Surname	
Other Names	
Candidate's Signature	

GCSE 9 - 1 Questions

Simultaneous Equations 1

Calculator Allowed

INSTRUCTIONS TO CANDIDATES

Write your name in the space provided.

Write your answers in the spaces provided in this question paper.

Answer ALL questions.

Any working should be clearly shown in the spaces provided since marks may be awarded for partially correct solutions.

You should have a ruler, compass and protractor where required.

Total Marks :

1) Solve the simultaneous equations

$$2p + q = 10$$
$$3p - q = 10$$

Show your working.
A solution by trial and improvement will not be accepted.

Answer p = _____, q = _____ [2]

2) Solve the simultaneous equations

$$3x - 2y = 14$$
$$x + 2y = 10$$

Show your working.
A solution by trial and improvement will not be accepted.

Answer x = _____, y = _____ [2]

3) Solve the simultaneous equations

$$2x - 3y = 7$$

$$3x + 5y = 1$$

Show your working.
Solution by trial and improvement will not be accepted.

Answer x = _____, y = _____ [4]

4) Solve the following simultaneous equations using an algebraic method.
You must show all your working. [4]

$$3x + 5y = 6{\cdot}5$$

$$2x - 2y = -9$$

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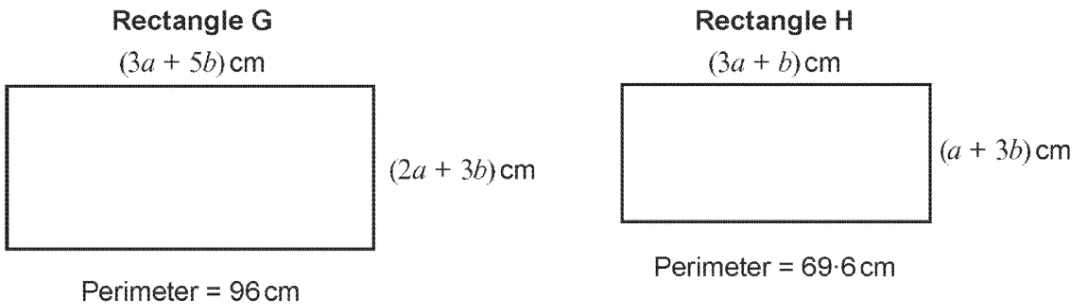
5) Use an algebraic method to solve the following simultaneous equations. [5]

$$3x + 2y = 1 \quad \text{and} \quad 2x = 5(y - 10)$$

6) The dimensions and perimeters of two rectangles, G and H, are shown below.



Diagrams not drawn to scale

Freya has written an equation for rectangle G:

$$10a + 16b = 96$$

(a) Write down an equation for rectangle H. [1]

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(b) Use an algebraic method to calculate a and b.
Hence, calculate the dimensions of rectangle H. [5]

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Length of rectangle H is ..... cm

Width of rectangle H is ..... cm

7)

Tomos, Gwen and Jen visit the same fruit stall.
Tomos buys 4 kg of raspberries and 5 kg of blackcurrants for a total cost of £38.
Gwen buys 6 kg of raspberries and 3 kg of blackcurrants for a total cost of £39.
Use an algebraic method to find how much Jen pays **in total** for 5 kg of raspberries and 7 kg of blackcurrants. [6]

8)

Sumston Village School organised a concert to raise money for charity.

All of the 120 tickets were sold for a total of £1210.
The price of an adult's ticket was £12.
The price of a child's ticket was £7.

How many adult tickets and how many child tickets were sold?
You must use an algebraic method. [4]

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Number of adult tickets = ...

Number of child tickets = ...

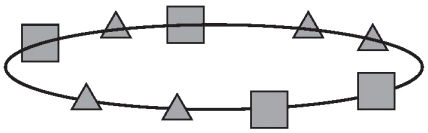
9) An organic fruit farm sells cherries and raspberries.

Poppy buys 3 kg of cherries and 5 kg of raspberries.
Harry buys 4 kg of cherries and 7 kg of raspberries.
Poppy spends £66.10 and Harry spends £91.

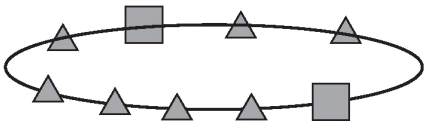
Use an algebraic method to calculate the **total cost** of 10 kg of cherries and 1 kg of raspberries.
You must show your working. [6]

10) Catrin and Susie both have necklaces with chunky beads.
They notice that they have the same types of beads, but different numbers of each bead.
The beads are either cubes or square based pyramids.
All the cubes are identical.
All the square based pyramids are identical.

Catrin's necklace

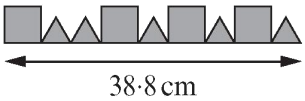


Susie's necklace

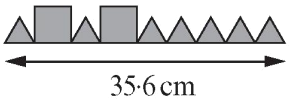


The girls both take the beads off their necklaces and place them in straight lines.

Catrin's beads



Susie's beads



Diagrams not drawn to scale

(a) Calculate the length of an edge of the base of a pyramid and the length of an edge of a cube.
You must use an algebraic method.

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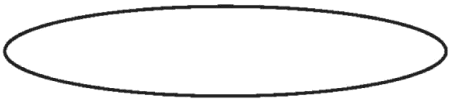
[5]

(b) Catrin's necklace string is 80 cm long.



How many extra cubic beads can Catrin place on her necklace?

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[2]

11)

The cost of a bottle of still water is $\frac{4}{5}$ of the cost of a bottle of sparkling water.

The cost of an apple is $\frac{7}{8}$ of the cost of an orange.

Iona buys 2 bottles of still water and 4 oranges for £2.56.
Bert buys 3 bottles of sparkling water and 3 apples for £3.24.

The cost of a bottle of sparkling water is x pence.
The cost of an orange is y pence.

Calculate the total cost of 4 bottles of sparkling water and 2 oranges.
You must use an algebraic method. [8]

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Total cost of 4 bottles of sparkling water and 2 oranges is £ .....