



Problem Solving



Q1.

The numbers in this sequence **increase** by 45 each time.

Write the missing numbers.

<input type="text"/>	155	200	245	<input type="text"/>	<input type="text"/>
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2 marks

Q2.

The numbers in this sequence increase by 14 each time.

Write the missing numbers.

<input type="text"/>	82	96	<input type="text"/>	124	138	<input type="text"/>
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2 marks

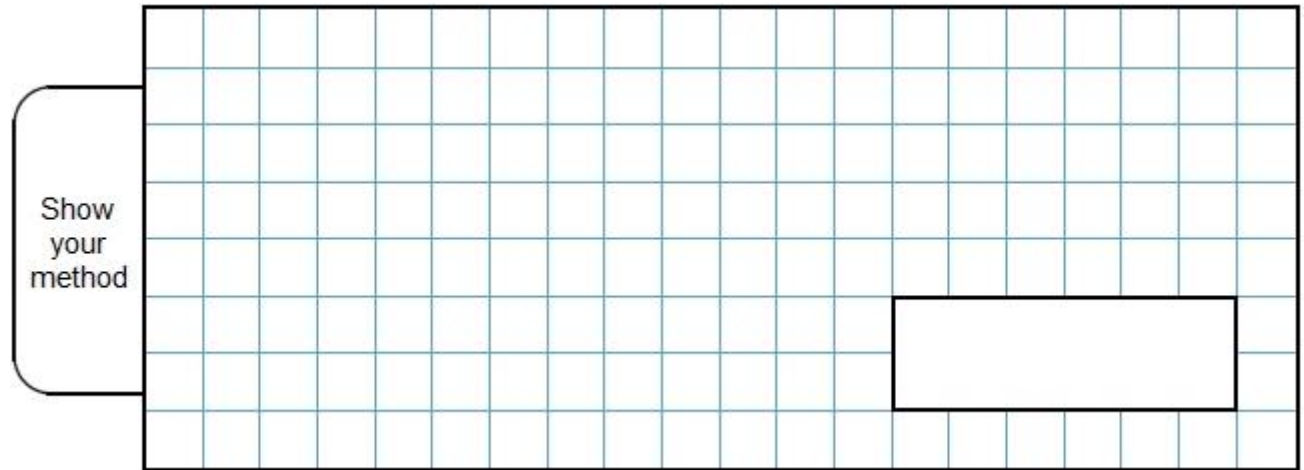
Q5.

In a class, 18 of the children are girls.

A quarter of the children in the class are boys.

Altogether, how many children are there in the class?

Show your method



2 marks

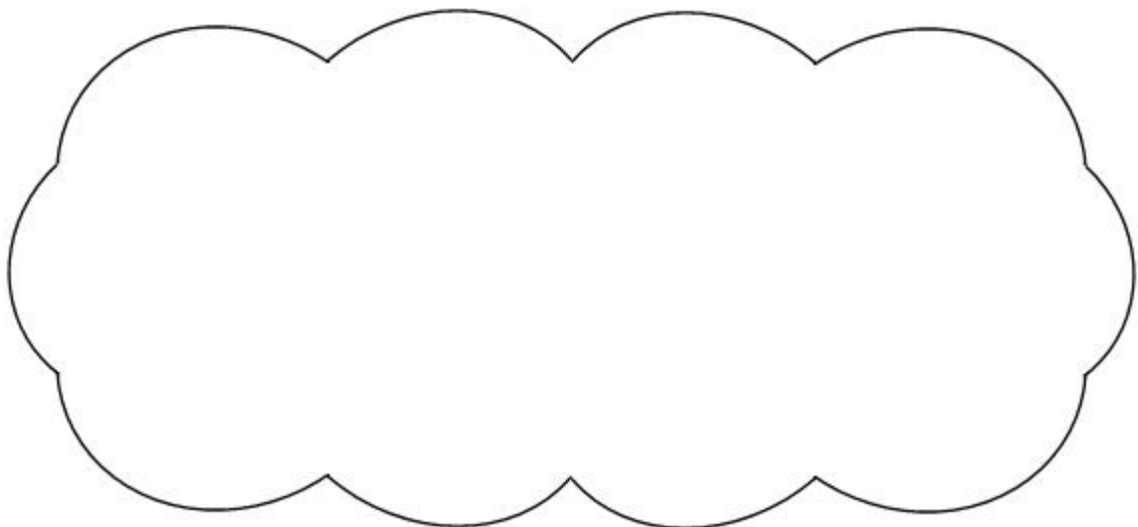
Q6.

Liam did a survey of 55 people to see how many were left-handed.

Liam says,

'The results show that exactly 10% of the people in the survey are left-handed.'

Explain why Liam cannot be correct.



1 mark

Q7.

The numbers in this sequence increase by 10 each time.

3 13 23 ...

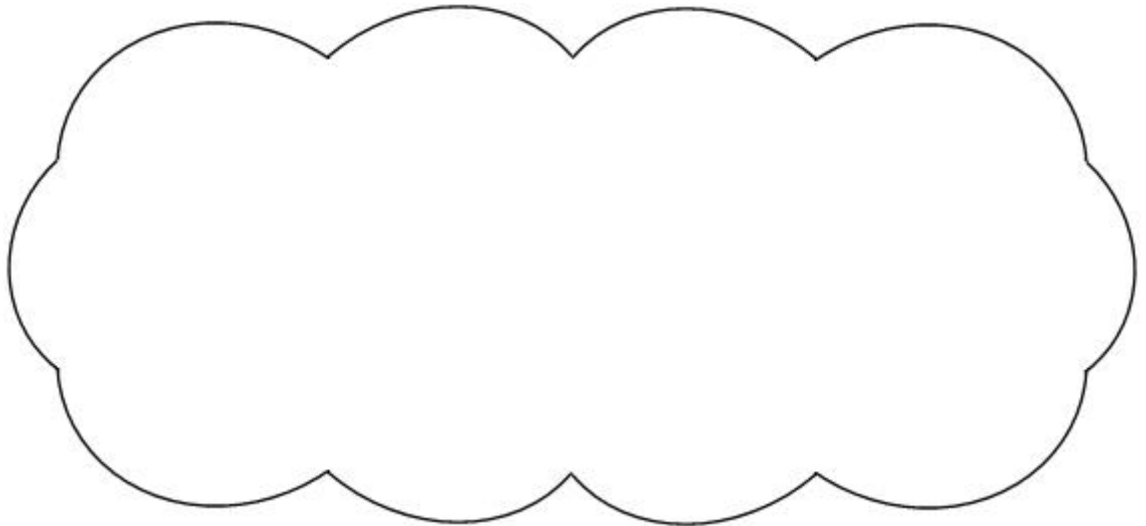
The sequence continues in the same way.

Write **two** numbers from the sequence that add to make a total of **96**

and

1 mark

Explain why it is **not** possible to find **three** numbers from the sequence that add to make a total of **96**



1 mark

Q8. Jack has £400

He spends **35%** of his money on a new bike.



£

How much does Jack spend on his new bike?

Mark schemes

Q1.

Award **TWO** marks for three correct numbers, as shown:

Award **ONE** mark for:

- any **TWO** numbers correctly placed

OR

- if box 1 is correct, accept correct follow-through for box 3 from the incorrect value in box 2.

Do not accept misreads for this question.

Up to 2m

[2]

Q2.

Award **TWO** marks for numbers in order as shown:

68 82 96 **110** 124 138 **152**

If the answer is incorrect, award **ONE** mark for two numbers correct.

Up to 2m

[2]

Q3.

9.6 or equivalent, eg:

- 9.60

! Measures

2

or

Shows or implies the correct scale factor, eg:

- $\times 3$ seen
- $13.5 \div 4.5 = 3$
- $3.2 + 3.2 + 3.2$
- $1 : 3$

OR

Shows the digits 96

OR

Shows or implies a complete correct method, eg:

- $13.5 \div 4.5 \times 3.2$

- $$4.5 \overline{) 13.5} \quad 2.10 \text{ (error)}$$

$$3.2 \times 2.10 = 6.4 \text{ (error)}$$

1

[2]

Q4.

Award **TWO** marks for the correct answer of 3.

If the answer is incorrect, award **ONE** mark for evidence of an appropriate method, e.g.

- $2.5 \times 6 = 15$
 $15 \div 5$

*Answer need not be obtained for the award of **ONE** mark.*

*Misreads are **not** allowed.*

Up to 2m

[2]

Q5.

Award **TWO** marks for the correct answer of 24

If the answer is incorrect, award **ONE** mark for evidence of appropriate working, eg:

- $18 \div 3 \times 4 = \text{wrong answer}$

OR

- $18 \div 3 = 6$

$$6 + 18 = \text{wrong answer}$$

*Working must be carried through to reach an answer for the award of **ONE** mark.*

OR

- a 'trial and improvement' method, eg

$$18 \text{ girls} + 14 \text{ boys} = 32 \quad 32 \div 4 = 8$$

$$18 \text{ girls} + 10 \text{ boys} = 28 \quad 28 \div 4 = 7$$

$$18 \text{ girls} + 4 \text{ boys} = 22 \quad 22 \div 4 =$$

A 'trial and improvement' method must show evidence of improvement, but a final answer need not be reached for

Q6.

An explanation which recognises that 10% of 55 is not a whole number, eg:

- '10% of 55 is $5\frac{1}{2}$, and you can't have $5\frac{1}{2}$ people'
- 'It wouldn't be a whole number of people'
- 'No whole number out of 55 will give you 10%'
- 'If it was 5 people, 5 out of 55 isn't 10%.
6 out of 55 isn't 10% either'
- 'Because you can't have half a person.'

- $5\frac{1}{2}$,

Do not accept vague or incomplete explanations, eg:

- 'You can't get 10% of 55'
- 'Some children write with both hands'.

U1

[1]

Q7.

(a) Two numbers from the sequence that total 96, eg:

43 **AND** 53

OR

23 **AND** 73

Numbers may be given in either order.

*Accept negative numbers, eg -7 **AND** 103*

1

(b) An explanation that recognises that adding three numbers ending in 3 will produce a number ending in a 9 eg:

- 'They all end in 3 so adding three will give a number ending in 9'
- 'If you add three numbers in the sequence you will always get a number ending in 9'
- 'All the numbers are odd and 96 is even'

Do not accept vague or incomplete explanations, eg:

- 'All the numbers end in three'
- 'It only works with two numbers'

- '3 odds add to make an even'

U1

[2]

Q8.

£140

Do not accept 140%