

1. An adult ticket to a concert cost $\$x$ and a children's tickets cost $\$y$.

- a) Write down an expression, in terms of x and y , for the cost of a family for 2 adults and 3 children attending the concert.

Answer $\$$ [1]

- b) The total cost of the family attending the concert is $\$136$. Write down an equation, in terms of x and y , for the cost of the family attending the concert.

Answer [1]

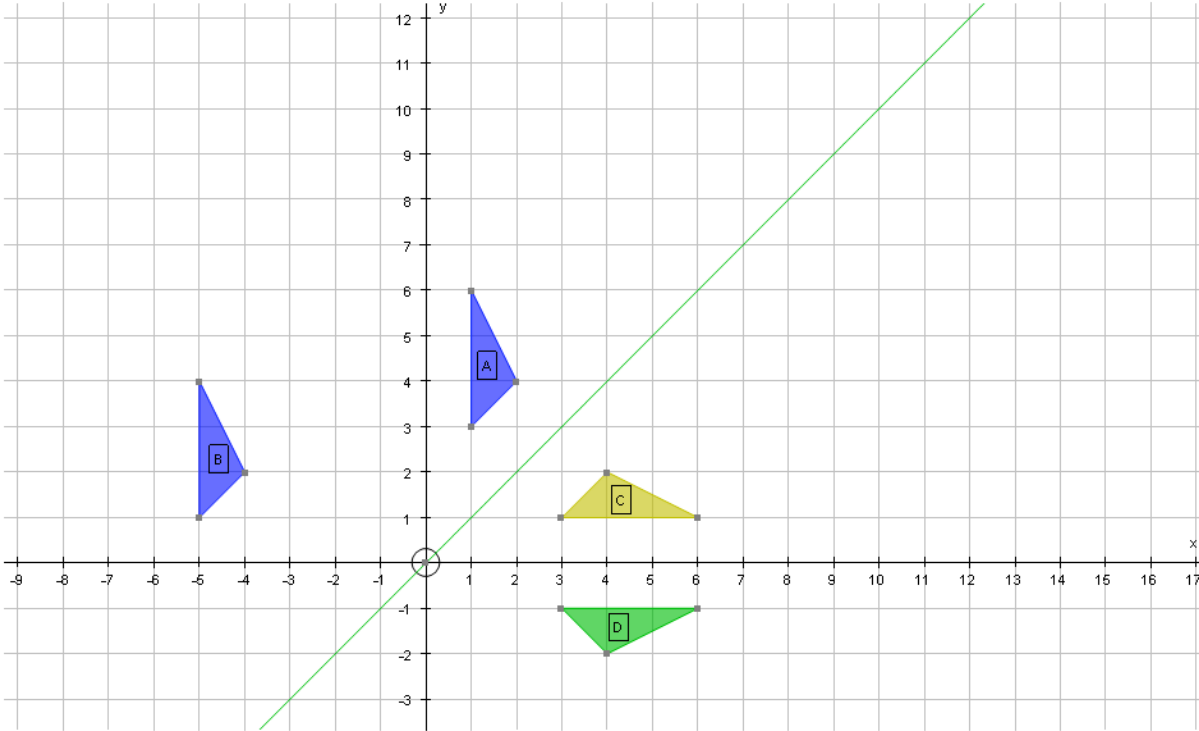
- c) A different family consists of 1 adult and 4 children. The cost of this family attending the concert is $\$123$. Write down an equation, in terms of x and y , for the cost of the family attending the concert.

Answer [1]

- d) Solve the equations from b) and c) simultaneously to find the values of x and y .

Answer $x =$ and $y =$ [4]

2.



a) Describe fully the single transformation that maps:

i) triangle A onto B

Answer [2]

ii) triangle A onto C

Answer [2]

iii) triangle A onto D

Answer [3]

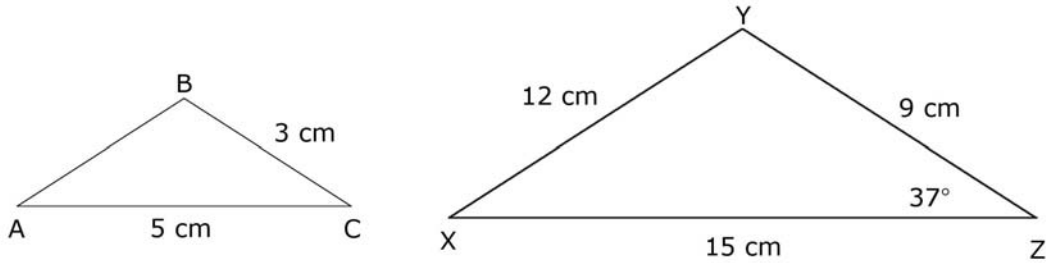
b) On the grid draw the following transformations of triangle A.

i) Reflection in the *y*-axis. [2]

ii) Enlargement by a scale factor of 2 with centre (0,0). [3]

3.

Not to scale



The triangles ABC and XYZ are similar.

a) Find the angle inside the triangle at C .

Answer ° [1]

b) Find the length of AB .

Answer cm [1]

c) Adam states that ' XYZ is a right-angled triangle'.
 Is Adam's statement true or false.
 Use Pythagoras' theorem to help you and show all your working out.

Answer [4]

4. The table below shows the values for the graph of $y = x^2 - 5x$.

x	-2	-1	0	1	2	3	4	5	6	7
y	14	a	0	-4	b	-6	-4	0	c	14

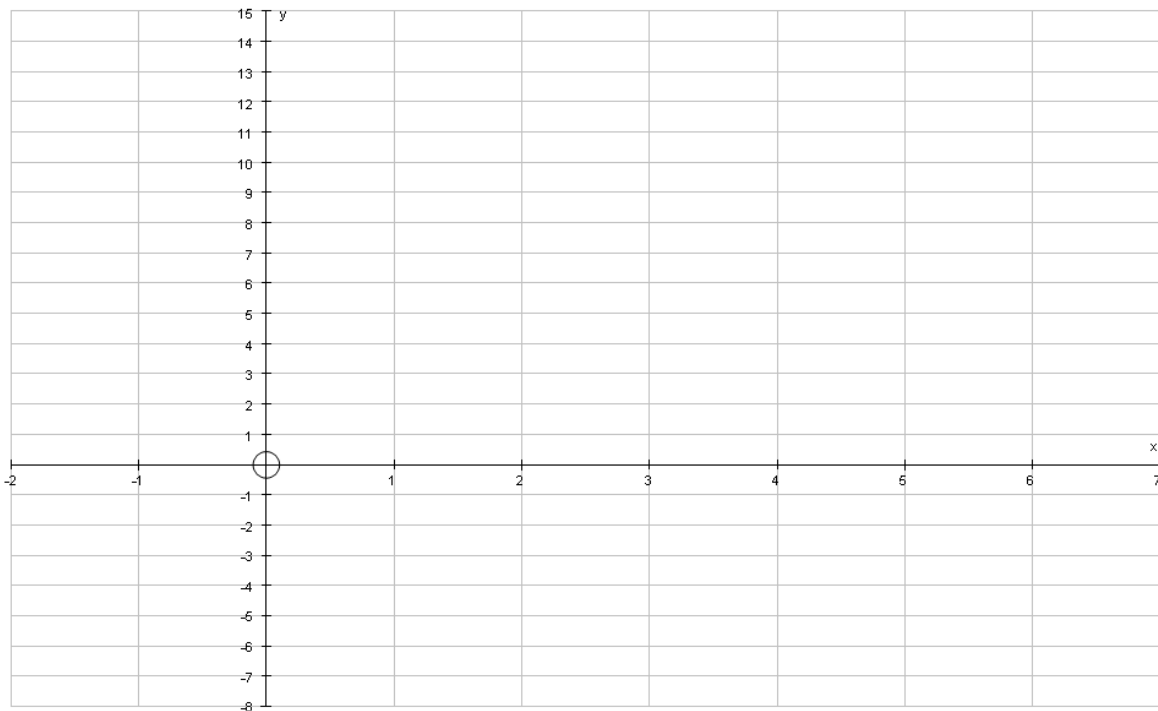
a) Find the values of a , b , and c in the table above.

Answers $a = \dots\dots\dots$ [1]

$b = \dots\dots\dots$ [1]

$c = \dots\dots\dots$ [1]

b) Draw the graph of $y = x^2 - 5x$ on the grid below. [4]



c) Mark the point at which $x^2 - 5x = 3$. [1]

- d) Solve the equation $x^2 - 5x = 3$ by using your graph.

Answer $x = \dots\dots\dots$ and $\dots\dots\dots$ [2]

- e) The table below shows the values of the graph $y = 2x - 3$

x	-1	1	3	5
y	-1

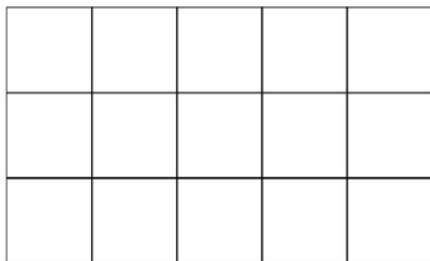
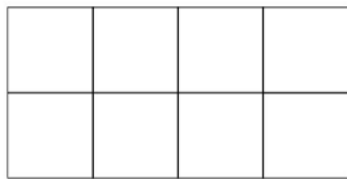
Complete the table above for the graph of $y = 2x - 3$. [3]

- f) Draw the graph of $y = 2x - 3$ on your graph. [2]
- g) Use your graph to find the solutions to the equation,

$$x^2 - 5x = 2x - 3$$

Answer $x = \dots\dots\dots$ and $\dots\dots\dots$ [2]

5.



- a) In the space above draw the next shape in the sequence. [2]
- b) The table below shows the number of squares for each diagram.

n	1	2	3	4	5
<i>Squares (s)</i>	8	15

[3]

Complete the missing spaces.

- c) Write a formula for the number of squares (s) in terms of n .

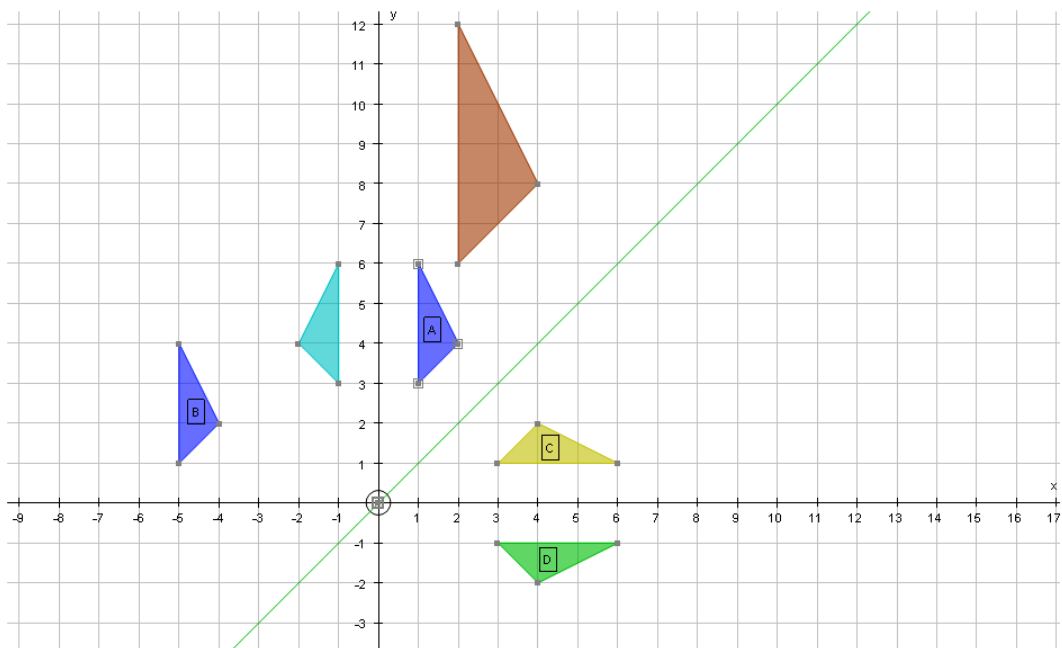
Answer [3]

Answers

1. a) $2x + 3y$
- b) $2x + 3y = 136$
- c) $x + 4y = 123$
- d) $x = 35, y = 22$

2. a) i) translation by the vector $\begin{pmatrix} -6 \\ -2 \end{pmatrix}$.
- ii) reflection in the mirror line $y=x$.
- iii) rotation by 90° clockwise through $(0,0)$.

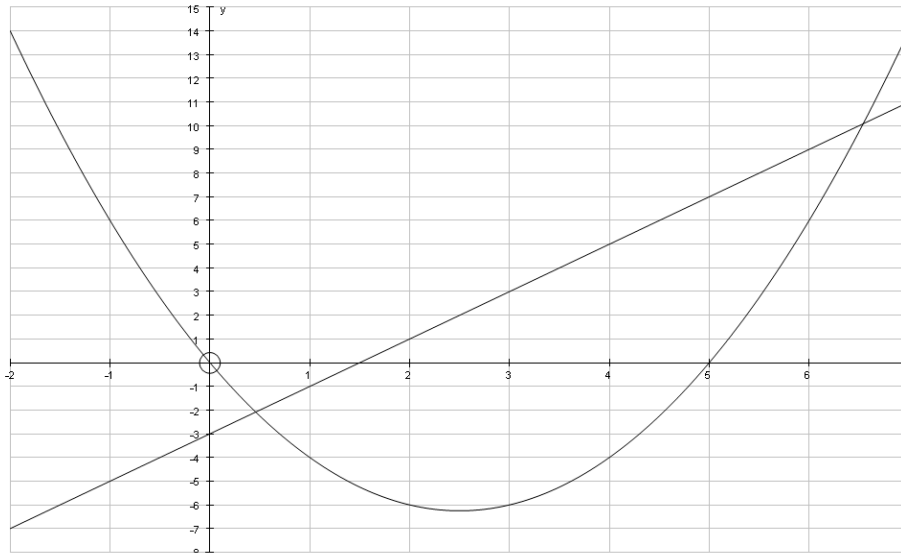
b)



3. a) 37° b) 4 cm
- c) Yes Adam's statement is true.
 $12^2 + 9^2 = 15^2$
 $144 + 81 = 225$

4. a) $a = 6, b = -6, c = 6$

b) and f)



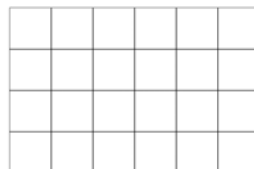
d) $x = -\frac{1}{2}$ and $x = 5\frac{1}{2}$

e)

x	-1	1	3	5
y	-5	-1	3	7

f) $x = 0.5$ and $x = 6.5$

5. a)



b)

n	1	2	3	4	5
Squares (s)	8	15	24	35	42

c) $s = (n + 1)(n + 3)$ or $s = n^2 + 4n + 3$.