

Algebra 1H Assessment

THE ANSWERS

Higher Level



All questions

Clip	Grade	Title of clip	Question(s)	Marked out of	Score	%
33.....	2.....	Simplifying - Addition and Subtraction.....	1 - 3	12	_____	_____
34.....	2.....	Simplifying - Multiplication	4 - 6	10	_____	_____
35.....	2.....	Simplifying - Division.....	7 - 9	9	_____	_____
36.....	2.....	Function Machines	10	4	_____	_____
93.....	3.....	Expanding Brackets	11	8	_____	_____
94.....	3.....	Simple Factorisation	12	10	_____	_____
95.....	3.....	Substitution	13 - 16	17	_____	_____
96.....	3.....	Straight Line Graphs	17 - 18	8	_____	_____
97.....	3.....	The Gradient of a Line	19	4	_____	_____
98.....	3.....	Drawing Quadratic Graphs	20	6	_____	_____
99.....	3.....	Sketching Functions	21	2	_____	_____
102.....	3.....	Generating a Sequence from the n th Term	22	5	_____	_____
103.....	3.....	Finding the n th Term	23	2	_____	_____
104.....	3.....	Special Sequences	24 - 25	3	_____	_____

Out of 100

TOTAL
SCORE _____

Final
Percentage

%

1) Simplify the following:

a) $2x + 5x = \underline{7x}$ 1
b) $7y - 4y = \underline{3y}$ 1
c) $3x + x = \underline{4x}$ 1
d) $2x - 8x + 3x = \underline{-3x}$ 1

2) Simplify the following:

a) $4xy^2 + 2xy^2 = \underline{6xy^2}$ 1
b) $2x^2y^3 - 7x^2y^3 + 6x^2y^3 = \underline{x^2y^3}$ 1

3) Simplify the following:

a) $2x + 5y + 4x + 3y = \underline{6x + 8y}$ 2
b) $8x + 4y - 7x - y = \underline{x + 3y}$ 2
c) $3x - 5y - x - 6y = \underline{2x - 11y}$ 2

4) Simplify the following:

a) $x \times x \times x = \underline{x^3}$ 1
b) $x^2 \times x^5 = \underline{x^7}$ 1
c) $2x \times 4x = \underline{8x^2}$ 1
d) $3x^2 \times 2x^5 = \underline{6x^7}$ 1
e) $x \times 2x^3 \times 4x^2 = \underline{8x^6}$ 1

5) Simplify the following:

a) $7 \times 4t = \underline{28t}$ 1
b) $3xy^2 \times 4x^3y^5 = \underline{12x^4y^7}$ 1

6) Simplify the following:

a) $(x^3)^2 = \underline{x^6}$ 1
b) $(x^5)^4 = \underline{x^{20}}$ 1
c) $(2x^4)^3 = \underline{8x^{12}}$ 1

7) Simplify the following:

a) $x^5 \div x^3 = \underline{x^2}$ 1
b) $\frac{x^5 \times x^3}{x^2} = \underline{x^6}$ 1
c) $\frac{x^4 \times x^7}{x^2 \times x^3} = \underline{x^6}$ 1

8) Simplify the following:

a) $12x^5 \div 3x = \underline{4x^4}$ 1
b) $\frac{14x^7}{2x^3} = \underline{7x^4}$ 1
c) $\frac{5x^2 \times 4x^3}{10x^4} = \underline{2x}$ 2

9) Simplify the following:

a) $\frac{(x-3)^3}{(x-3)} = \underline{(x-3)^2}$ 1
b) $\frac{12(2x+3)^6}{2(2x+3)^4} = \underline{6(2x+3)^2}$ 1

10) Complete the table for this function machine:



In	Out	
1	5	1
5	17	1
9	29	1
x	$3x + 2$	1

11) Expand the following:

a) $2(4x - 3) = \underline{8x - 6}$ 2
b) $x(x + 7) = \underline{x^2 + 7x}$ 2
c) $2x(5x + 3) = \underline{10x^2 + 6x}$ 2
d) $4x(6x - 5y) = \underline{24x^2 - 20xy}$ 2

12) Factorise fully:

a) $2x + 20 = \underline{2(x + 10)}$ 2
b) $9x + 12 = \underline{3(3x + 4)}$ 2
c) $x^2 - 7x = \underline{x(x - 7)}$ 2
d) $3x^2 + 2x = \underline{x(3x + 2)}$ 2
e) $8x^4y + 2x^3 = \underline{2x^3(4xy + 1)}$ 2

13) If $x = 6$, find the value of:

a) $2x = \underline{12}$ 1
b) $x^2 = \underline{36}$ 1
c) $5 + 4x = \underline{29}$ 1
d) $3x - 20 = \underline{-2}$ 1

- 14) If $x = 5$ and $y = -3$, find the value of:

a) $2x + y = \underline{7}$ 2

b) $3x - y = \underline{18}$ 2

c) $2x^2 = \underline{50}$ 2

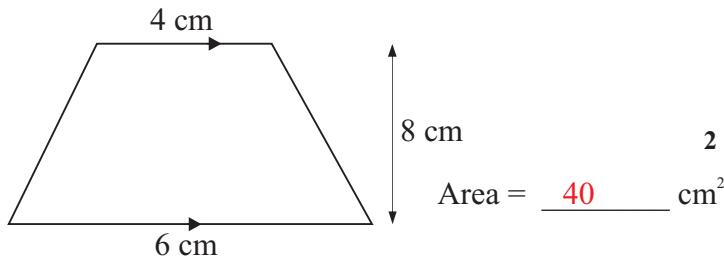
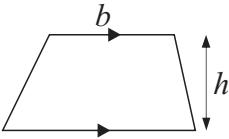
d) $x^2 + 2y^2 = \underline{43}$ 3

- 15) The cost, £ C , of hiring a carpet cleaner for d days is given by $C = 5d + 10$. Bill hires the cleaner for 6 days.

How much does it cost him? £40 2

- 16) The area of a trapezium is given by $A = \frac{1}{2}(a + b)h$

Find the area of this trapezium

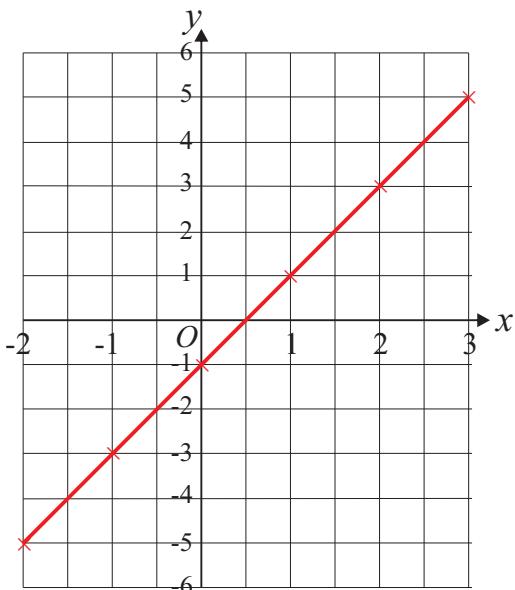


- 17) a) Complete the table of values for $y = 2x - 1$

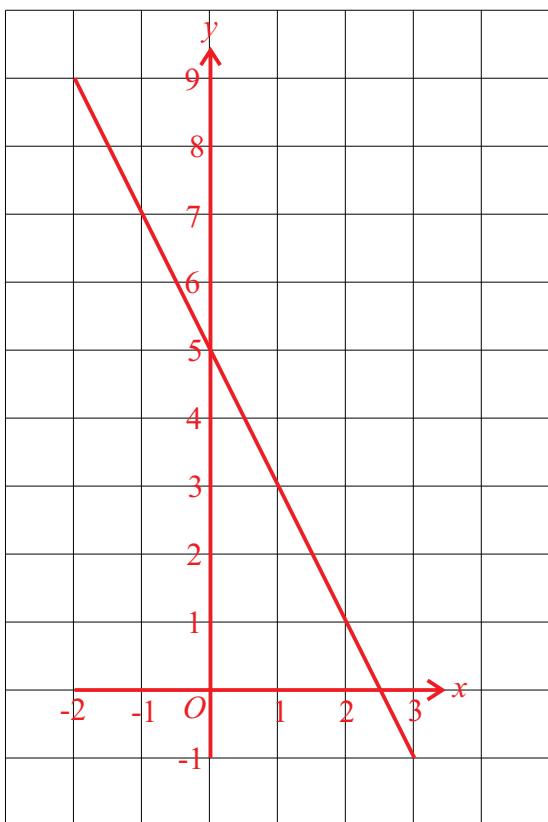
x	-2	-1	0	1	2	3
y	-5	-3	-1	1	3	5

2

- b) Draw the graph of $y = 2x - 1$ 2



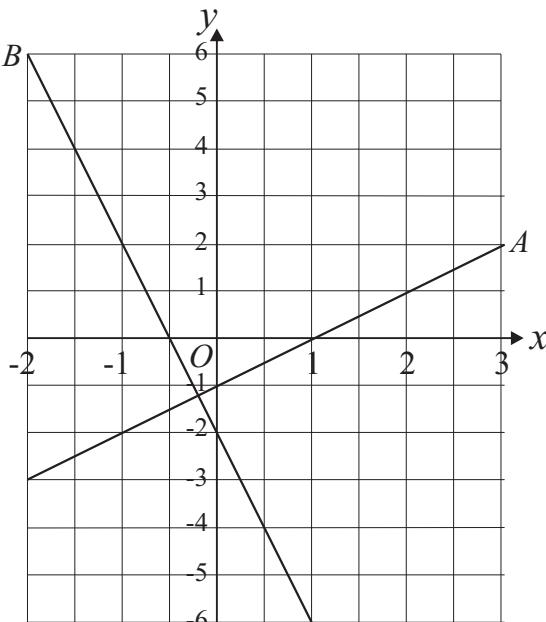
- 18) On the grid, draw the graph of $2x + y = 5$ for values of x between -2 and 3. 4



- 19) Find the gradients of lines A and B.

a) Gradient of A is 1 2

b) Gradient of B is -4 2

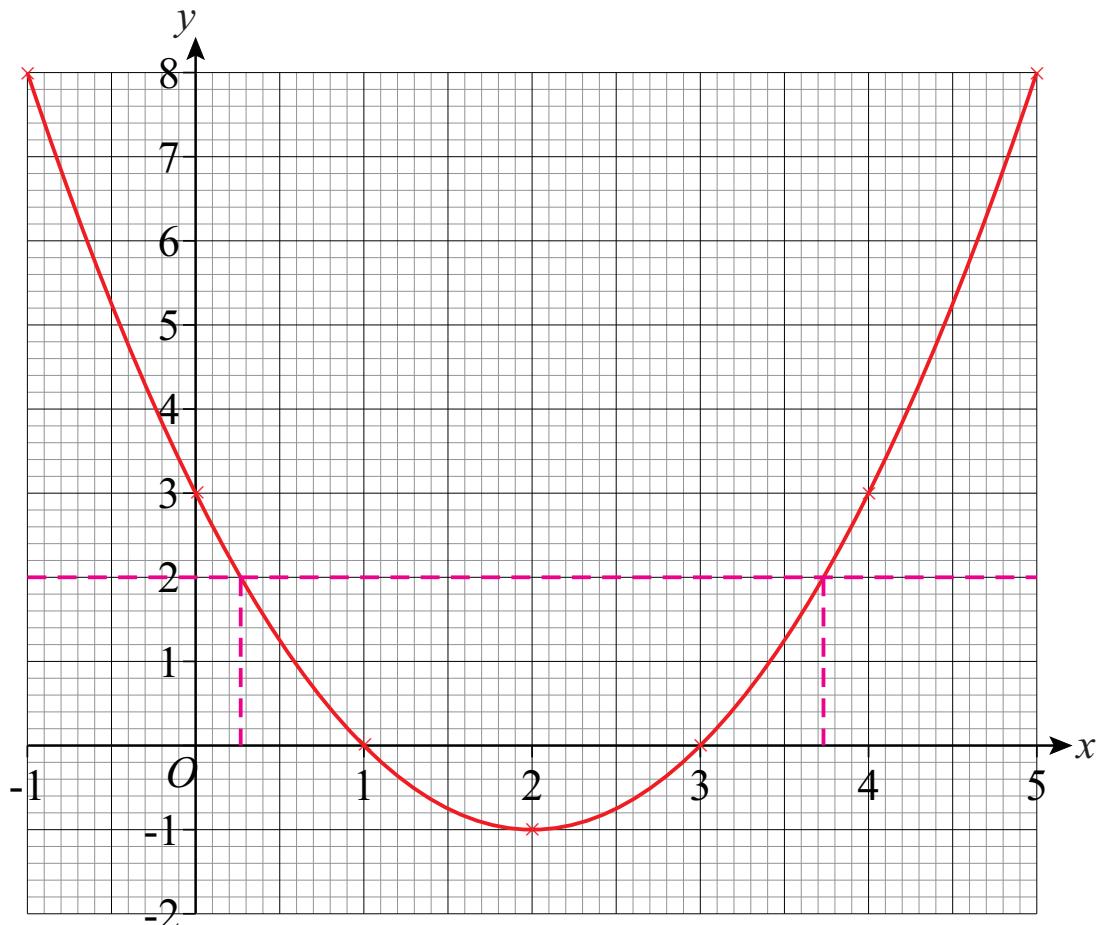


20) a) Complete the table of values for the equation $y = x^2 - 4x + 3$

x	-1	0	1	2	3	4	5
y	8	3	0	-1	0	3	8

2

b) Draw the graph of $y = x^2 - 4x + 3$ 2

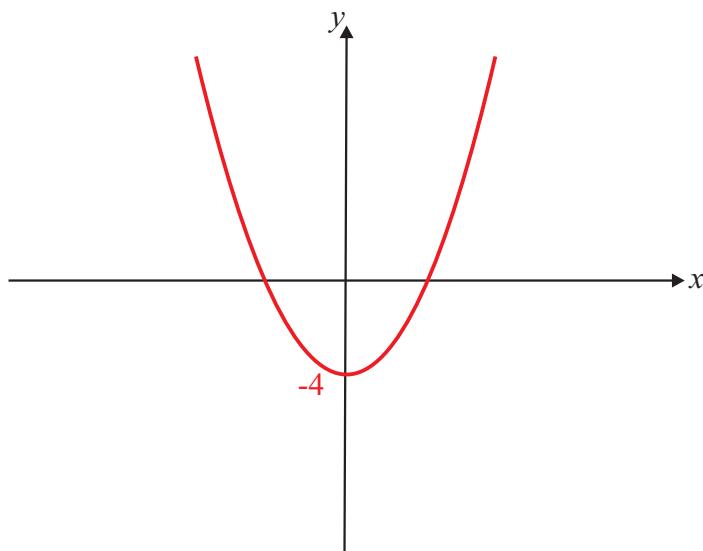


c) Using your graph, solve $x^2 - 4x + 3 = 2$

$$x = \underline{0.27} \quad \text{or} \quad x = \underline{3.73}$$

2

21) On the axes below, sketch the graph of $y = x^2 - 4$ 2



- 22) a) The n th term of a number sequence is $5n - 3$

Write down the 7th term of the sequence 32 2

- b) The n th term of a number sequence is $3n^2 - 4$

Write down the 10th term of the sequence 296 3

- 23) Here are the first five terms of an arithmetic sequence:

7, 11, 15, 19, 23

Find an expression for the n th term of this sequence. $4n + 3$ 2

- 24) Here are the first five terms of a number sequence:

80, 40, 20, 10, 5

What is the term to term rule for this sequence? $\div 2$ 1

- 25) The n th term for triangular numbers is $\frac{n(n+1)}{2}$

Use this to work out the 6th triangular number. 21 2