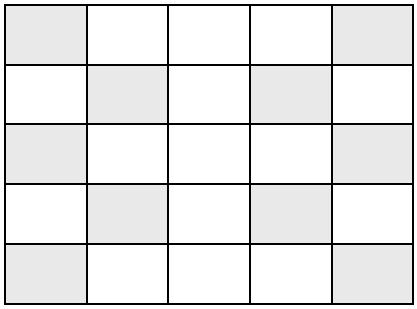
Percentages

Q1.

Here is a pattern on a grid.



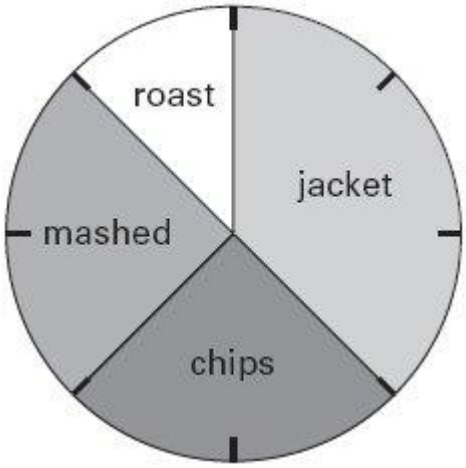
What **percentage** of the grid is shaded?

%

1 mark

Q2.

This pie chart shows how the children in Class 6 best like their potatoes cooked.



32 children took part in the survey.

Look at the four statements below.

For each statement put a tick (✓) if it is **correct**.
Put a cross (✗) if it is **not correct**.

10 children like chips best.

25% of the children like mashed potatoes best. ☐

$\frac{1}{5}$ of the children like roast potatoes best. ☐

12 children like jacket potatoes best. ☐

2 marks

Q3.

Hassan scores 40 out of 80 in a test.

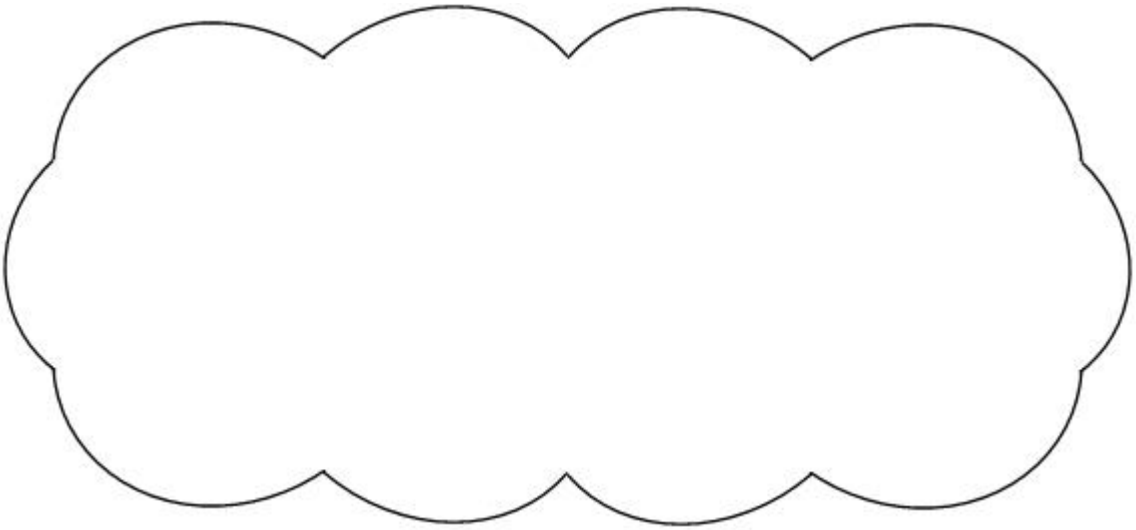
Kate scores 40% in the same test.

Who has the higher score?

Circle **Hassan** or **Kate**.

Hassan / Kate

Explain how you know.



1 mark

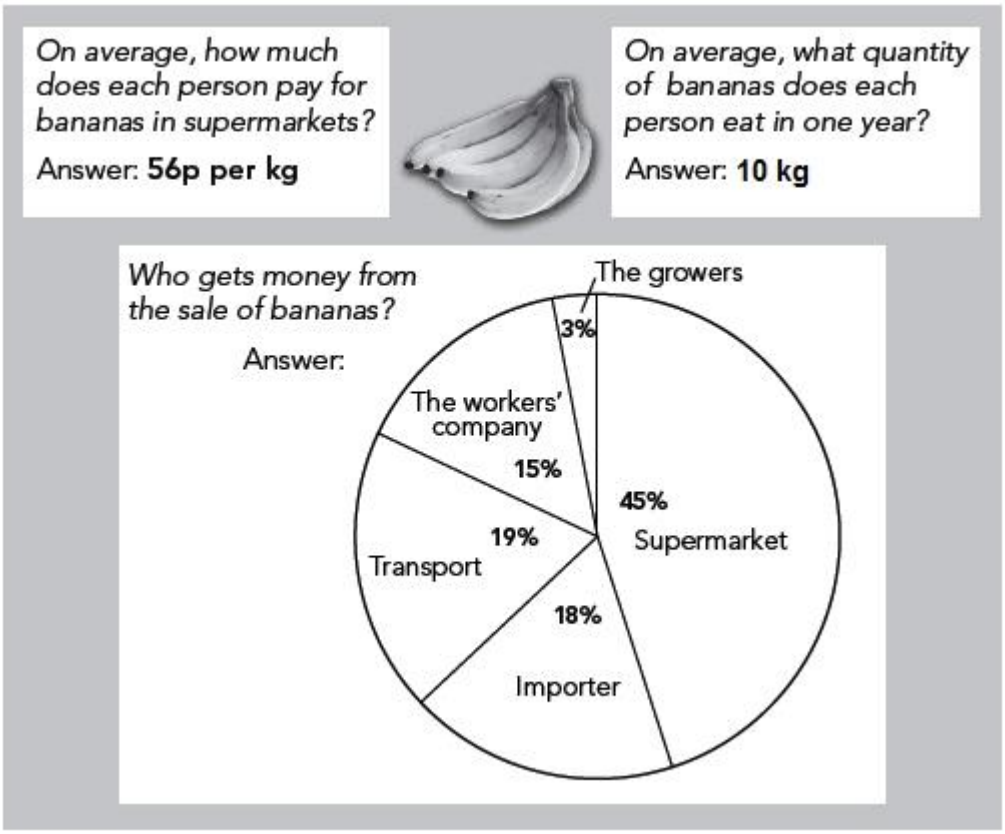
Q4.

Write the missing number.

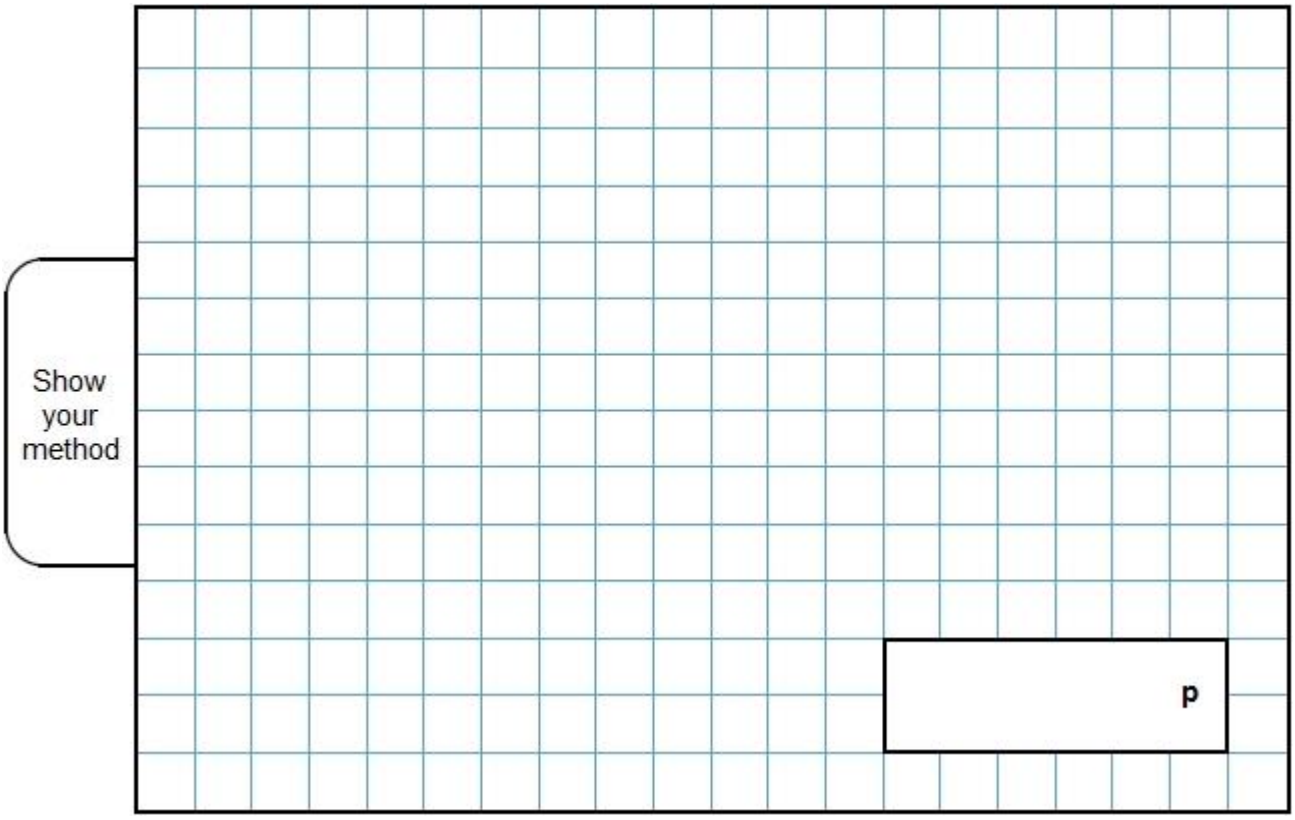
1 mark

Q5.

Here are three questions and answers about bananas.



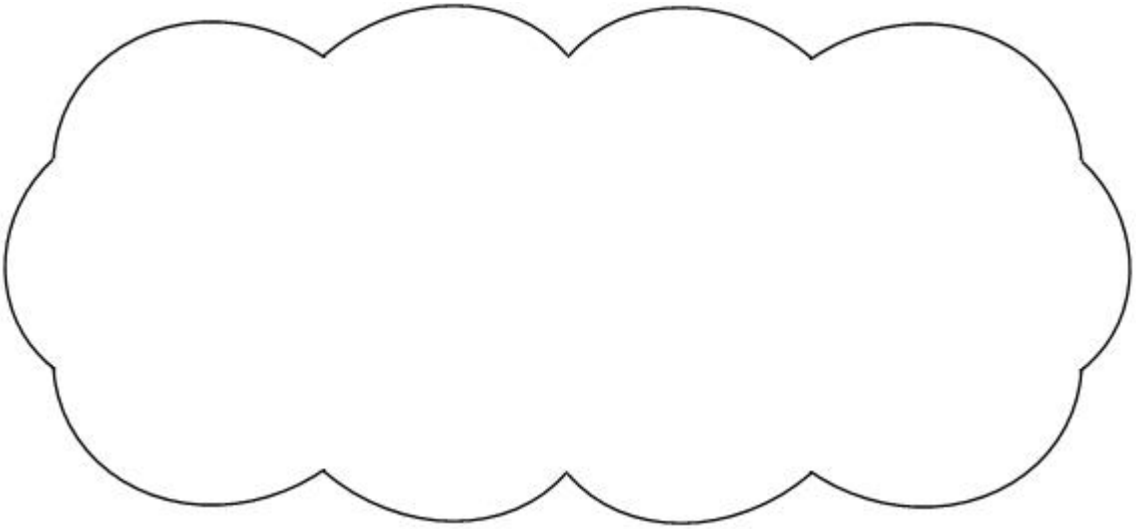
How much of the money each person pays for bananas in one year goes to the **growers**?



2 marks

Q6.

If you know **40%** of a number, explain how you could work out the original number.



1 mark

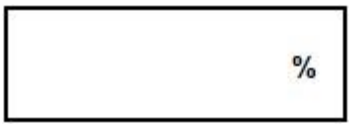
Q7.

A cat sleeps for **12 hours** each day.

50% of its life is spent asleep.

Write the missing percentage.

A koala sleeps for **18 hours** each day.



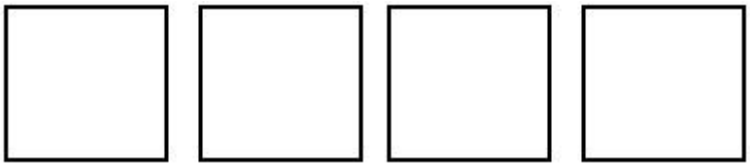
of its life is spent asleep.

1 mark

Q8.

Write these in order of size, starting with the smallest.

$\frac{3}{4}$ 0.34 0.7 43%

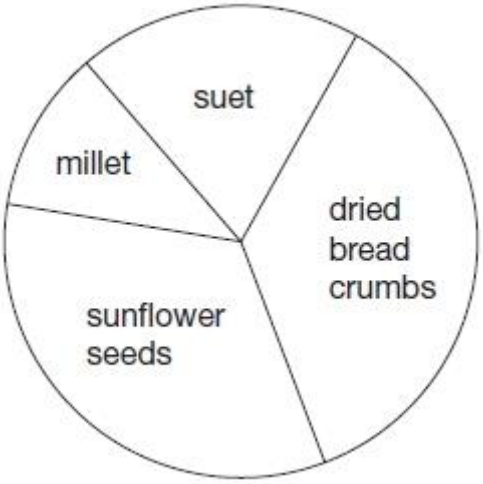


smallest

1 mark

Q9.

This pie chart shows the ingredients to make a food mixture for wild birds.



Estimate the **percentage** of mixture that is suet.

%

1 mark

Mina uses 100 grams of millet in the mixture.

Estimate how many grams of sunflower seeds she should use.

g

1 mark

Q10.

What is 10% of a half?

1 mark

What percentage of 20 is 19?

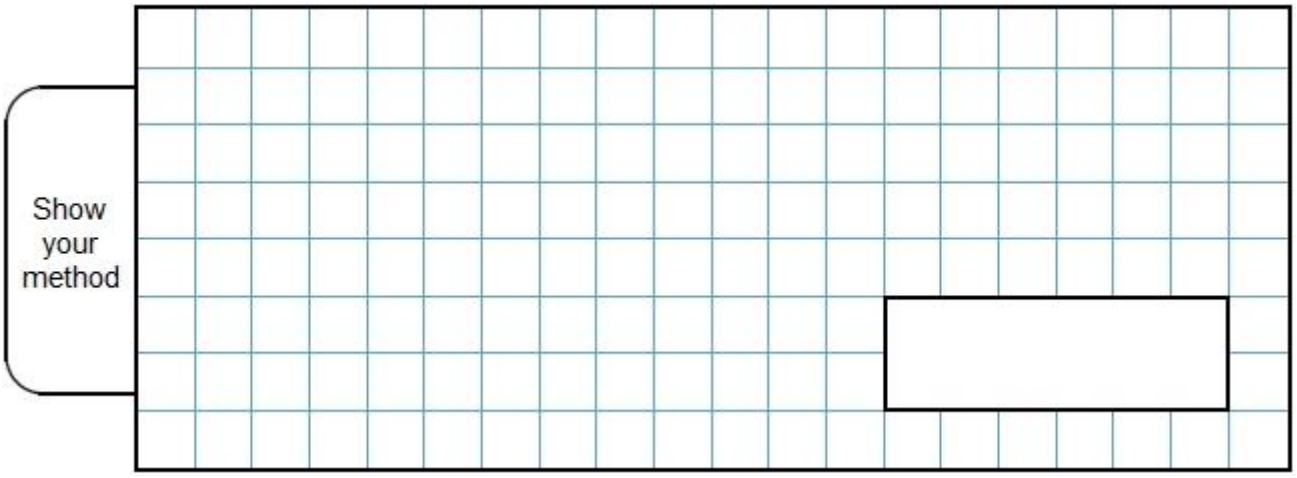
%

1 mark

Q11.

20% of Megan's number is **64**

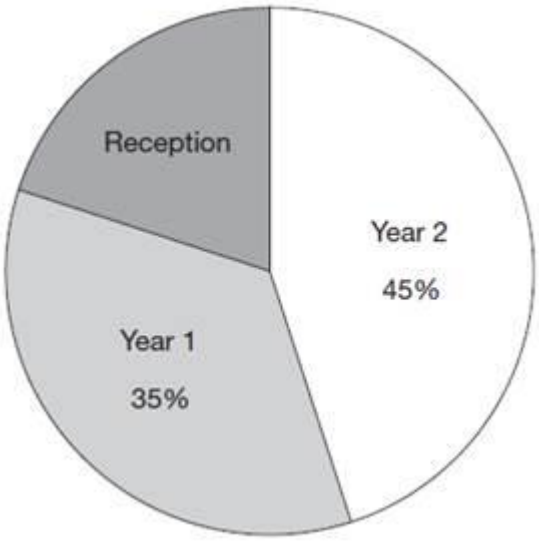
What is **50%** of Megan's number?



2 marks

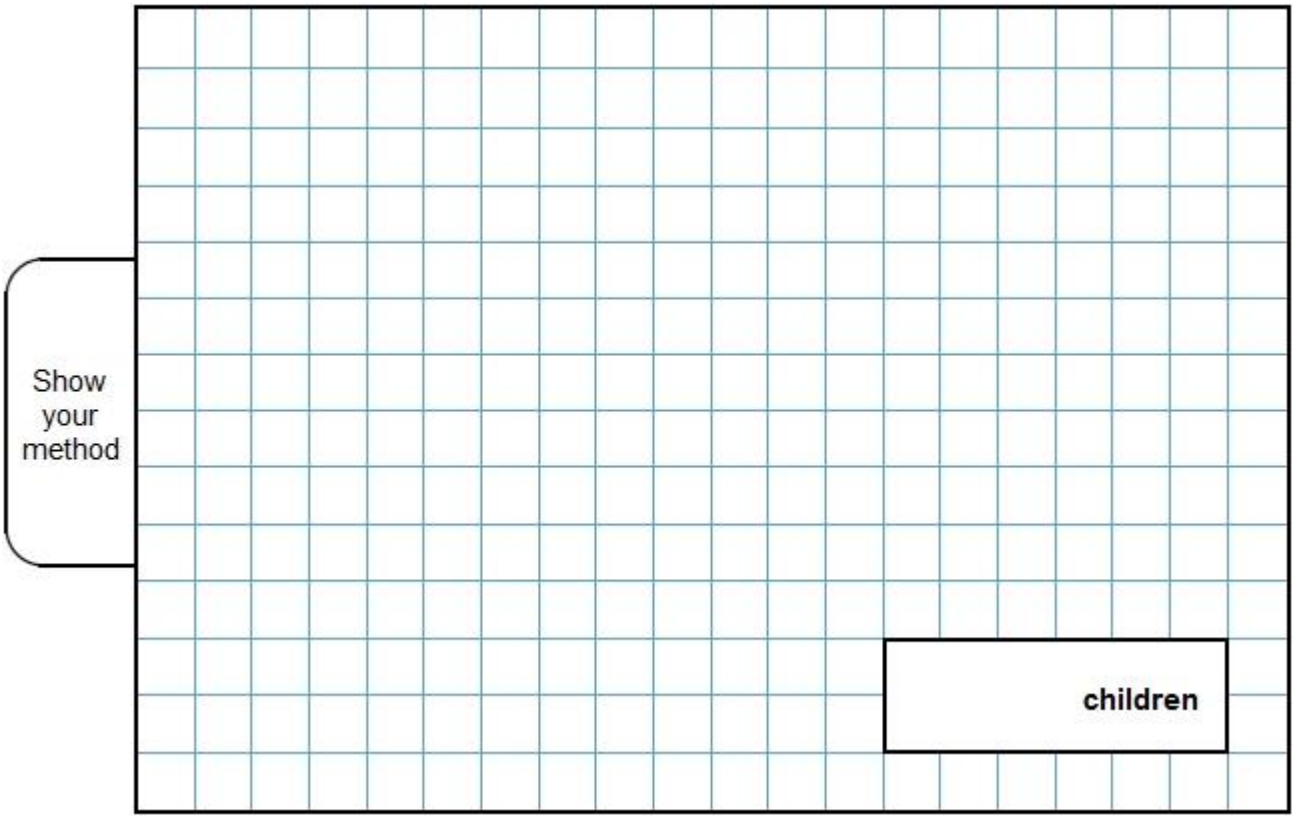
Q12.

The pie chart shows the Year groups of children at Woodland Infant School.



There are **56** children in **Year 1**.

How many children are there in Reception?



2 marks

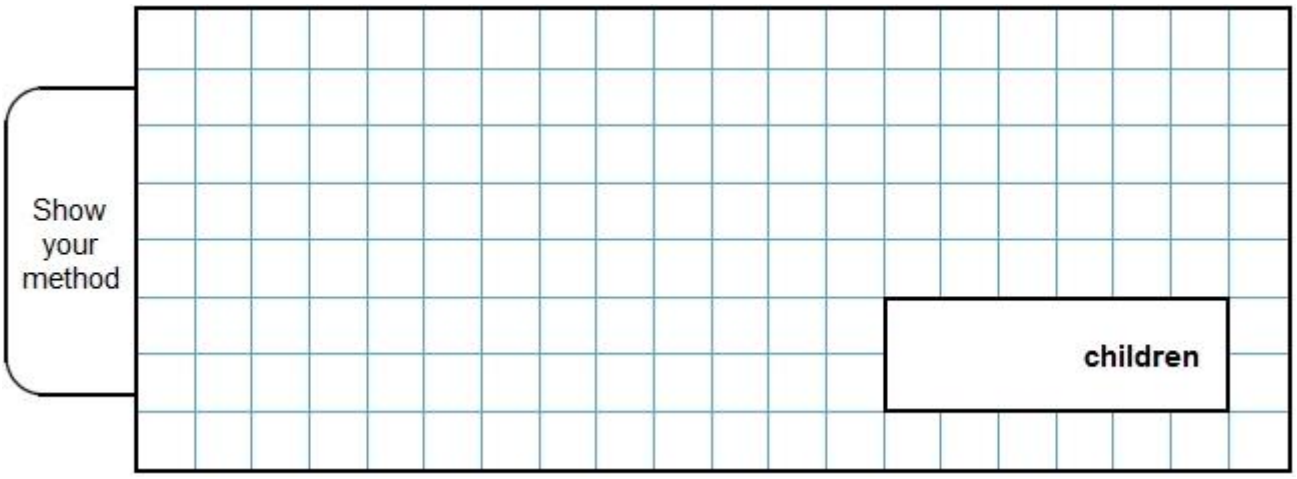
Q13.

200 children went on holiday.

10% of the children went to Wales.

25% of the children went to Scotland.

How many **more** children went to Scotland than went to Wales?



2 marks

Q14.

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

Q15.

Jack has £400

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

How much does Jack spend on his new bike?

£

1 mark

Q16.

20% of the children in a sports club play tennis.

25% of the children who play tennis **also** play rounders.

There are 8 children in the club who play **both** tennis and rounders.

How many children are there in the sports club **altogether**?

Show your method

2 marks

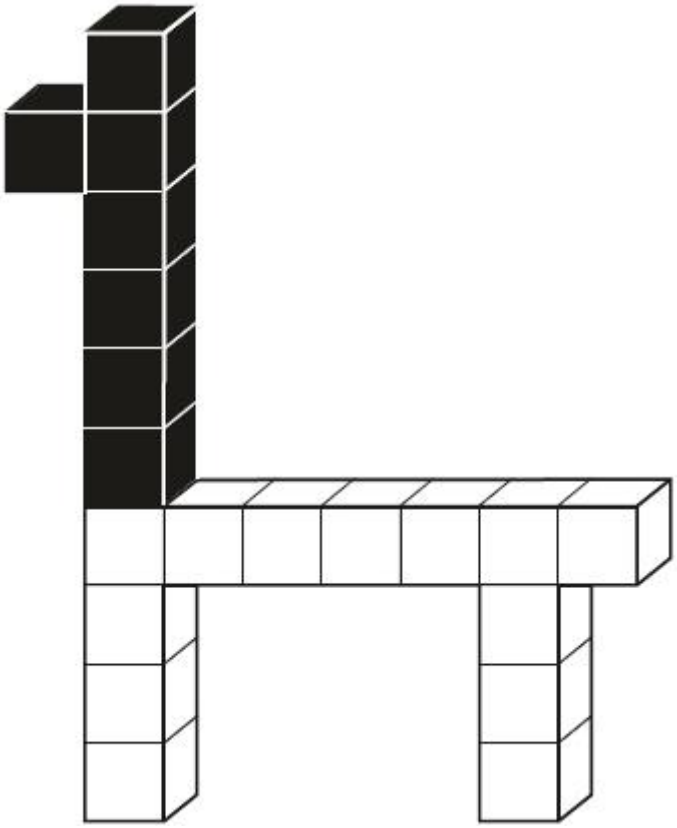
Q17.

Calculate 55% of 640

1 mark

Q18.

This model is made with 20 cubes.

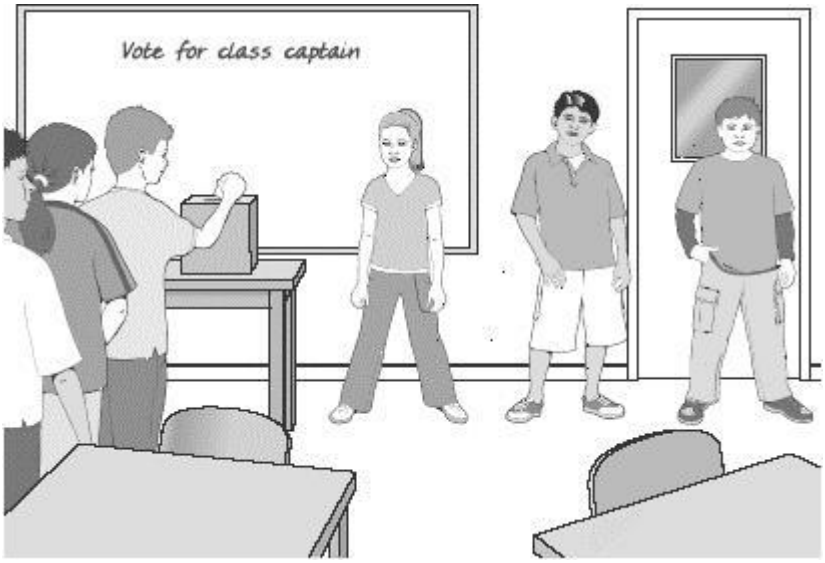


What **percentage** of the cubes in the model is black?

%

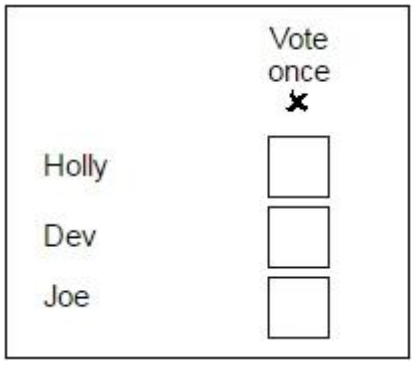
1 mark

Q19.



All the children in Class 6 vote to pick a class captain.

The choice is Holly or Dev or Joe.



Dev gets 10% of the votes.

Joe gets twice as many votes as Holly.

What percentage of the votes does the winner get?

%

1 mark

Q1.

40%

Do not *accept equivalent fractions or decimals.*

[1]

Q2.

Award **TWO** marks for boxes ticked and crossed as shown:

If the answer is incorrect, award **ONE** mark for any three boxes correctly completed.

*Accept alternative unambiguous indications such as **Y** or **N**.*

*For **TWO** marks, accept:*

Up to 2

[2]

Q3.

An explanation which correctly compares two percentages or two scores, eg:

- ‘40 out of 80 is 50%’
- ‘50% is more than 40%’
- ‘40% of 80 is 32’
- ‘40 out of 80 is better than 40 out of 100’
- ‘40 out of 80 is more than 32 out of 80’

- ‘Kate has less than half marks’.

No mark is awarded for circling ‘Hassan’ alone.

Do not *accept vague or incomplete explanations, eg:*

- *‘Hassan has half marks’*
- *‘Percentages are bigger’*
- *‘Hassan has more than 40%’*
- *‘Kate has less than 40 out of 80’.*

If ‘Kate’ is circled but a correct unambiguous explanation is given, then award the mark.

U1

[1]

Q4.

25 %

Do not accept *equivalent fractions or decimals*

[1]

Q5.

16.8p or 17p or equivalent

2

or

Shows the digits 168 or 17

or

Shows a complete correct method with not more than one computational or rounding error eg

- 56 × 10 × 3 ÷ 100
- 5.6(0) × 0.03
- 560 ÷ 100 = 5.6

6p *(premature rounding)* × 3 = 18

! Money
See general guidance

1

[2]

Q6.

An explanation which recognises that 40% of the number must be

multiplied by $2\frac{1}{2}$, or equivalent, eg:

- 'You multiply by 2.5'
- 'Halve it and multiply by 5'
- 'Divide by 4 to get 10% and then multiply by 10'
- 'Divide by 40 then multiply by 100'
- 'If you had 100, quarter of 100 is 25, then times by 10 to get 250'
- 'Double it and add half of it'.

***Do not** accept vague or incomplete explanations, eg:*

- *'Start with the original number and find 40% of it'*
- *'Find 10% and multiply by 10'*
- *'Divide by 4 to find 10% and then you can find 100%'*
- *'Find 1% and multiply by 100'*
- *'If you had 20 it would be 50'*
- *'Add 60%'*

U1

[1]

Q7.

75

[1]

Q8.

Numbers in order as shown:

0.34	43%	0.7	$\frac{3}{4}$

Accept use of equivalent fractions, decimals or percentages, eg 0.34, 0.43, 0.7, 0.75

[1]

Q9.

(a) Answer in the range 15% inclusive to 25% exclusive

***Do not** accept 25%*

1

(b) Answer in the range 200 g to 400 g exclusive

***Do not** accept 200 g **OR** 400 g.*

1

[2]

Q10.

(a) $\frac{1}{20}$ or equivalent

Accept equivalent fractions, decimals or percentages, eg:

- *5%*
- *0.05*
- $\frac{5}{100}$

***Do not accept** 5 without a percentage sign*

1

(b) 95

***Do not accept** equivalent fractions or decimals*

1

[2]

Q11.

Award **TWO** marks for the correct answer of 160

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

- 64 ÷ 2 = 32

  64 + 64 + 32 = wrong answer

OR

- 64 × 5 = 320

  320 ÷ 2 = wrong answer

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

Up to 2
U1

[2]

Q12.

32

2

or

160 seen *(the total children in the school)*

Do not accept 160° or 160%

OR

Shows or implies a complete, correct method, eg:

- 35 + 45 = 90 *(error)*
  100 − 90 = 10

56 ÷ 35 = 1.6
1.6 × 10 = 16

- 35% of children = 56
  total children = 56 × 100 ÷ 35 = 150 *(error)*
  Reception = 100 – (45 + 35)% = 20%
  Reception = 20% of 150
  0.2 × 150 = 40 *(error)*

- 35% is 56
  5% is 8
  20% is 4 × 8 = 24 *(error)*

1

[2]

Q13.

Award **TWO** marks for a correct answer of 30

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

- 10% of 200 = 20

  25% of 200 = 50

  50 – 20 = wrong answer

OR

- 25% – 10% = 15%

  15% of 200 = wrong answer

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

Up to 2m

[2]

Q14.

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]

Q15.

£140

Do not *accept 140%*

[1]

Q16.

160

2

or

32 seen (*number who play tennis*)

Do not accept *32% seen*

OR

Shows or implies a complete correct method, eg:

- 8 × 4 × 5
- 25% of tennis is 8
  8 × 4 = 24 (*error*)
  tennis is 20% of sports club
  24 × 5 = 120

1

[2]

Q17.

352

Do not *accept 352%*

[1]

Q18.

35%

[1]

Q19.

60%

U1

[1]