

HW 38

1-4

E145	Solve linear simultaneous equations.
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5-7

E214	Solve simultaneous equations where one is quadratic, one is linear.
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8-9

E144	Solve simultaneous equations using graphical methods.
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10-17

E175	Construct Venn Diagrams.
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E176	Understand union, intersection and complements of sets, including the universal and empty sets.
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Question 1

Marcin buys 7 rulers and 15 crayons for £7.

A ruler costs 12p more than a crayon.

Find the cost of one crayon.

..... p

(5 marks)

Question 2

In a football league, teams gain 3 points for a win and 1 point for a draw.

East Hill have either won or drawn each of their last 12 matches.

They gained a total of 28 points from these matches.

Find the number of these matches that East Hill have won.

..... matches

(3 marks)

Question 3

Brian and Bob visit a ski resort. Brian buys 3 full passes and 4 restricted passes. The total cost of his passes is £185.

This can be illustrated by the equation $3f + 4r = 185$.

Bob buys 2 full passes and 3 restricted passes. The total cost of his passes is £130.

This can be illustrated by the equation $2f + 3r = 130$.

Find the cost of a restricted pass and the cost of a full pass.

A restricted pass costs £

A full pass costs £

(3 marks)

Question 4

Each year a school has a concert of readings and songs.

In 1999 the concert had 3 readings and 9 songs.
It lasted 120 minutes.

In 2000 the concert had 5 readings and 5 songs.
It lasted 90 minutes.

In 2001 the school plans to have 5 readings and 7 songs.

Use simultaneous equations to estimate how long the concert will last.

Call the time estimated for a reading x minutes,
and the time estimated for a song y minutes.

Estimated time = minutes

Question 5

Solve these simultaneous equations algebraically.

$$y = x^2 + 2x + 3$$

$$y = x + 6$$

Give your answers correct to 1 decimal place.

.....

(5 marks)

Question 6

Solve the simultaneous equations

$$x^2 + y^2 = 9$$

$$x + y = 2$$

Give your answers correct to **2 decimal places**.

.....

(6 marks)

Question 7

Solve the following simultaneous equations, ensuring you use a full algebraic method:

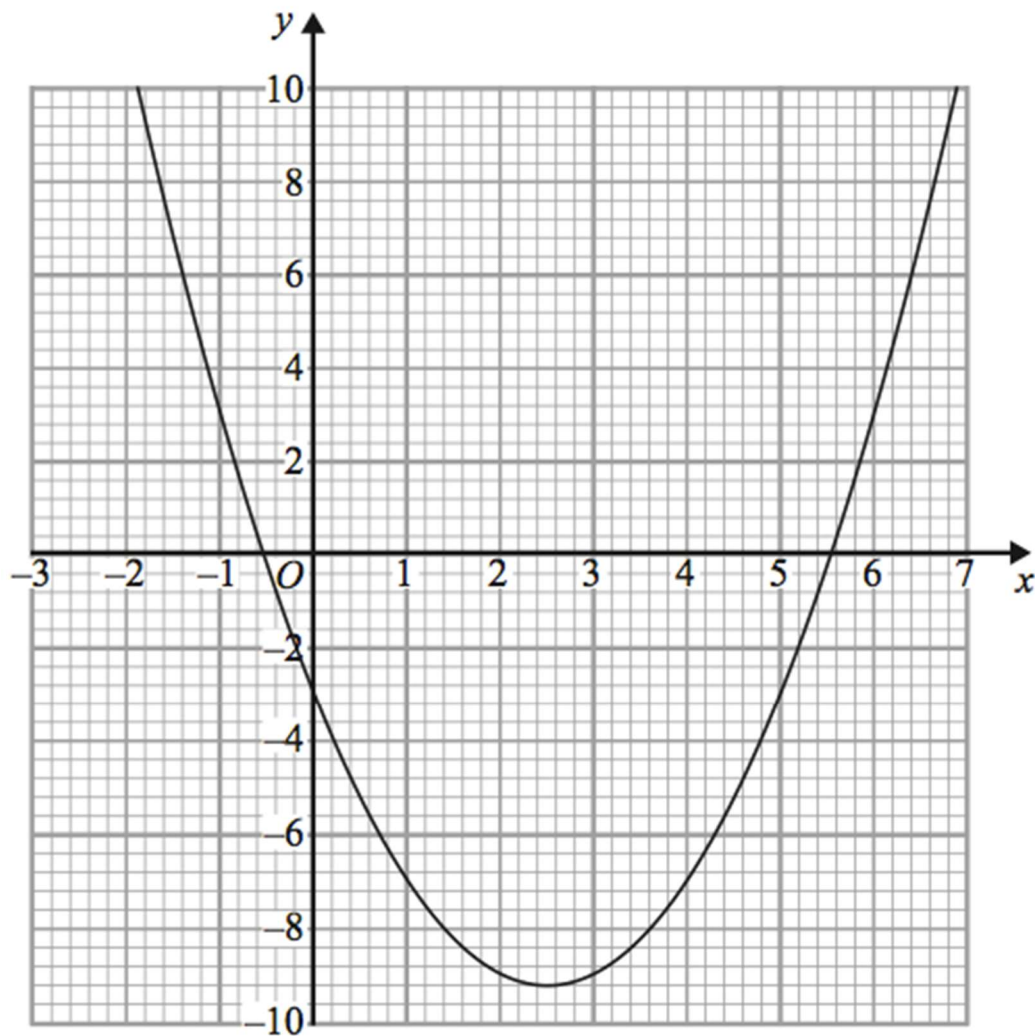
$$y - 3x = 8$$

$$2x^2 - y^2 = 17$$

.....

Question 8

The diagram shows the graph of $y = x^2 - 5x - 3$.



Use the graph to find estimates for the solutions of the simultaneous equations

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

$$y = x - 4$$

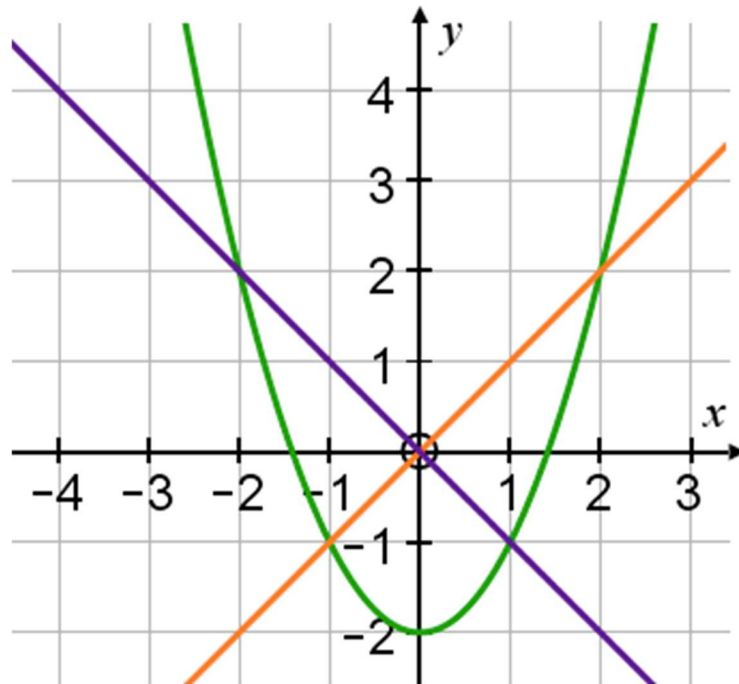
.....
(3 marks)

Question 9

Using the graph below, find the solutions to the simultaneous equations

$$y = x^2 - 2$$

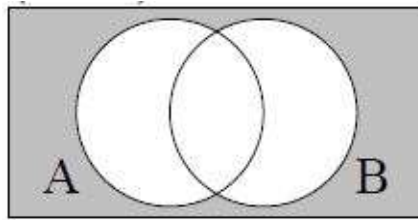
$$y = x$$



.....

Question 10

Identify the shaded region



$A \cap B$

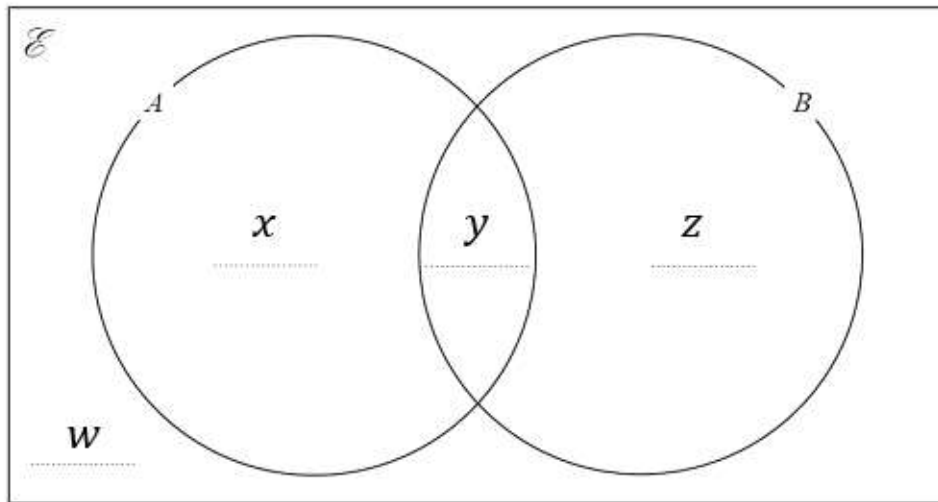
$A \cup B$

$(A \cap B)'$

$(A \cup B)'$

Question 11

A and B are two sets.



$$n(B) = 21 \quad n(A \cap B) = 8 \quad n(A') = 18$$

Complete the Venn diagram to show the **number of elements** in each region of the Venn diagram.

$$x = \dots\dots\dots$$

$$y = \dots\dots\dots$$

$$z = \dots\dots\dots$$

$$w = \dots\dots\dots$$

(3 marks)

Question 12

57 men were asked which drink they like: tea (T), milk (M) or Coke (C).

26 like tea

24 like milk

30 like Coke

9 like both tea and milk

13 like both tea and Coke

13 like both milk and Coke

4 like all three of them

8 like none of them

a) By drawing a Venn Diagram, find $n((T \cap M)' \cap C)$.

b) Find the probability that a man selected at random likes only tea.

c) Find the probability that a man selected at random likes tea, given that he likes milk.