Algebra – GCSE Mathematics Paper 1

1. No.2

P is double r.

Circle the correct formula.

[1 mark]

$P = \frac{r}{2}$ $P = r + 2$ $P = r - 2$ $P = 2r$

2. No.19

(a) Work out $\frac{3^{12}}{3^7}$

Give your answer as a whole number.

[2 marks]

Answer _____

(b) Simplify $8 \times 2^6 \times 2^4$

Give your answer as a power of 2

[2 marks]

Answer _____

3. No.26

Solve $\frac{2w}{15} = \frac{4}{5}$

[2 marks]

$w =$ _____

4. No.1

Which of these is the equation of a straight line?

Circle your answer.

[1 mark]

$y = 6x^2$ $\quad$ $y = x - 6$ $\quad$ $y = x^2 + 6$ $\quad$ $y = \frac{6}{x}$

5. No.6

(a) Work out $\frac{3^{12}}{3^{7}}$

Give your answer as a whole number.

[2 marks]

Answer _____

(b) Simplify $8 \times 2^{6} \times 2^{4}$

Give your answer as a power of 2

[2 marks]

Answer _____

6. No.13

Solve $\frac{2w}{15} = \frac{4}{5}$

[2 marks]

$w =$ _____

7. No.18

$$12x^3 + 7x^2 + 3x - 10 \equiv 2(ax^3 + x^2 + 2x - 5) + x(bx + c)$$

Work out the values of a, b and c.

[3 marks]

$a =$ _____ $b =$ _____ $c =$ _____

8. No.20

Rearrange $y = \frac{5x + 9}{x}$ to make x the subject.

[4 marks]

Answer _____

9. No.24

(a) Simplify fully $\frac{6}{a} - \frac{11}{4a}$

[2 marks]

Answer _____

(b) Simplify fully $(y^2 - 3y) \times \frac{y^2 + 10y + 21}{y^2 - 9}$

[4 marks]

Answer _____

10. No.2

Circle the expression that is equal to $x + x + x - x + x$

[1 mark]

x $2x$ $3x$ $4x$

11. No.22

(a) Lucy wants to simplify $6a - (7b - 2a)$

She writes $4a - 7b$

Is she correct?

Tick a box.

☐ Yes ☐ No

Give a reason for your answer.

[1 mark]

(b) Lucy also wants to simplify $3p^2 \times 5p^7$

She says,

"Add 3 and 5, then add 2 and 7"

Her answer is $8p^9$

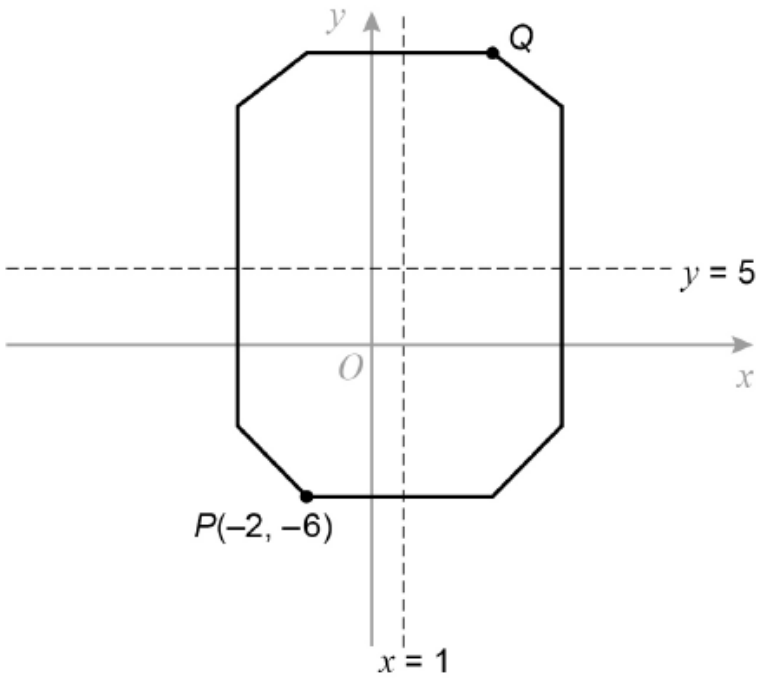
Tick a box for each part of her method.

[1 mark]

	Correct	**Not correct**
Add 3 and 5	☐	☐
Add 2 and 7	☐	☐

12. No.26

The diagram shows an octagon.



Not drawn accurately

$x = 1$ and $y = 5$ are lines of symmetry.

Work out the coordinates of point Q.

[2 marks]

Answer (_____ , _____)

13. No.32

Factorise $x^2 + 7x + 10$

[2 marks]

Answer _____

14. No.1

Simplify $\left(a^5\right)^3$

Circle your answer.

[1 mark]

$8a$ $15a$ a^8 a^{15}

15. No.14

Simplify $\frac{3}{x} + \frac{4}{x}$

Circle your answer.

[1 mark]

$\frac{7}{x}$ $\frac{7}{2x}$ $\frac{12}{x}$ $\frac{12}{x^2}$

16. No.15

$(x + a)(x + 3a) \equiv x^2 + bx + 75$

Work out the **two** possible values of b.

[3 marks]

Answer _____ and _____

17. No.23

Rearrange $y = \frac{1}{\sqrt{x+1}}$ to make x the subject.

[3 marks]

Answer _____

18. No.24

(a) $f(x) = cx + d$

$f(4) = 7$

$f(10) = 22$

Work out the values of c and d.

[3 marks]

$c =$ _____ $d =$ _____

(b) $g(x) = 2x$ and $h(x) = \frac{x-1}{2}$

Circle the expression for $hg(x)$

[1 mark]

$\frac{2x^2 - x}{2}$ $\frac{2x-1}{2}$ $x^2 - x$ $x - 1$