Walking Talking - Graphs

1.

(a)　(i)　Use the graph paper below to draw the graph of $3x + 2y = 12$.

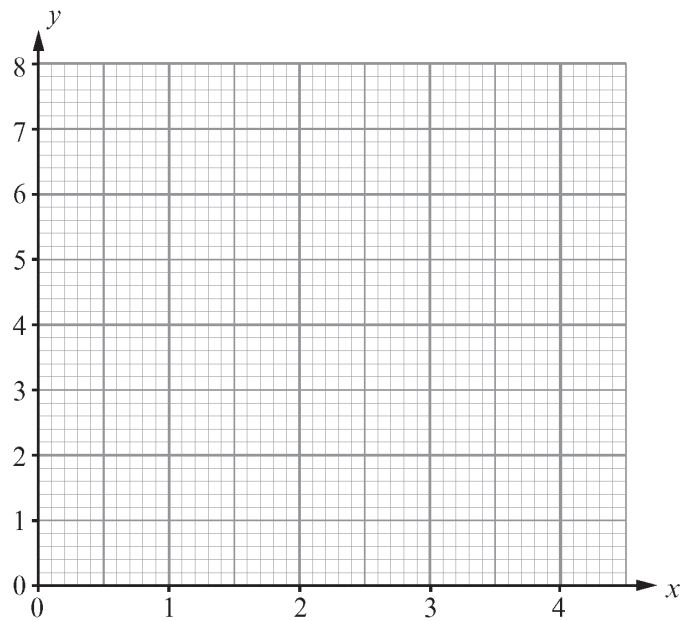..

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[3]

(ii)　Write down the gradient of $3x + 2y = 12$.

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[1]

(b) Select from the following list of equations to complete the table below.

Equations:

A: $y + 4x = 3$ **B:** $y = 5x$ **C:** $y = 5x + 7$

D: $y - 3x = 4$ **E:** $x + y - 5 = 0$ **F:** $2y = 3x + 5$

Description	Equation
Passes through the origin $(0, 0)$	
Parallel to $y = 3x + 7$	
Intersects the y-axis at $y = 5$	

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[3]

2.

Line	Equation
A	$y = 3x + 4$
B	$y = -3x + 3$
C	$y = -2x - 4$
D	$y = 3x - 5$
E	$y = 4x + 4$

(a) Which two of the above lines are parallel?
You must give a clear reason for your answer.

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[2]

(b) Which two of the above lines intersect each other on the y-axis?

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[1]

3.

Lucy is a scientist. During an investigation she needs to find the points of intersection of two equations to solve a problem.
The equations are $y = x^2 - 6x + 8$ and $x + y = 4$.
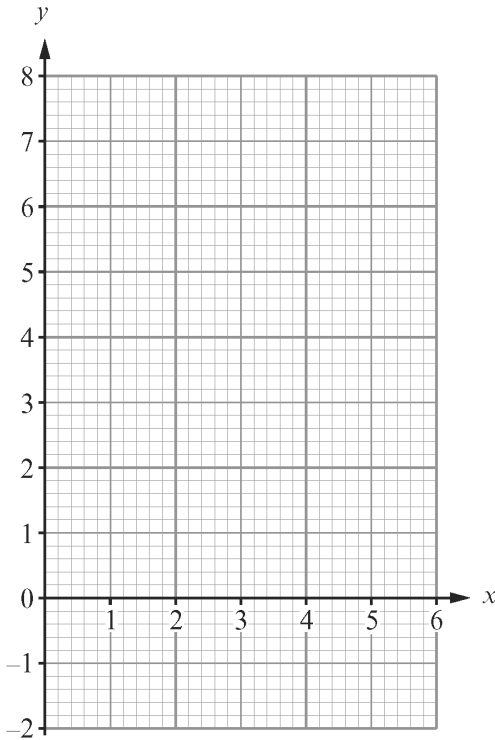Draw graphs to solve Lucy's problem.
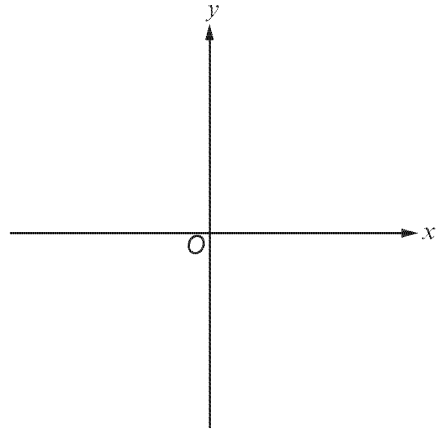
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[5]

Points of intersection ....
[2]

4.

Use the axes given below to sketch the following.

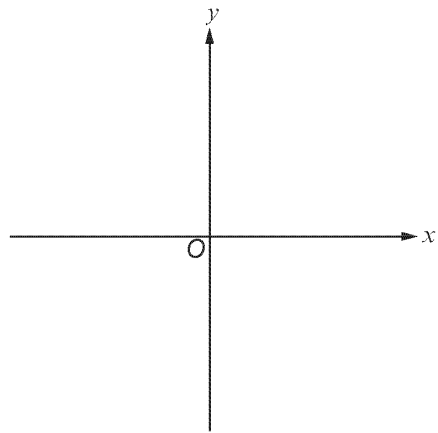(a) $y = x^2$ [1]

(b) $y = -x^2$ [1]

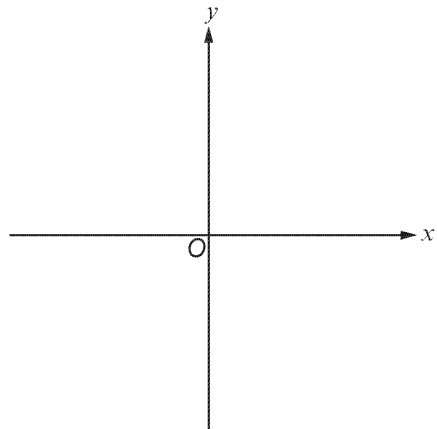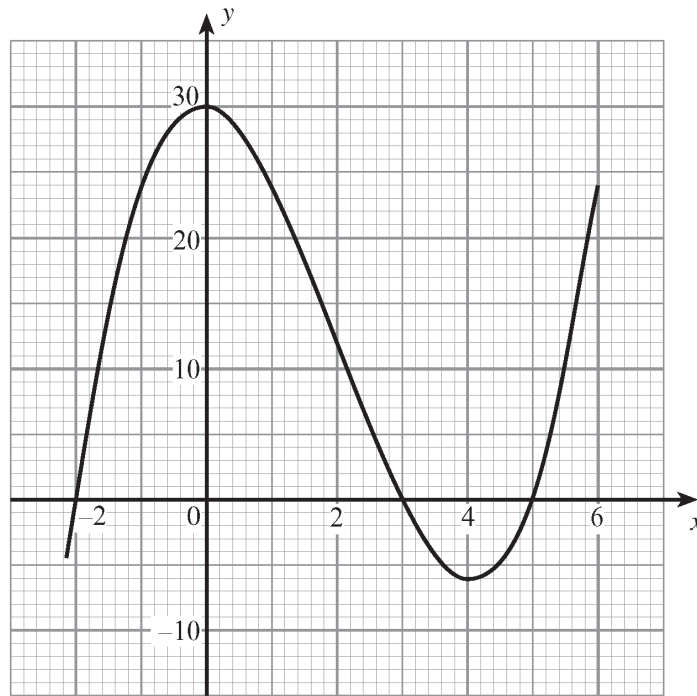(c) $y = x^3$ [1]

5.

The graph of the equation $y = x^3 - 6x^2 - x + 30$ is shown on the graph paper below.

Use the graph above to answer the following questions.

(a) Solve $x^3 - 6x^2 - x + 30 = 0$.

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[2]

(b) By drawing a suitable straight line, solve the equation $x^3 - 6x^2 - x + 30 = -5x + 10$.

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[4]

6.

Select **two** of the following lines which are **perpendicular** to the straight line, *AB*, shown on the grid.
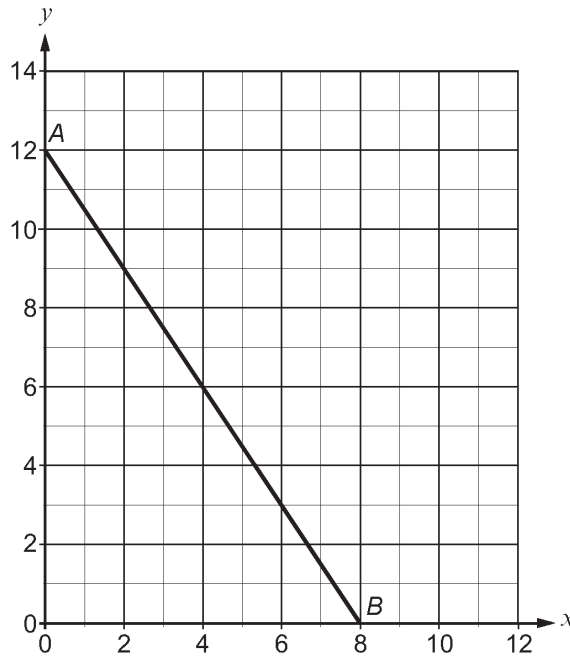You must write a reason for your selections.

$$y = \frac{3}{2}x + 8 \qquad\qquad 2x + 3y = 8 \qquad\qquad 2y = 3x + 6$$

$$y = \frac{-2x + 8}{3} \qquad\qquad 3y = 2x + 5 \qquad\qquad 2x - 3y = 8$$

Reason for selections: [4]

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7.

A cutting machine has two settings, x and y.
For safety in operating the cutting machine, the settings x and y must be selected so that all the inequalities below are satisfied.
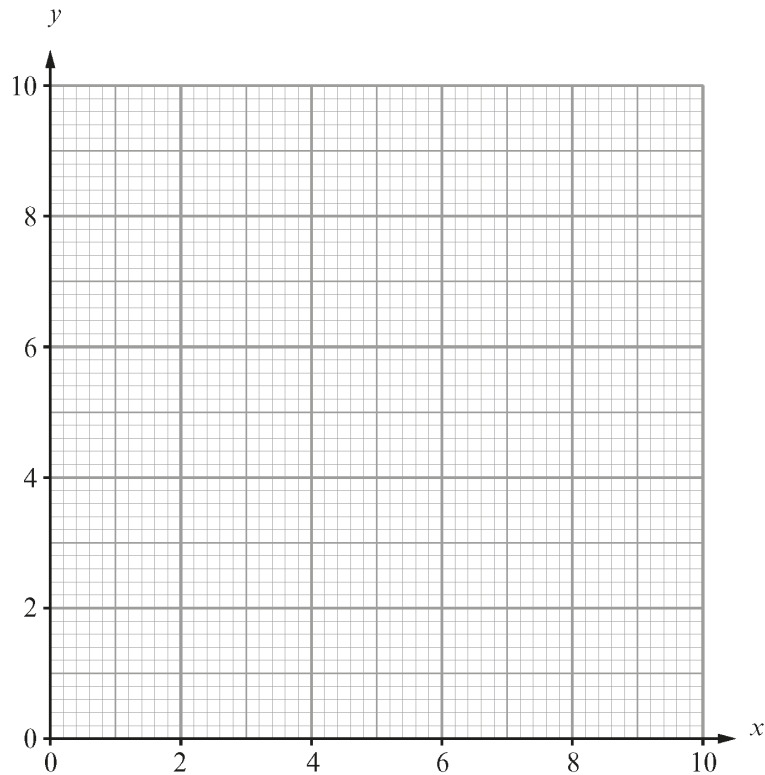
$$x + y < 8$$
$$5x + y > 10$$
$$2y - x > 4$$

(a) Use the graph paper below to identify the region that shows the safe settings of x and y for the cutting machine.

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[3]

(b) Write down a set of possible safe settings for the cutting machine.

$x = $ .... and $y = $ ....

[1]

8.

The table shows values of $y = 3x^2 + 2x - 10$ for values of x from -4 to 3.

x	-4	-3	-2	-1	0	1	2	3
$y = 3x^2 + 2x - 10$	30		-2	-9	-10	-5	6	23

(a) Complete the table above.

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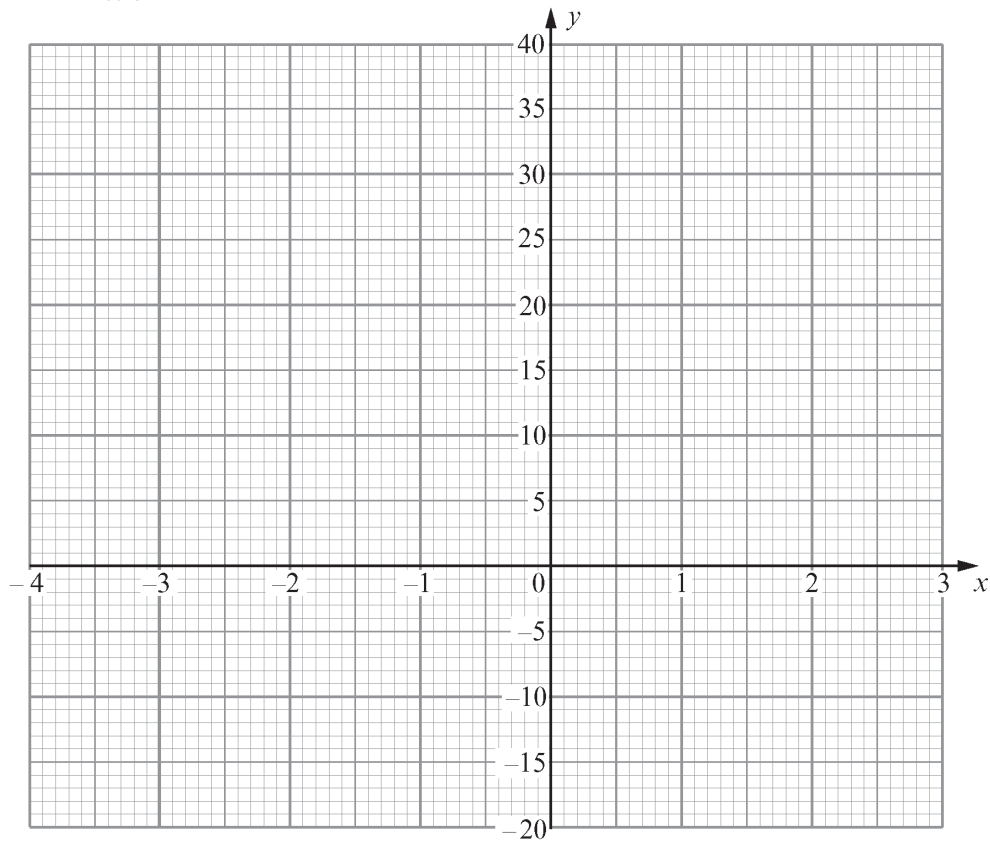...

[1]

(b) On the graph paper below, draw the graph of $y = 3x^2 + 2x - 10$ for values of x from -4 to 3. [2]

(c) Write down the x-coordinates of the points where the graph of $y = 3x^2 + 2x - 10$ intersects the x-axis.
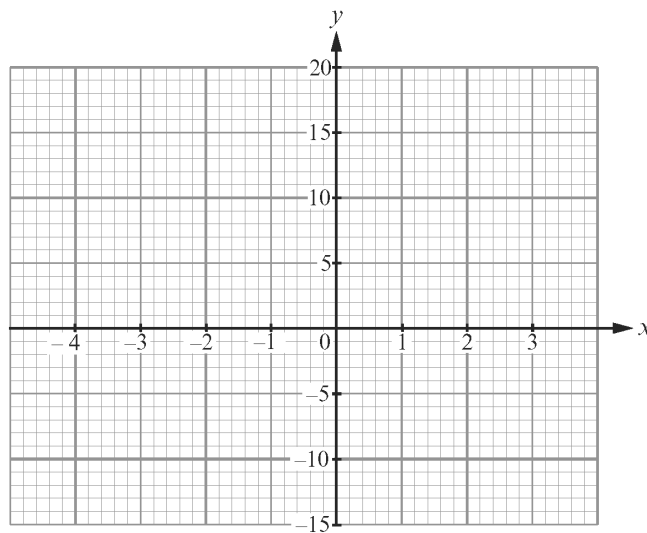
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[1]

9.

The table shows some of the values of $y = 2x^2 + 3x - 9$ for values of x from -4 to 3.

(a) Complete the table below.

x	-4	-3	-2	-1	0	1	2	3
$y = 2x^2 + 3x - 9$	11	0		-10	-9	-4		18

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[2]

(b) On the graph paper below, draw the graph of $y = 2x^2 + 3x - 9$ for values of x from -4 to 3.

[3]

(c) Use your graph to solve $2x^2 + 3x - 9 = 0$.

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[2]

(d) Use your graph to solve $2x^2 + 3x - 9 = 6$.

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[2]