Algebra – 2021 IGCSE 0444

1. Nov/2021/Paper_23/No.7

Simplify.

$$32g^{32} \div 4g^{4}$$

..... [2]

2. Nov/2021/Paper_23/No.10

These are the first four terms of a sequence.

3 −1 −5 −9

(a) Find the next term in this sequence.

..... [1]

(b) Find the nth term.

..... [2]

3. Nov/2021/Paper_23/No.11

$$P = M(g^2 + h^2)$$

(a) Find the value of P when $M = 100$, $g = 3$, and $h = 2$.

$P =$ ..... [2]

(b) Rearrange the formula to write g in terms of P, M, and h.

$g =$ ..... [3]

4. Nov/2021/Paper_23/No.21

Simplify fully.

$$\left(243y^{10}\right)^{\frac{3}{5}}$$

..... [2]

5. Nov/2021/Paper_23/No.25

Simplify.

$$\frac{3x^2 - 18x}{ax - 6a + 2cx - 12c}$$

..... [4]

6. Nov/2021/Paper_43/No.5

(a) Solve the system of linear equations.
You must show all your work.

$$5p - 3q = 18$$
$$3p + 2q = 7$$

$p =$ .....

$q =$ ..... [4]

(b) Solve the equation.

$$\frac{x}{4} + \frac{2x}{3} = 1$$

$x =$ ..... [2]

(c) $-8 < 3x - 2 \leqslant 7$

(i) Solve the inequality.

..... [3]

(ii) Find the integer values of x that satisfy the inequality.

..... [1]

(d) Factorize completely.

$$16a - 4a^2$$

..... [2]

(e) Write each of the following as a single fraction, in its simplest form.

(i) $\frac{1}{2a} \div \frac{3}{4b}$

..... [2]

(ii) $2 - \frac{x}{x-1}$

..... [2]

7. Nov/2021/Paper_43/No.7

(a) Amir buys 3 cakes that cost c cents each and 2 loaves of bread that cost $(2c - 11)$ cents each.
He spends a total of \$5.87 .

Find the value of c.

$c =$ ..... [3]

(b) A bottle of water costs \$$w$.
A bottle of juice costs \$$(w + 1)$.

Alex spends \$22 on bottles of water and \$42 on bottles of juice.
The number of bottles of water is equal to the number of bottles of juice.

Find the value of w.

$w =$ ..... [3]

8. Nov/2021/Paper_43/No.12

Alicia walks a distance of 9 km at a speed of x km/h.
She then runs a distance of 5 km at a speed of $(2x + 1)$ km/h.

The total time Alicia takes is 2.5 hours.

(a) Show that $10x^2 - 41x - 18 = 0$.

[4]

(b) Work out Alicia's running speed.
You must show all your work.

..... km/h [4]

9. June/2021/Paper_21/No.7

(a) The nth term of a sequence is $n^2 + 3n$.

Find the first three terms of this sequence.

....., ..., ... [2]

(b) These are the first five terms of a different sequence.

25 18 11 4 −3

Find the nth term of this sequence.

..... [2]

10. June/2021/Paper_21/No.8

Solve the system of linear equations.
You must show all your working.

$$2x + y = 3$$
$$x - 5y = 40$$

$x =$ .....

$y =$ ..... [3]

11. June/2021/Paper_21/No.12

(a) Simplify fully.

$$(4ab^5)^4$$

..... [2]

(b) $2p^{\frac{1}{3}} = 6$

Find the value of p.

$p =$ ..... [1]

(c) $81^2 \div 3^t = 9$

Find the value of t.

$t =$ ..... [2]

12. June/2021/Paper_21/No.16

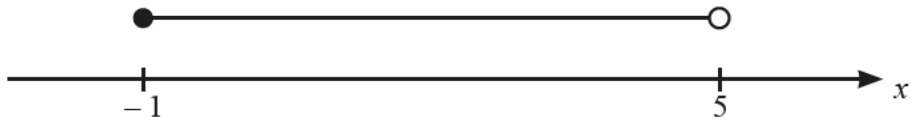
Solve for h.

$$2mh = g(1-h)$$

$h =$ ..... [4]

13. June/2021/Paper_41/No.5

(a)



(i) Write down the inequality shown by this number line.

..... [2]

(ii) Find the integers that satisfy this inequality.

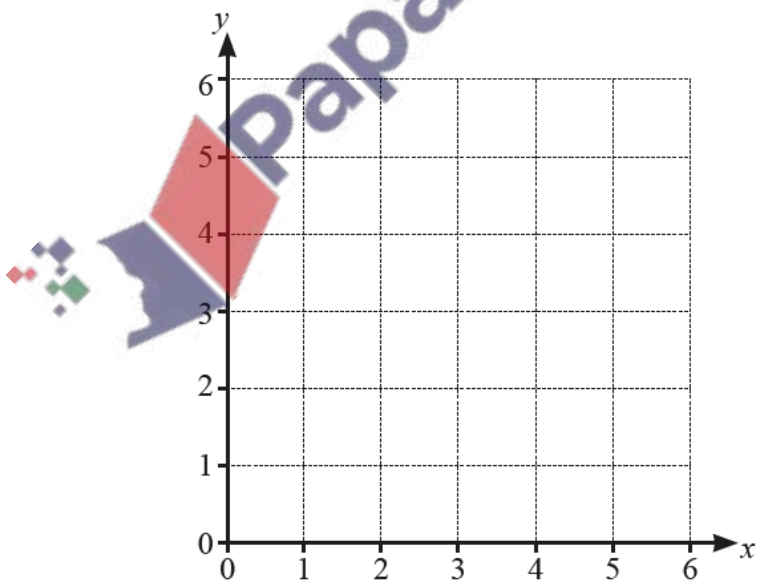
..... [2]

(b) Solve the inequality.

$$\frac{3x-2}{4} > 2x$$

..... [2]

(c)



On the grid, find and label the region, R, bounded by the following inequalities.

$x \leqslant 5$ $y \geqslant 1$ $y \leqslant x$ $x + y \geqslant 5$ [5]

14. June/2021/Paper_41/No.7

(a) Factor.

$$3x-1-y+3xy$$

..... [2]

(b) Simplify.

$$\frac{x^2-25}{x^2-x-20}$$

..... [3]

(c) Write as a single fraction in its simplest form.

$$\frac{x+5}{x}+\frac{x+8}{x-1}$$

..... [3]

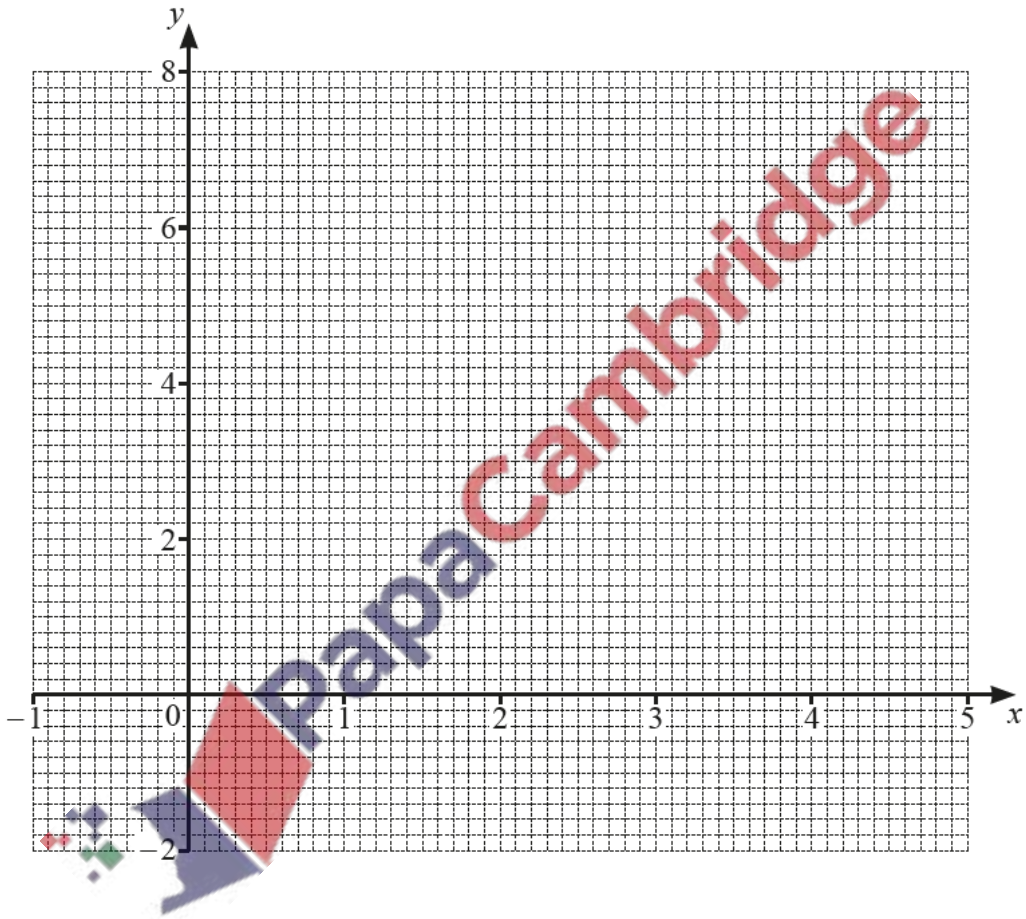
15. June/2021/Paper_41/No.12

The table shows some values of $y = 3 + 4x - x^2$ for $-1 \leqslant x \leqslant 5$.

x	-1	-0.5	0	1	2	3	4	4.5	5
y	-2			6		6			-2

(a) Complete the table. [3]

(b) On the grid, draw the graph of $y = 3 + 4x - x^2$ for $-1 \leqslant x \leqslant 5$.



[4]

(c) Write down an **integer** value of k for which the equation $3 + 4x - x^2 = k$ has no solutions.

..... [1]

(d) By drawing a suitable tangent, estimate the slope of the curve when $x = 3$.

..... [2]

(e) By drawing a suitable straight line on the grid, solve the equation $-1 + \frac{9}{2}x - x^2 = 0$.

$x =$ ..... or $x =$ ..... [4]