

Bobbi has these notes.

Note	Number of notes
£5	3
£10	x

The total value of her notes is £T

Write a formula for T in terms of x.

[2 marks]

_____

_____

Answer _____

4. May/2020/Paper_3F/No.21

Circle the equation of the line parallel to $y = 5x + 2$

[1 mark]

$y = 2x + 5$ $y = 5x - 2$ $y = -5x + 2$ $y = -2x - 5$
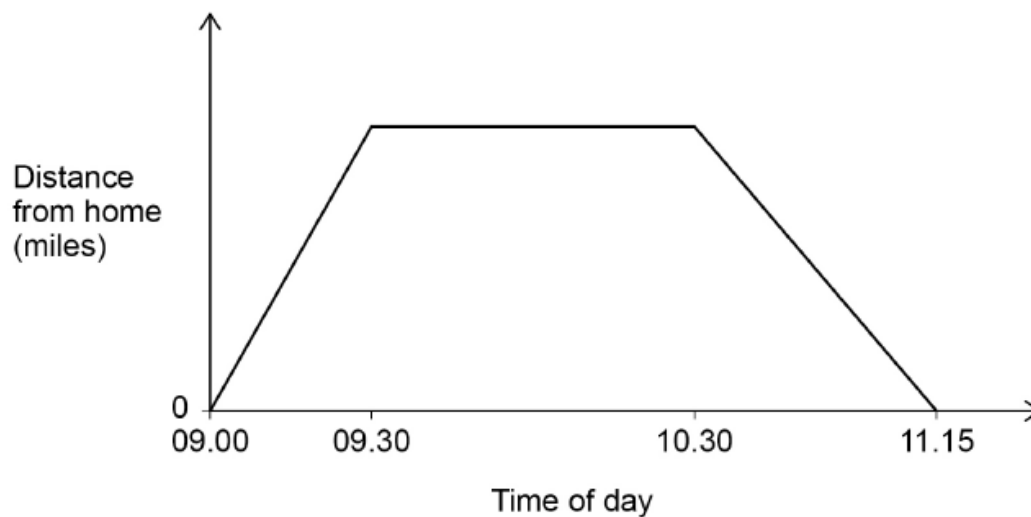
5. May/2020/Paper_3F/No.25

Chris visits a library.

He cycles to the library in half an hour at a speed of 12 miles per hour.

He stays at the library for one hour.

He then cycles home.

The sketch graph represents his visit.

Work out the speed, in miles per hour, at which Chris cycles home.

[3 marks]

Answer _____ mph

5. May/2020/Paper_3F/No.25

3

6.   May/2020/Paper_3F/No.27

Circle the expression that is equivalent to $(x-1)^2$

[1 mark]

$x^2 - 1$ $x^2 + 1$ $x^2 - 2x - 1$ $x^2 - 2x + 1$

7.   May/2020/Paper_3F/No.30

Expand and simplify fully $4(2c + 3) - (5c - 1)$

[2 marks]

_____

_____

_____

_____

Answer _____

8. May/2020/Paper_3H/No.2

Circle the equation of the line that is parallel to $y = \dfrac{1}{2}x + 3$

[1 mark]

$y = -2x$ $\qquad\qquad$ $y = 2x$ $\qquad\qquad$ $y = \dfrac{1}{2}x$ $\qquad\qquad$ $y = -\dfrac{1}{2}x$

9. May/2020/Paper_3H/No.10

Expand and simplify fully $\quad 4(2c + 3) - (5c - 1)$

[2 marks]

_____

_____

_____

_____

Answer _____

10. May/2020/Paper_3H/No.12

Here is some information about 26 houses.

a, b and c are all **different** numbers.

Number of bedrooms	Number of houses
1	7
2	a
3	b
4	c
5	8

The median number of bedrooms is 3.5

Work out a possible set of values for a, b and c.

[3 marks]

_____

_____

_____

_____

$a =$ _____

$b =$ _____

$c =$ _____

11. May/2020/Paper_3H/No.13

(a) Simplify $\dfrac{25a}{8} \times \dfrac{2a}{5}$

Give your answer as a single fraction in its simplest form.

[2 marks]

_____

_____

_____

_____

Answer _____

(b) Sofia is trying to simplify $\dfrac{6c + 10}{2}$

Her method is

     divide $6c$ by 2

     then

     add 10

Evaluate her method.

[1 mark]

_____

_____

_____

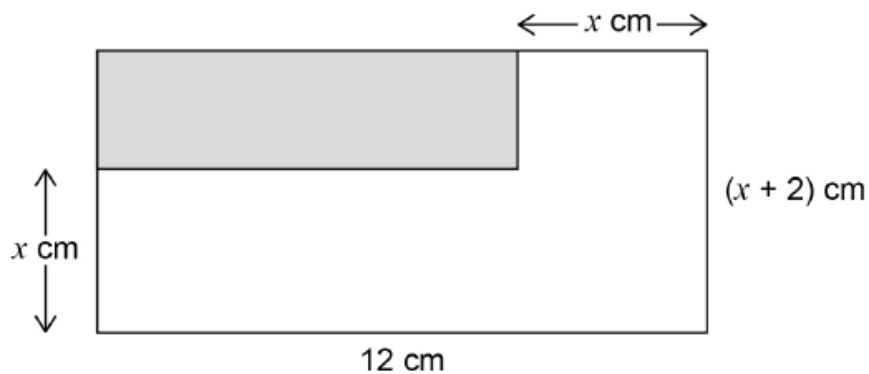**12.** May/2020/Paper_3H/No.17

Here are two rectangles.

Not drawn accurately

The area of the shaded rectangle is $\frac{1}{4}$ the area of the large rectangle.

Work out the value of x.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

8

13.   May/2020/Paper_3H/No.25

The equation of a circle is $x^2 + y^2 = 9$

Work out the length of the **diameter**.

Circle your answer.

[1 mark]

3   6   9   18

14.   May/2020/Paper_3H/No.30

$$f(x) = \frac{1}{2}x \qquad g(x) = x - x^2$$

Solve $f^{-1}(x) = gf(x)$

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

15. June/2019/Paper_3F/No.2

Solve $x - 8 = 5$

Circle your answer.

[1 mark]

$x = -13$ $\qquad$ $x = -3$ $\qquad$ $x = 3$ $\qquad$ $x = 13$

16. June/2019/Paper_3F/No.9

Jim wants to buy 10 rolls of wallpaper.

He sees these prices.

Wallpaper	
Single roll	£12.50
Pack of 3 rolls	£34.50
Pack of 5 rolls	£58.75

What is the cheapest price for 10 rolls?

[4 marks]

Answer £_____

17. June/2019/Paper_3F/No.19

(a) Simplify fully $3a^2 + 7a + 3 - a^2 + 8a - 4$

[3 marks]

_____

_____

_____

Answer _____

(b) Factorise fully $24y^2 - 20y$

[2 marks]

_____

_____

_____

Answer _____

18. June/2019/Paper_3F/No.27

Here are two sets of numbers, A and B.

Set A

200	160
104	100

Set B

270	400	483
	300	x

mean of Set A : mean of Set B = 3 : 8

Work out the value of x.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Answer _____

19. June/2019/Paper_3H/No.8

Rearrange $y = 3x - 2$ to make x the subject.

Circle your answer.

[1 mark]

$$x = \frac{y}{3} - 2 \qquad x = \frac{y+2}{3} \qquad x = \frac{y-2}{3} \qquad x = \frac{y}{3} + 2$$
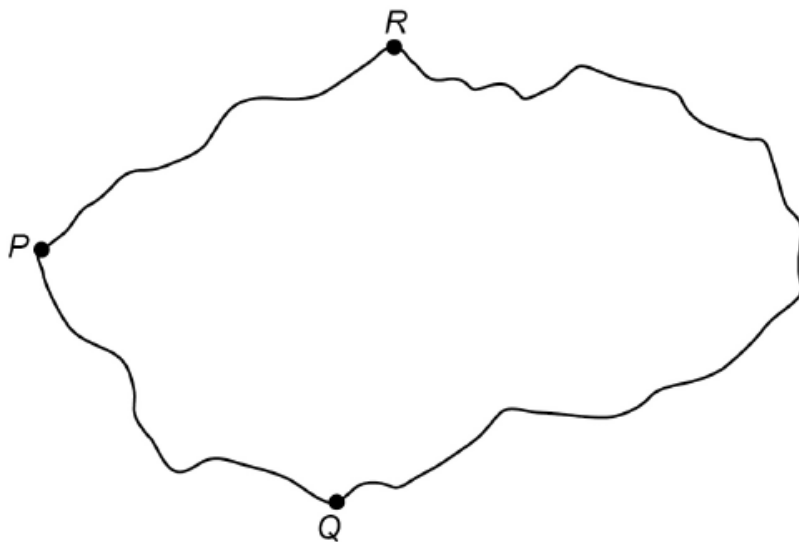
20. June/2019/Paper_3H/No.9

Towns P, Q and R are connected by roads PQ, PR and QR.

PR is 10 km longer than PQ.

QR is twice as long as PR.

The total length of the three roads is 170 km

Not drawn
accurately

Work out the length of PQ.

[4 marks]

Answer _____ km

21. June/2019/Paper_3H/No.15

Simplify fully $\dfrac{a^3b^2}{cd} \times \dfrac{c}{ab^5}$

[3 marks]

_____

_____

_____

_____

_____

Answer _____

22. June/2019/Paper_3H/No.18(a)

(a) Write $x(3x - 9) = 4$ in the form $ax^2 + bx + c = 0$ where a, b and c are integers.

[1 mark]

_____

_____

Answer _____

23. June/2019/Paper_3H/No.26

$g(x) = 16 - x$ $h(x) = x^3$

Solve $gh(x) = 24$

[3 marks]

$x =$ _____

24. June/2019/Paper_3F/No.2

Circle the expression that can be written as $3cd$

[1 mark]

$3 + c + d$ $\qquad$ $c + c + c + d$ $\qquad$ $c \times c \times c \times d$ $\qquad$ $3 \times c \times d$

25. June/2019/Paper_3F/No.9

(a) Rearrange $m = p + 2$ to make p the subject.

[1 mark]

Answer _____
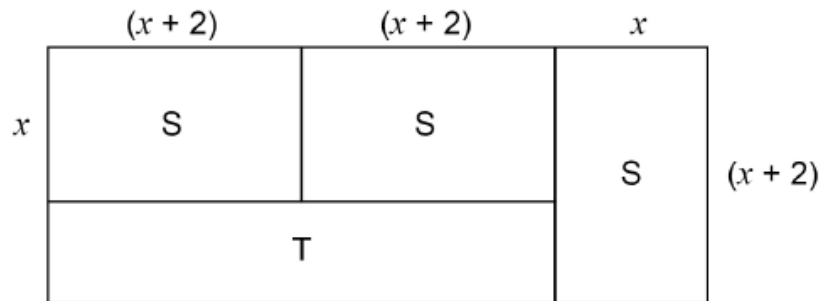
(b) Simplify $5x^2 - x^2$

[1 mark]

Answer _____

26. June/2019/Paper_3F/No.19

S and T are rectangles.

S has dimensions $(x + 2)$ and x.

Some of these rectangles make the larger rectangle shown.

	$(x + 2)$	$(x + 2)$	x		Not drawn accurately
x	S	S			
			S	$(x + 2)$	
	T				

Work out an expression for the perimeter of T.

Give your answer in its simplest form.

[3 marks]

_____

_____

_____

_____

_____

Answer _____

27. June/2019/Paper_3H/No.2

The equation of a straight line is $2y = 3x + 5$

Circle the gradient of the line.

[1 mark]

$\dfrac{2}{3}$ $\dfrac{3}{2}$ 3 5

28. June/2019/Paper_3H/No.3

$(2x - 4)(3x + 5)$ is expanded and simplified.

Circle the term which is part of the answer.

[1 mark]

$2x$ $-2x$ $22x$ $-22x$

29. June/2019/Paper_3H/No.17

$f(x) = 3x^2 - 4x + 8$ for all values of x

Jenny says,

"f(10) must equal 2 × f(5), because 10 is 2 × 5"

Is Jenny correct?

Show working to support your answer.

[2 marks]

_____

_____

_____

_____

_____

_____

30.

$f(x) = 2x - 3$ and $g(x) = x^2$

Show that $f^{-1}(55) = fg(4)$

[4 marks]