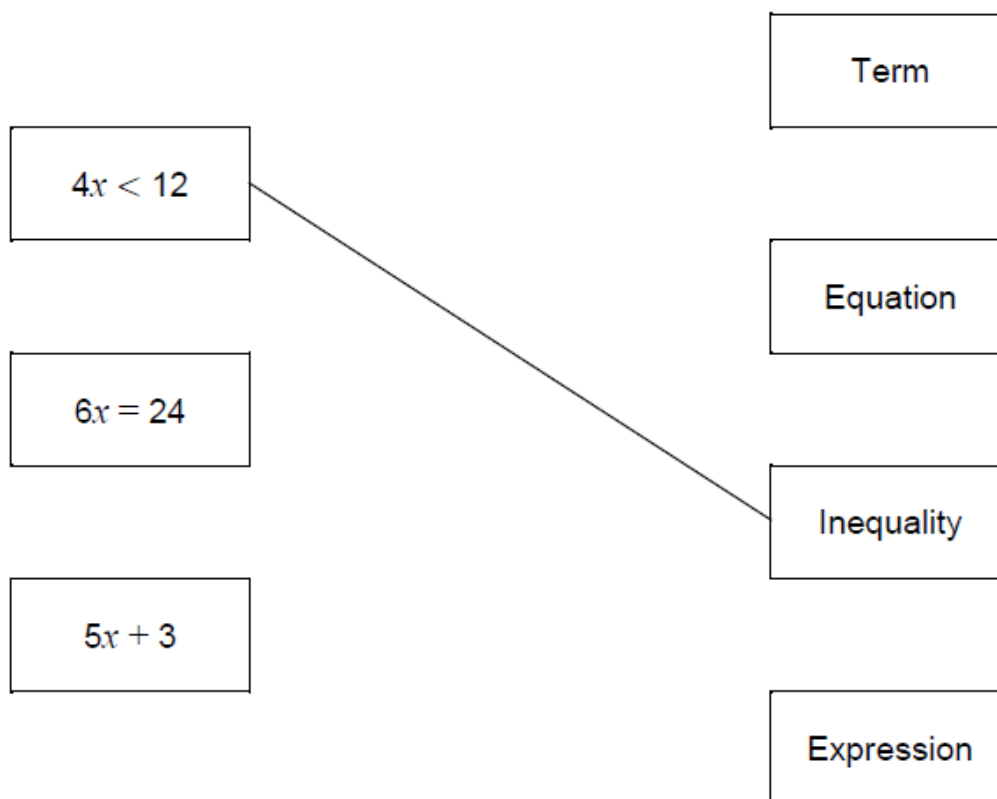


Algebra – GCSE Mathematics Paper 31. **No.7**

Match the algebra to the correct description.

One has been done for you.

[2 marks]2. **No.15** n is negative.Circle the expression that is **positive**.**[1 mark]**

$n - 1$

n^2

n^3

$\frac{1}{n}$

3. 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. 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. No.25

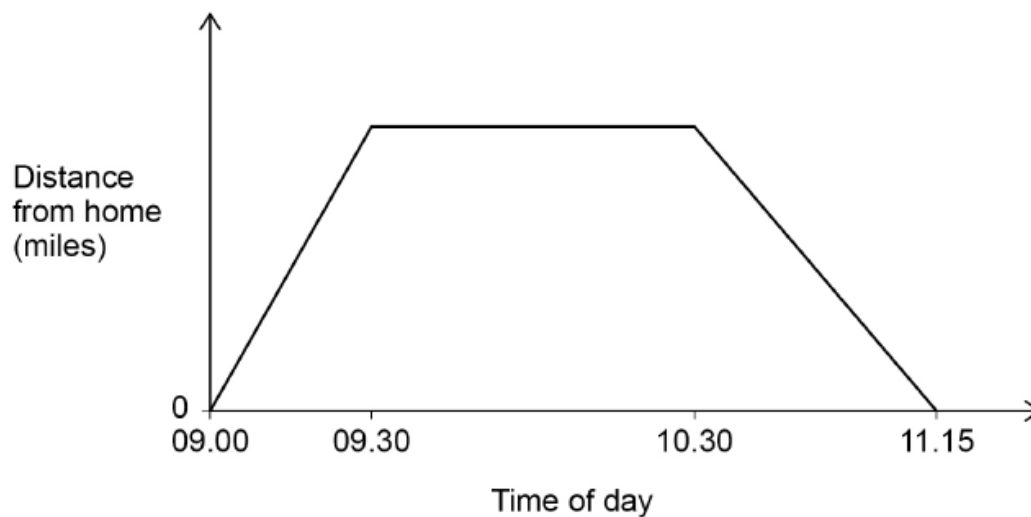
Chris visits a library.

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

6. 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. No.30

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

[2 marks]

Answer

8. No.2

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

[1 mark]

$y = -2x$

$y = 2x$

$y = \frac{1}{2}x$

$y = -\frac{1}{2}x$

9. No.10

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

[2 marks]

Answer _____

10. 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. No.13

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

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

[2 marks]

Answer _____

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

Her method is

divide $6c$ by 2

then

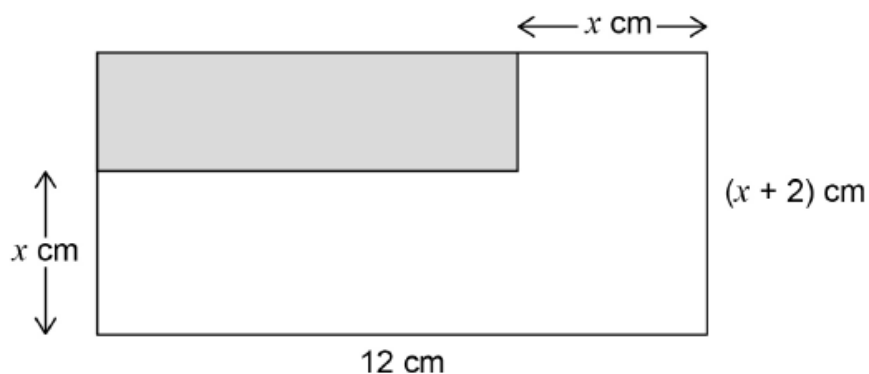
add 10

Evaluate her method.

[1 mark]

12. 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 _____

[1 mark]

18

14. No.30

[4 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Answer

15. No.2

Solve $x - 8 = 5$

Circle your answer.

[1 mark]

$x = -13$

$x = -3$

$x = 3$

$x = 13$

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]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Answer £

17. 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. 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. No.8

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

Circle your answer.

[1 mark]

$$x = \frac{y}{3} - 2$$

$$x = \frac{y+2}{3}$$

$$x = \frac{y-2}{3}$$

$$x = \frac{y}{3} + 2$$

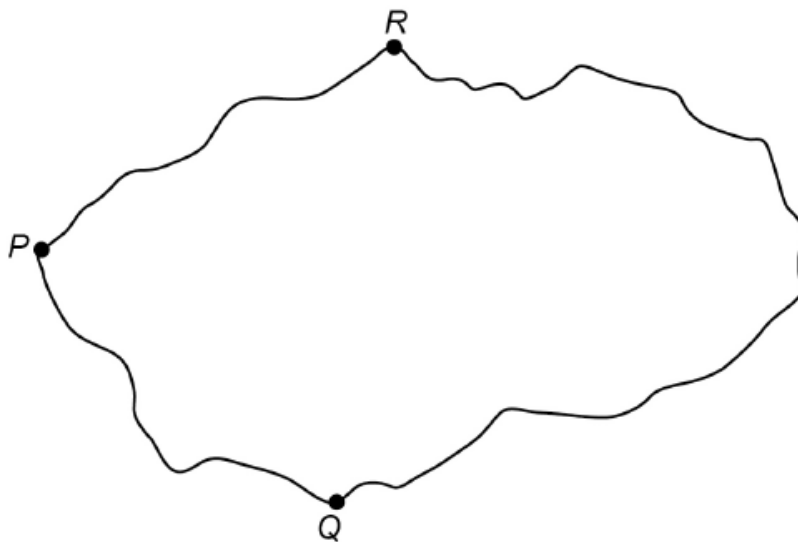
20. No.9

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. No.15

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

[3 marks]

Answer _____

22. 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. No.26

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

Solve $gh(x) = 24$

[3 marks]

$$x = \underline{\hspace{10cm}}$$

24. No.2

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

[1 mark]

$3 + c + d$

$c + c + c + d$

$c \times c \times c \times d$

$3 \times c \times d$

25. No.9

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

[1 mark]

Answer

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

[1 mark]

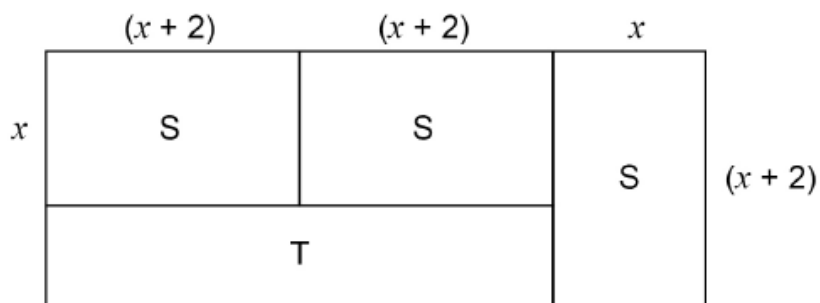
Answer

26. No.19

S and T are rectangles.

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

Some of these rectangles make the larger rectangle shown.

Not drawn
accurately

Work out an expression for the perimeter of T.

Give your answer in its simplest form.

[3 marks]

Answer _____

27. No.2

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

Circle the gradient of the line.

[1 mark]

$$\frac{2}{3}$$

$$\frac{3}{2}$$

$$3$$

$$5$$

28. 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. No.17

$$f(x) = 3x^2 - 4x + 8 \quad \text{for all values of } x$$

Jenny says,

“ $f(10)$ must equal $2 \times f(5)$, because 10 is 2×5 ”

Is Jenny correct?

Show working to support your answer.

[2 marks]

30. No.28

$$f(x) = 2x - 3 \quad \text{and} \quad g(x) = x^2$$

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

[4 marks]
