

Algebra 1F Assessment

Foundation Level



All questions

Clip	Grade	Title of clip	Question(s)	Marked out of	Score	%
7.....1.....	1.....	Algebraic conventions	1 - 2	8	_____	_____
8.....1.....	1.....	Coordinates	3	6	_____	_____
33.....2.....	2.....	Simplifying - Addition and Subtraction.....	4 - 6	12	_____	_____
34.....2.....	2.....	Simplifying - Multiplication	7 - 9	10	_____	_____
35.....2.....	2.....	Simplifying - Division	10 - 12	8	_____	_____
36.....2.....	2.....	Function Machines	13	4	_____	_____
37.....2.....	2.....	Generating a Sequence - Term to Term	14 - 15	6	_____	_____
93.....3.....	3.....	Expanding Brackets	16	8	_____	_____
94.....3.....	3.....	Simple Factorisation	17	10	_____	_____
95.....3.....	3.....	Substitution	18 - 21	16	_____	_____
96.....3.....	3.....	Straight Line Graphs	22 - 23	8	_____	_____
97.....3.....	3.....	The Gradient of a Line.....	24 - 25	6	_____	_____
98.....3.....	3.....	Drawing Quadratic Graphs	26	6	_____	_____
99.....3.....	3.....	Sketching Functions	27	2	_____	_____
100.....3.....	3.....	Solving Equations using Flowcharts	28	4	_____	_____
101.....3.....	3.....	Subject of a Formula using Flowcharts.....	29	2	_____	_____
102.....3.....	3.....	Generating a Sequence from the <i>n</i> th Term	30	4	_____	_____
103.....3.....	3.....	Finding the <i>n</i> th Term	31	2	_____	_____
104.....3.....	3.....	Special Sequences	32 - 33	3	_____	_____

Out of 125 TOTAL SCORE _____

Final Percentage %

1) Write the following in their simplest forms using algebraic notation:

a) $9 \times x =$ _____ 1

b) $x \times 7 =$ _____ 1

c) $x \div 5 =$ _____ 1

d) $x + x + x + x =$ _____ 1

2) Write the following using algebraic notation:

a) I think of a number, multiply it by 3 and then subtract 2.

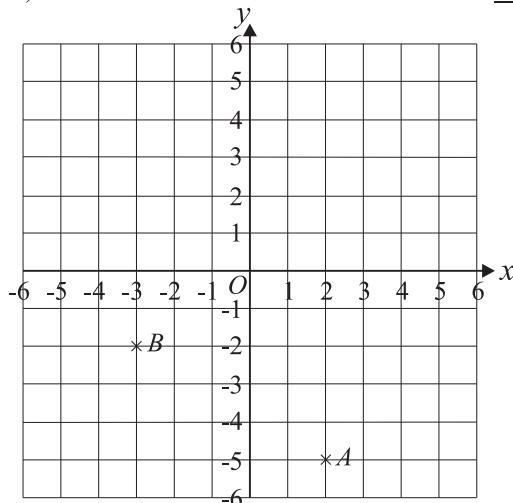
_____ 2

b) I think of a number, add 2 and then multiply the result by 6.

_____ 2

3) a) Write down the coordinates of A. _____ 2

b) Write down the coordinates of B. _____ 2



c) Plot the point $(-5, 3)$ and label it C. 2

4) Simplify the following:

a) $2x + 5x =$ _____ 1

b) $7y - 4y =$ _____ 1

c) $3x + x =$ _____ 1

d) $2x - 8x + 3x =$ _____ 1

5) Simplify the following:

a) $4xy^2 + 2xy^2 =$ _____ 1

b) $2x^2y^3 - 7x^2y^3 + 6x^2y^3 =$ _____ 1

6) Simplify the following:

a) $2x + 5y + 4x + 3y =$ _____ 2

b) $8x + 4y - 7x - y =$ _____ 2

c) $3x - 5y - x - 6y =$ _____ 2

7) Simplify the following:

a) $x \times x \times x =$ _____ 1

b) $x^2 \times x^5 =$ _____ 1

c) $2x \times 4x =$ _____ 1

d) $3x^2 \times 2x^5 =$ _____ 1

e) $x \times 2x^3 \times 4x^2 =$ _____ 1

8) Simplify the following:

a) $7 \times 4t =$ _____ 1

b) $3xy^2 \times 4x^3y^5 =$ _____ 1

9) Simplify the following:

a) $(x^3)^2 =$ _____ 1

b) $(x^5)^4 =$ _____ 1

c) $(2x^4)^3 =$ _____ 1

10) Simplify the following:

a) $x^5 \div x^3 =$ _____ 1

b) $\frac{x^5 \times x^3}{x^2} =$ _____ 1

c) $\frac{x^4 \times x^7}{x^2 \times x^3} =$ _____ 1

11) Simplify the following:

a) $12x^5 \div 3x =$ _____ 1

b) $\frac{14x^7}{2x^3} =$ _____ 1

c) $\frac{5x^2 \times 4x^3}{10x^4} =$ _____ 1

12) Simplify the following:

a) $\frac{(x-3)^3}{(x-3)} =$ _____ 1

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

- 13) Complete the table for this function machine:



In	Out
1	1
5	1
	29
x	1

- 14) Write the first three terms of each sequence using the following rules:

a) Start at 4 and add 5. __, __, __ 2

b) Start at 1 and subtract 7. __, __, __ 2

- 15) Find the term to term rule for these sequences:

a) 7, 9.5, 12, 14.5, 17

_____ 1

b) -3, -5, -7, -9, -11

_____ 1

- 16) Expand the following:

a) $2(4x - 3) =$ _____ 2

b) $x(x + 7) =$ _____ 2

c) $2x(5x + 3) =$ _____ 2

d) $4x(6x - 5y) =$ _____ 2

- 17) Factorise fully:

a) $2x + 20 =$ _____ 2

b) $9x + 12 =$ _____ 2

c) $x^2 - 7x =$ _____ 2

d) $3x^2 + 2x =$ _____ 2

e) $8x^4y + 2x^3 =$ _____ 2

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

a) $2x =$ _____ 1

b) $x^2 =$ _____ 1

c) $5 + 4x =$ _____ 1

d) $3x - 20 =$ _____ 1

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

a) $2x + y =$ _____ 2

b) $3x - y =$ _____ 2

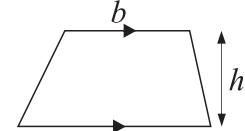
c) $2x^2 =$ _____ 2

d) $x^2 + 2y^2 =$ _____ 2

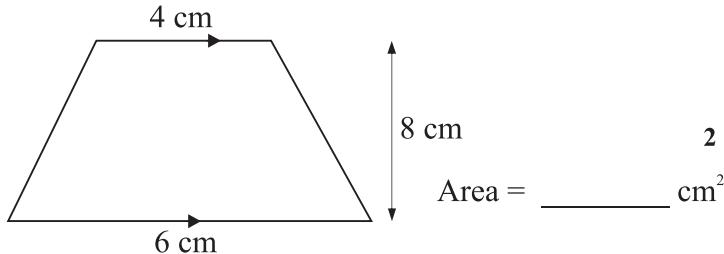
- 20) The cost, £ C , of hiring a carpet cleaner for d days is given by $C = 5d + 10$. Bill hires the cleaner for 6 days.

How much does it cost him? _____ 2

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



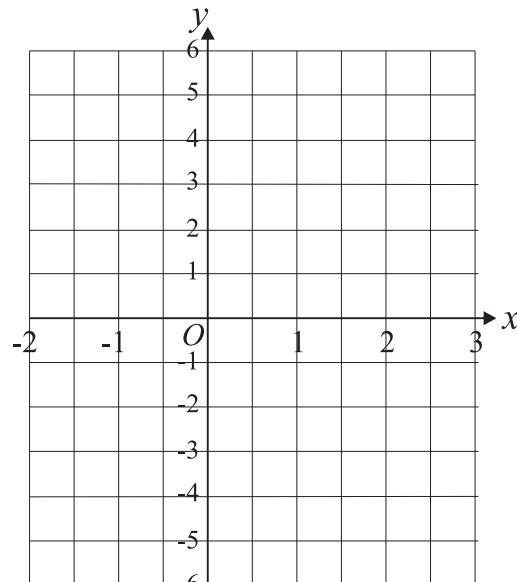
Find the area of this trapezium



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

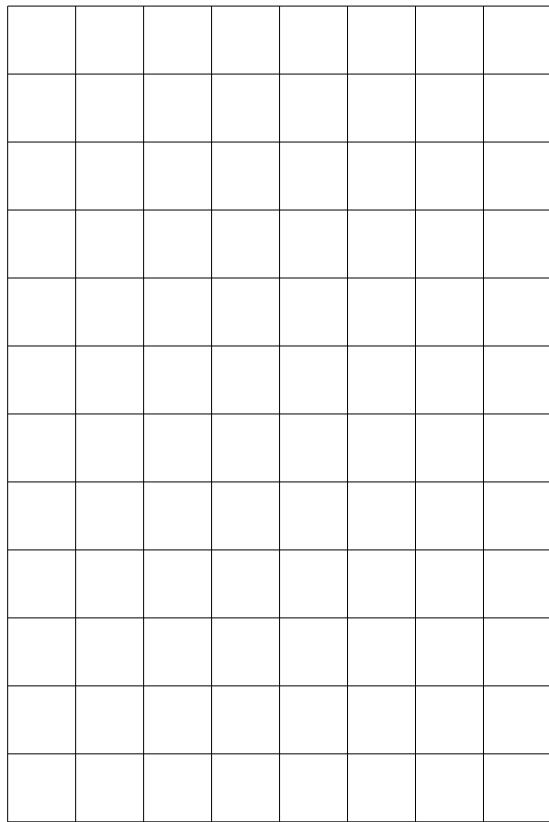
x	-2	-1	0	1	2	3
y		-3				5

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



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

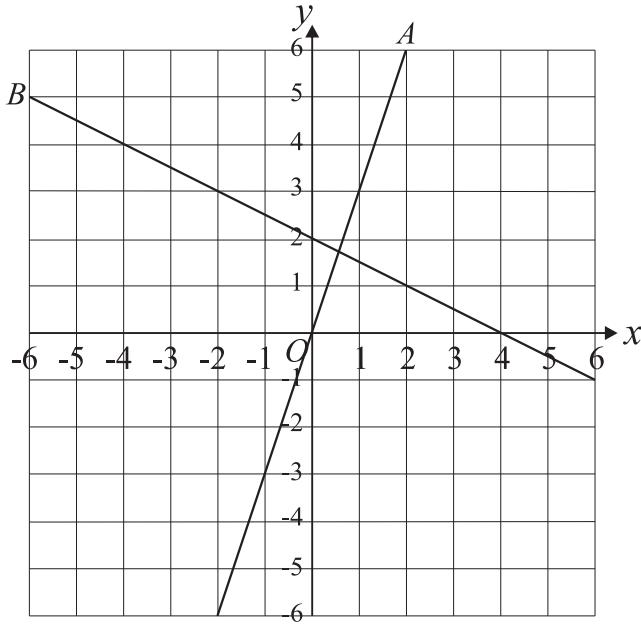
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- 24) Find the gradients of lines A and B .

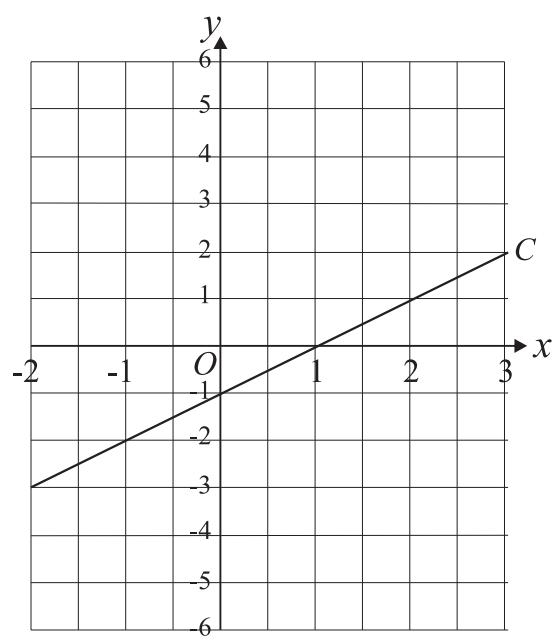
a) Gradient of A is _____ 2

b) Gradient of B is _____ 2



- 25) Find the gradient of line C .

Gradient of C is _____ 2

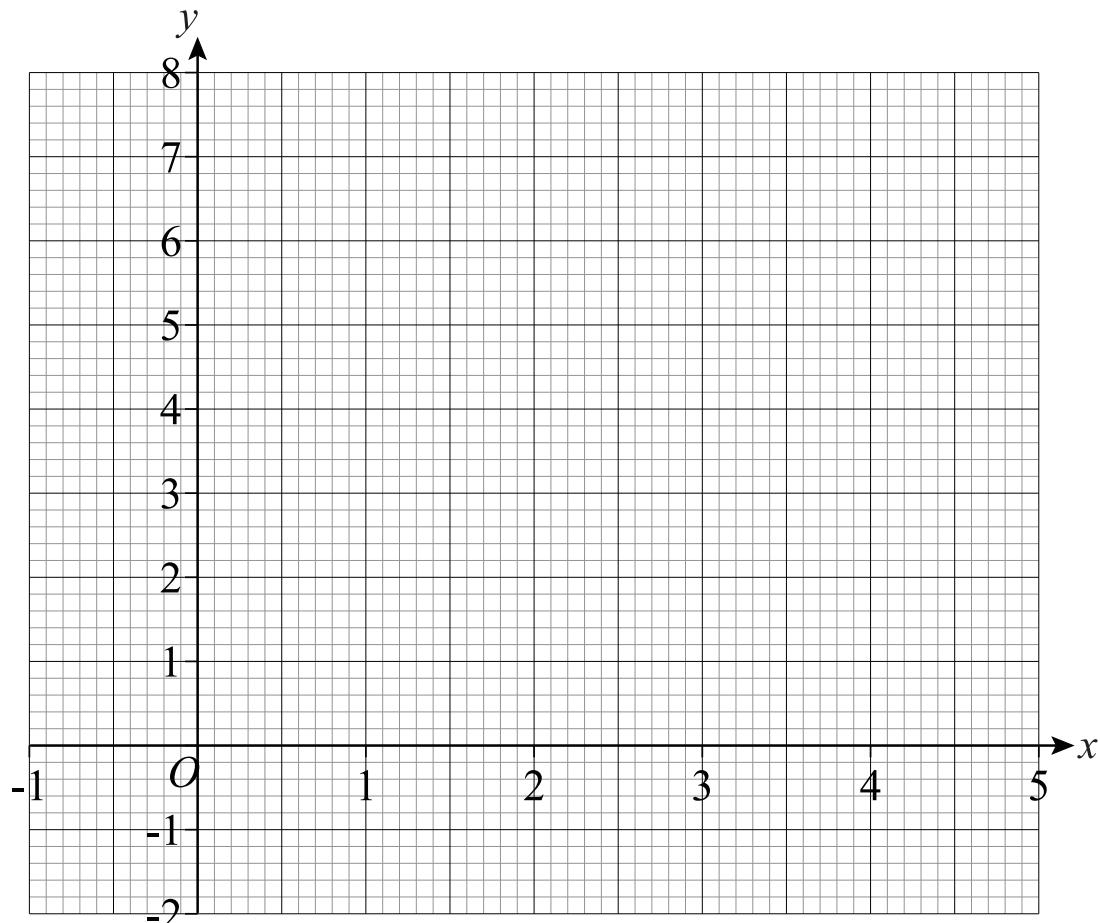


26) a) Complete the table of values for the equation $y = x^2 - 4x + 3$

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

2

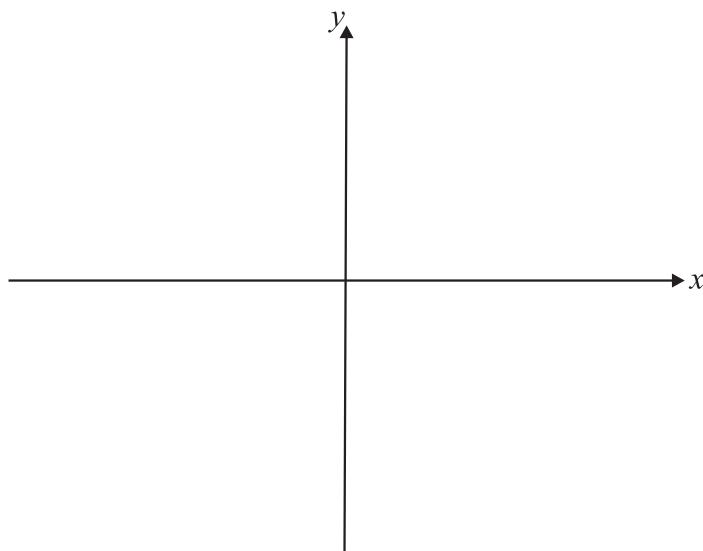
b) Draw the graph of $y = x^2 - 4x + 3$ 2



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

$$x = \underline{\hspace{2cm}} \text{ or } x = \underline{\hspace{2cm}} \quad 2$$

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



- 28) Using a flowchart, or otherwise, solve the following equations:

a) $2(4x - 1) = 26$

$x = \underline{\hspace{2cm}}$ 2

b) $4\left(\frac{x}{5} + 3\right) = 32$

$x = \underline{\hspace{2cm}}$ 2

- 29) Rearrange the formula $w = 5\left(\frac{x}{2} - y\right)$

to make x the subject.

$x = \underline{\hspace{2cm}}$ 2

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

Write down the 7th term of the sequence _____ 2

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

Write down the 10th term of the sequence _____ 2

- 31) 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. _____ 2

- 32) 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? _____ 1

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

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