Aberdare Community School

Mathematics Department

WJEC GCSE

Higher – Non Calculator

Algebra

Algebra skills - start of paper

Name: .....

Set: .....

Date: .....

Teacher: .....

2. Simplify $3(a + 2b) + 7a - 8b$.

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[3]

2. Simplify $5\,(x - 3y) + 6x - 10y$.

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[3]

Examiner only

4. When $t = 5$ and $w = -2$ find the value of

(a) $\dfrac{4t - 2w}{3}$,

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[2]

(b) tw^3.

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[2]

Examiner only

6. *(a)* Solve **each** of the following equations.

(i) $7x + 4 = 3x + 16$

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(ii) $3x + 2 = 2(3 - 2x)$

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[6]

(b) Simplify **each** of the following.

(i) $2(3r + 1) + 5r$

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(ii) $3(2p + 3) - 2(p - 1)$

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[4]

4. Solve **each** of the following equations.

(a) $6x - 11 = 17 + 2x$

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[3]

(b) $3(x - 7) = 27$

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[3]

(c) $\frac{2x}{3} = 6$

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[2]

4. *(a)* When $f = 5$ and $g = -2$ find the value of

(i) $\dfrac{2f - 3g}{2}$,

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(ii) $3fg^2$.

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[4]

Examiner only

4. *(a)* Solve $\frac{x}{4} = 20$.

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[1]

(b) Factorise $y^2 - 4y$.

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[1]

(c) Solve $5x + 2 = 6 - 3x$.

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[3]

(d) Expand $x(5x^2 + 6)$.

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[2]

Examiner only

7. *(a)* Solve $\frac{x+5}{3} = 14$.

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[2]

(b) Simplify $5(2y + 3) - 2(4y - 7)$.

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[2]

2. Simplify $3(a + 2b) + 7a - 8b$.

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[3]

Examiner only

5. Look at the grid.
The total of each column is shown under the grid.

a	*b*	*c*	*a*
a	*c*	*c*	*b*
b	*c*	*c*	*c*
b	*c*	*c*	*d*
10	26	32	0

Find the values of *a, b*, *c* and *d*.

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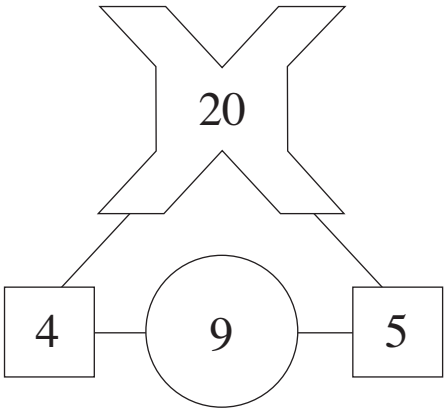
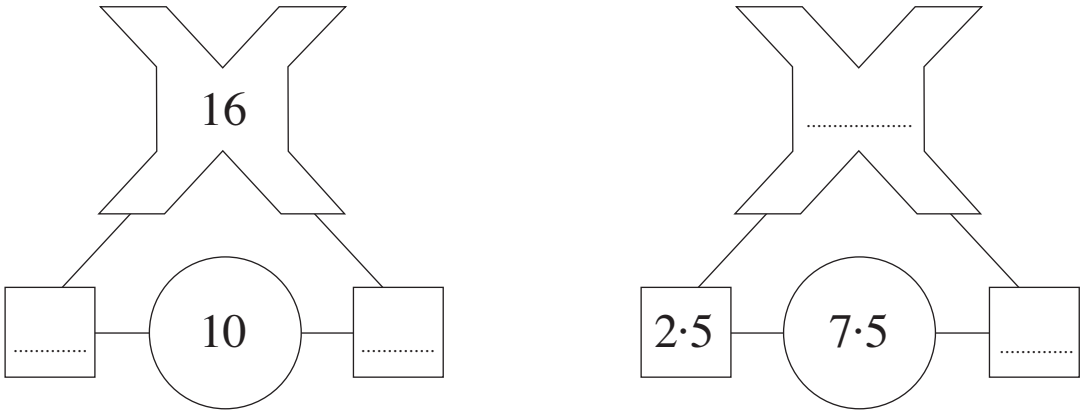
a = ... *b* = ... *c* = ... *d* = ... [4]

1. The sum of the two numbers in the squares is shown in the circle.
The product of the two numbers in the squares is shown in the cross.

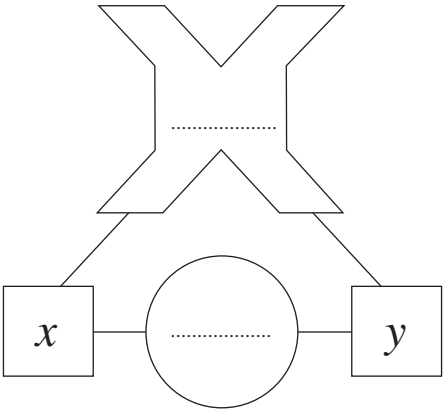


(a) Complete **each** of the following diagrams.



[2]

(b) Using the same rules, complete the diagram below in terms of x and y.



[2]

1. *(a)* (i) Use the formula below to find the value of g when $f = 9$ and $h = -3$.

$$g = \frac{f(5 - h)}{3}$$

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[3]

(ii) Find the value of $d^2 - 7$ when $d = -4$.

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[1]

(b) Make q the subject of the formula below.

$$q + 5t = u$$

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[1]

(c) Factorise $7p + 21$.

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[1]

(d) Simplify $4f + 5f - 17f - f + 6f$.

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[1]

(e) Expand $6(x + 2)$.

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[1]

Examiner only

3. *(a)* Factorise $18a - 27$.

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[1]

(b) Factorise $b^3 - 3b$.

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[1]

(c) Expand $5(2x + 7)$.

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[1]

(d) Solve $\frac{12}{x} = 4$.

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[1]

(e) Solve $8x + 5 = 4x + 7$.

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[3]

Examiner only

4352 020005

3. Solve $4x - 9 > 15 + 2x$.

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[3]

Examiner only

4.

(b) Simplify $12x - 50y - 40x - 35y$.

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[2]

(d) Simplify $\frac{(3a + 2)^8}{3a + 2}$.

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[1]

Examiner only

4. *(a)* Given that $a = -2$, $b = -4$ and $c = 8$ find the value of $\frac{3c-4a}{b^2}$.

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[2]

3.

(d) Simplify $2xy + 3y - 13xy + 4x - 17y$.

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[1]

Examiner only

5. *(a)* Simplify $4(x + 5) - 3(2x - 4)$.

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[2]

(b) Simplify $\frac{y^{16} \times y^2}{y^4}$.

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[1]

(c) Solve $3b + 2 > 29$.

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[2]

Examiner only

4. *(a)* Expand $y(y^3 + 6)$.

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[2]

(b) Solve $\frac{x}{3} + 54 = 63$.

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[2]

(c) Solve $\frac{36 - x}{4} = 10$.

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[3]

(d) Factorise $2x^2 - 4x$.

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[2]

Examiner only

[3]

4. *(a)* Solve $\frac{40}{5x} = 4$.

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[2]

(b) Solve $3(2x - 5) > 21$.

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[3]

Examiner only

4. *(a)* Solve $6x - 7 = 2x + 21$.

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[3]

(b) Factorise $24x + 3$.

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[1]

(c) Factorise $x^2 - 6x$.

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[1]

(d) Expand $2x(x^3 + 6)$.

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[2]

(e) Solve $\frac{x}{3} + 15 = 25$.

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[2]

Turn over.

Examiner only

5. *(a)* Expand $y^2(y^3 - 2)$.

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[2]

(b) Factorise $8x^3 + 16$.

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[2]

(c) Solve $7x < 2x + 30$.

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[2]

Examiner only

3.

(b) Solve $\frac{3x}{2} = 15$.

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[2]

Examiner only

(b) Solve $8x < 3x + 40$.

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[2]

Examiner only

1. Given that $f = -3$, $g = 2$ and $h = 5$, find the value of the following expressions.

(a) $\dfrac{f^2 - h}{g}$ [2]

(b) $(2h)^3$ [2]

(c) $g - f + \dfrac{1}{h}$ [2]

Turn over.

Examiner only

4. *(a)* Simplify

(i) $3t^2 \times 4t^7$, [1]

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(ii) $\frac{p^8}{p^2}$. [1]

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(b) Solve the inequality $7x < 72 - x$. [2]

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Examiner only

1.

(b) Simplify $32x - 16y - 50x - 17y$. [2]

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(c) Simplify $\dfrac{(2x+7)^4}{2x+7}$. [1]

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Turn over.

Examiner only

1. *(a)* Given that $a = -3$, $b = -5$ and $c = 2$, find the value of $\dfrac{6c - 2b}{a^2 + 2}$. [2]

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Turn over.

Examiner only

6. *(a)* Solve $6x - 27 = 4x - 13$. [3]

(b) Solve $\frac{x}{2} + 18 = 26$. [2]

(c) Factorise $y^2 - 5y$. [1]

(d) Expand $y(y^2 + 4)$. [2]

(e) Solve $5x - 6 < 30$. [2]

Examiner only

5.

(b) Given that $a = 10$, $b = -3$ and $c = -5$, find the value of each of the following expressions.

(i) b^2 [1]

(ii) $\frac{ab}{c}$ [1]

(iii) $\frac{2bc}{a}$ [1]

Examiner only

6. Solve the inequality $3 - x < 7$. [2]

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Examiner only

2. *(a)* Solve $\frac{3x}{4} = 36$. [2]

(b) Solve $\frac{9}{x} = 18$. [1]

(c) Solve $5x - 12 = 3(x + 6)$. [3]

Examiner only

(d) Solve the inequality $9x + 5 < 77$. [2]

(e) Write down the smallest whole number that satisfies the inequality $4x > 45$. [2]

Smallest whole number is .....

(f) Simplify $10x \times 5x \times 2x$. [1]

Turn over.

Examiner only

6. *(a)* (i) Solve the inequality. [2]

$$6p < 4p - 7$$

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(ii) An integer p satisfies the above inequality.
Write down the greatest possible value of p. [1]

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(b) Simplify $5(3x + 2) - 4(2x - 5)$. [2]

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Turn over.