



Aberdare Community School
Mathematics Department

WJEC GCSE

Higher – Calculator

Algebra

Algebra skills - later questions

Name:

Set:

Date:

Teacher:

12.

(b) Solve $\frac{24-2x}{5} = 6-x$.

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[3]

(c) Simplify $3x^6y^2 \times 4x^2y^5$.

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[2]

7. (a) Solve $25(3x - 8) = 100$.

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(c) Solve $4x < 2x + 13$.

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14. Solve the following equation.

$$\frac{3x-7}{4} - \frac{4x+5}{2} = \frac{3}{4}$$

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13. (a) Expand the following expression, simplifying your answer as far as possible.

$$(x + 2)(x - 6)$$

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8. (a) Expand and simplify

$$(x + 6)(x - 2).$$

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- (b) Simplify

$$3x^5 \times 5x^7.$$

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- (c) Simplify

$$\frac{35x^6}{5x^2}.$$

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- (d) Simplify

$$(5x^3y)^2.$$

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- (e) Solve

$$(x + 2)(5x - 1) = 0.$$

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- (f) Solve

$$8 = \frac{35}{x}.$$

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16. (a) Expand the following expression, simplifying your answer as far as possible.

$$(x - 4)(x + 6)$$

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9. Solve the following equation.

$$3(9 - 2x) = 83 - 13x$$

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12.

(b) Simplify $3x^8y^2 \times 5x^6y$.

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8.

(b) Solve the inequality $15t < 4t + 7$.

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11. (a) Simplify $(3x^2y^4) \times (2x^7y^5)$.

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(b) Expand and simplify $(x + 8)(x - 2)$.

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13.

(b) Simplify $\frac{2(x+3)^3}{(x+3)^2}$.

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(d) Solve $4n - 5 < n + 22$.

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- (c) Solve the inequality $45 + y < 7y - 3$.
Write your answer in the form $y > a$ where a is a whole number.

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$$y > \dots\dots\dots$$

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12.

(b) Solve $\frac{24 - 2x}{5} = 6 - x$.

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(c) Simplify $3x^6 \times 4x^2$.

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8. (a) Solve $28n - 3 > 15n + 6$.

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- (b) Expand and simplify $(2x + 1)(3x + 4)$.

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- (c) Solve the following equation.

$$\frac{x+8}{8} + \frac{x-4}{2} = \frac{15}{4}$$

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10.

(d) Solve the inequality $4 + 5n > 7n - 12$.

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10.

(b) Solve $y(y + 6) = 0$.

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

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(b) Expand $2y(y^2 + 3)$.

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(d) Solve $\frac{240}{x} = 30$.

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14. (a) Simplify $\frac{x^{\frac{3}{4}} y^{\frac{3}{2}}}{x^{\frac{1}{4}} y^{-\frac{1}{2}}}$.

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10. (a) Expand and simplify $(x + 6)(x - 3)$.

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(b) Simplify $\frac{3(x+4)^3}{(x+4)^2}$.

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10.

(c) Solve $3 - 2n > 4n - 9$.

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7. The following is a formula that is used by engineers to measure how far an object travels in a straight line under certain conditions.

$$s = ut + \frac{1}{2} at^2$$

- s is the distance travelled
- u is the object's initial velocity
- a is the acceleration of the object
- t is the time taken

The initial velocity of an object is 20 metres per second.
It travels a distance of 100 metres in 4 seconds.
Find the acceleration of the object.

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7. You are given the following clue to find the number x .

Five times the number added to a quarter of the number is 18.9.

Use the clue to find the value of x .

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9. Solve $\frac{8x-5}{3} + \frac{4x+5}{4} = \frac{149}{12}$.

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10.

(b) Solve $\frac{3+x}{2} + \frac{2x-1}{11} = 13$.

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8.

(b) Solve $x^2 - 6x = 0$.

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11.

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

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2. (a) When $r = 6.2$ and $t = -3.1$, find the value of $5r - 2t$.

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- (b) When $x = \frac{1}{2}$ and $y = \frac{3}{4}$, find the value of $x^2 + 7y$.

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8. (a) Solve $2x + 5 = 5(x + 1)$.

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(b) Solve $\frac{1}{3}(2x + 3) + 4x = 8$.

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12. Show that $(4x - 1)(6x + 5) - (8x - 1)(3x + 5)$ is identical to $-23x$.

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8. (a) Solve the following equation.

$$\frac{3x-1}{4} - \frac{x+6}{3} = \frac{3}{2}$$

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8.

(b) Solve the following equation.

$$\frac{8x+1}{3} - \frac{4x+7}{2} = \frac{1}{2}$$

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12. Solve the following equation.

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$$\frac{x-1}{2} + \frac{4x-6}{3} = \frac{1}{4}$$

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12. Solve the equation $\frac{12x-1}{5} - \frac{x}{2} = -4$.

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9. The following is a formula that is used by engineers to measure the velocity of an object travelling in a straight line under certain conditions.

$$v^2 = u^2 + 2as$$

- s is the distance travelled from the start
- v is the object's velocity after it has travelled a distance s
- u is the object's initial velocity
- a is the constant acceleration of the object

- (a) The initial velocity of an object is 4 metres per second.
After travelling a distance of 64 metres, its velocity is 20 metres per second.
Find the acceleration of the object.

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- (b) Assuming the acceleration remains the same, show whether or not the object has reached a velocity of 25 metres per second when it is at a distance of 100 metres from the start.

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8. (a) Solve the equation $\frac{12}{y} = 5$.

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(b) Solve the equation $4(2x - 5) = 3x - 5$.

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