

# 100 Reasoning and Problem Solving Questions for SATs

Addition and Subtraction

Fractions, Decimals and Percentages

Place Value

Shapes and Angles

# Contents

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## 25 KS2 SATs Questions: Arithmetic and Reasoning

### About this resource

Do not use a calculator to answer any questions in this work book.

You could work through these questions with your child, or leave them to try a set of 5 questions. You could then mark the questions they've attempted and work through those they are unfamiliar with together.

Some might find choosing a mixture of questions from each section works best for their child; others might wish to work through in a more orderly fashion - starting with sets of place value questions, followed by addition and subtraction, then sets of fractions questions, with shape and angles being used last.

It's important to adapt use of these questions to each child's needs and what they're most comfortable with - that's the power of working one-to-one with children.

We would advise against setting too many questions at any given time - maths practice is best when it is done little by little and as often as possible.

### Advice for your child:

- Follow the instructions for each question.
- If you need to do working out, you can use the space around the question.
- For these questions, you may get a mark for showing your method.
- If you cannot do a question, go on to the next one.
- Remember go back and check your work.

### Marks

- The number under each line at the side of the page tells you the maximum number of marks for each question.

## 25 KS2 SATs Questions: Addition and Subtraction

1 Choose two numbers to complete this calculation

$$\square + \square = 72$$

19    22    51    33    53

1 mark

2 Fill in the missing number

$$63 + 28 = 100 - \square$$

1 mark

3  $2,483 + 5,048 =$

1 mark

## 25 KS2 SATs Questions: Addition and Subtraction

4

$$\square = 78,425 - 13,214$$

1 mark

5

$$4^2 + 8 =$$

1 mark

6

a) There were 2,408 people on board a cruise ship. At the next port, it takes on 557 more passengers, but 379 people get off. How many passengers are on board the ship now?

1 mark

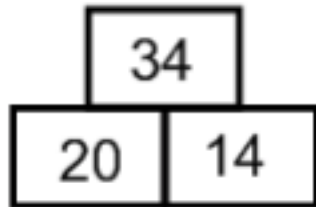
b) If 658 of these passengers are children, how many adults are on board?

1 mark

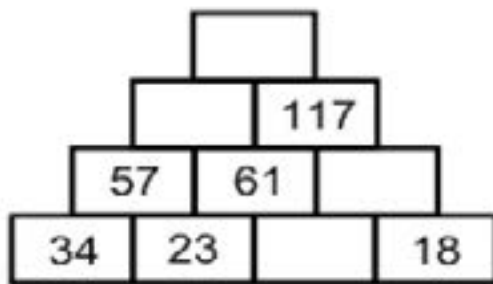
25 KS2 SATs Questions: Addition and Subtraction

- 7 Each number in the addition wall is made from adding the numbers in the two boxes directly below.

E.g.



Complete this addition wall




2 marks

- 8  $8,000,000 - 10 =$



1 mark

25 KS2 SATs Questions: Addition and Subtraction

9 Circle two numbers that have a difference of 230

340      580      250      810      120

1 mark

10  $7.34 + 32.08 + 403.9 =$

1 mark

11 Mrs Redley spent £23,407 on a new kitchen and then spent £2,073 on her grandchildren's Christmas presents. She has £19,098 left in her bank account. How much money did she have to begin with?

1 mark

25 KS2 SATs Questions: Addition and Subtraction

12 A new sports car costs £105,099. After 3 years, it's value is reduced by £47,520. How much is the car worth after 3 years?

1 mark

13  $8 - 2.34 =$

1 mark

## 25 KS2 SATs Questions: Addition and Subtraction

14 The prices in a cafe are shown in the table below

| Food item | Price |
|-----------|-------|
| Pizza     | £1.75 |
| Chips     | 95p   |
| Salad     | £1.36 |
| Burger    | £1.43 |
| Hotdog    | 87p   |

Jake buys a hotdog and a salad. Audrey buys a pizza and chips. How much more does Audrey spend than Jake?

2 marks

15 After his birthday, Carter has 5,238 football cards having received 257 cards from his Gran and 93 cards from his brother. How many cards did Carter have before his birthday?

1 mark

## 25 KS2 SATs Questions: Addition and Subtraction

- 16 This table shows the number of visitors to an art gallery at different months throughout the year.

| 3 month period | Total visitors |
|----------------|----------------|
| Jan - Mar      | 42 371         |
| Apr - Jun      | 60 158         |
| Jul - Sept     | 98 044         |
| Oct - Dec      | 77 108         |

How many more visitors were there in the last half of the year than in the first half of the year?

2 marks

17  $113.26 - 28.5 =$

1 mark

25 KS2 SATs Questions: Addition and Subtraction

18

7,205,415 =

+ 4,923,807

1 mark

19

Fill in the missing numbers to make this calculation correct:

$$\begin{array}{r}
 \square 3 4 \square 1 \\
 + \quad \square \square 7 6 \\
 \hline
 2 5 7 5 7
 \end{array}$$

1 mark

20

23,672 more people attended the Star Wars exhibition this year than last year. If 216,479 people went this year, how many people went last year?



1 mark

## 25 KS2 SATs Questions: Addition and Subtraction

- 21 A farmer has 42.6kg of animal feed. Each day he uses 5.75kg for his cows; 1,950g for his hens and 2,425g for his sheep. After 2 days, how much feed will he have left?

2 marks

- 22 The post office received 1,327,401 letters in December and 864,058 letters in January. Estimate the total number of letters received in December and January?

a) Estimate the answer by rounding to the nearest 10,000 first.

1 mark

b) What is the actual total number of letters received?

1 mark

## 25 KS2 SATs Questions: Addition and Subtraction

- 23 The table below shows the average temperature in Antarctica at different times of the year

| Time of year | Temperature (°C) |
|--------------|------------------|
| Jan          | -25              |
| Apr          | -1               |
| Aug          | 12               |
| Dec          | -22              |

What is the difference in temperature between January and August?

1 mark

- 24 Jamie has to drive 327.3 miles to Wales and then a further 186.9 miles to Devon. During his drive, he stops for a 10 minute break after 293.4 miles. How many more miles will he still need to drive to reach Devon?

1 mark

25 KS2 SATs Questions: Addition and Subtraction

25

Ella goes on a shopping spree and buys a handbag for £126.58; headphones for £37.25 and a pair of sunglasses. She had £200 to spend and now has the following left in her purse:

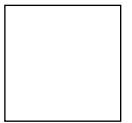
£10   £5   £2   50p   20p   5p

What did she pay for her sunglasses?

2 marks

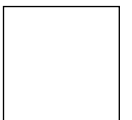
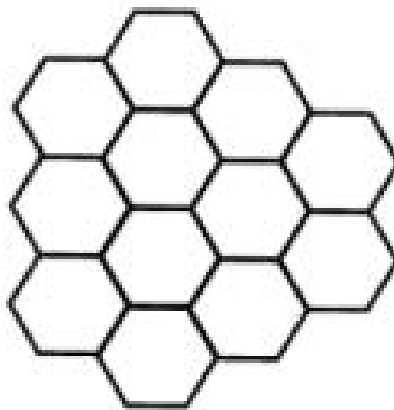
## 25 KS2 SATs Questions: Fractions, Decimals & Percentages

26 What fraction of the shape is shaded?



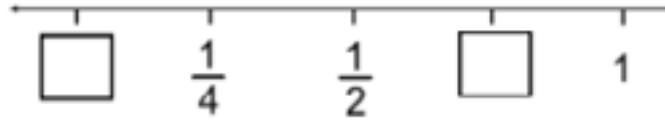
1 mark

27 Shade in  $\frac{2}{3}$  of this pattern



1 mark

28 Write the missing numbers on the **number line**




1 mark

29 Write this fraction in its simplest form

$$\frac{42}{56}$$



1 mark

30  $\frac{2}{3} \times 6 =$



1 mark

## 25 KS2 SATs Questions: Fractions, Decimals &amp; Percentages

31 Find an equivalent fractions to represent  $\frac{5}{6}$  as thirtieths

1 mark

32 Put these fractions in descending order:

$1 \frac{3}{6}$

$1 \frac{1}{12}$

$1 \frac{2}{3}$

$1 \frac{3}{4}$

1 mark

33  $\frac{9}{15} + \frac{4}{15} =$

1 mark

25 KS2 SATs Questions: Fractions, Decimals & Percentages

34 Find  $\frac{3}{10}$  of 360ml

1 mark

35  $\frac{2}{3} \times 6 =$

1 mark

36 Frankie has  $\frac{7}{8}$  of a pizza left. Perry eats  $\frac{5}{8}$  of the pizza.

How much pizza has Frankie got now?

1 mark

25 KS2 SATs Questions: Fractions, Decimals & Percentages

37 Write 0.16 as a fraction

1 mark

38  $\frac{4}{9} + \frac{2}{3} =$

1 mark

39  $7.63 \times 8 =$

1 mark

25 KS2 SATs Questions: Fractions, Decimals & Percentages

40 Circle **three** numbers that add up to 1

$\frac{1}{4}$    0.5   10%    $\frac{7}{10}$    15%   0.2

1 mark

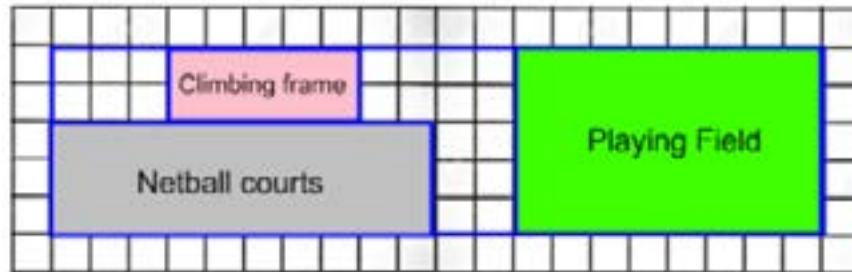
41 Find 35% of 780kg

1 mark

42  $\frac{7}{3} + \frac{9}{14} =$

1 mark

43 Look at this scaled drawing of a school playground



a) What percentage of the playground is field space?

b) How much of the playground does the netball courts take up? Write your answers as a fraction.

c) What amount of playground is taken up by the climbing frame? Write your answer as a decimal.



1 mark

44  $3\frac{2}{3} - 1\frac{3}{4} =$

1 mark

## 25 KS2 SATs Questions: Fractions, Decimals &amp; Percentages

- 45 There are 31 children in the class.  
Tia says, "40% of the class are boys."  
Is this possible? Why? Why not?

1 mark

46  $\frac{3}{7} \div 5 =$

1 mark

- 47 At the sweet factory, 3,600 sweets are made each hour.  $\frac{5}{9}$  of the sweets are lollipops. 20% of the sweets are gummy bears and the rest is chocolate bars. How many chocolate bars are manufactured each hour?

1 mark

## 25 KS2 SATs Questions: Fractions, Decimals &amp; Percentages

- 48 During a sale, prices were reduced by 20%. If Jack paid £132 for a new phone, what was the price of the phone before the sale?

1 mark

- 49 The population of the UK is 65.215 million. The population of USA is 5 times this size. What is the population of the USA? Round your answer to 2 decimal places.

1 mark

- 50 Pippa had some money. She spent  $\frac{1}{3}$  of it on a new pencil case. She then spent  $\frac{1}{2}$  of what she had left on a new set of pens. Her pens cost her £18. How much money did Pippa have to start with?

2 marks

## 25 KS2 SATs Questions: Place Value

- 51 Write the number **three million, twenty five thousand and seventeen** in figures.

1 mark

- 52 What is the value of the digit 7 in this number?  
**370,423**

1 mark

- 53 Write this number in words:  
**8,001,500**

1 mark

## 25 KS2 SATs Questions: Place Value

- 54 Write down the value of this Roman numeral:  
**MMCDXV**

1 mark

- 55 **295,362** is partitioned (expanded).  
Fill in the missing numbers:

$$\boxed{\phantom{000000}} + 90,000 + 5,000 + \boxed{\phantom{000000}} + 60 + 2$$

1 mark

- 56 What number is exactly 40,000 bigger than  
**1,120,107**?

1 mark

25 KS2 SATs Questions: Place Value

57 Write the number that is **300,000** less **8 million**

1 mark

58  $403 \times 100 =$

1 mark

59 What is the value of the digit 3 in this number?  
**405.123**

1 mark

## 25 KS2 SATs Questions: Place Value

- 60 **8,902.55** is partitioned (expanded). Fill in the missing numbers

$$8,000 + 900 + \boxed{\phantom{000}} + \boxed{\phantom{000}} + \boxed{\phantom{000}} \boxed{\phantom{000}}$$

1 mark

- 61 The population of a country is 7,350,361. If it increases by **800,000** over the next **5** years, what will be the population in 5 years?

|  |  |
|--|--|
|  |  |
|--|--|

1 mark

- 62 How many times greater is the value of the digit 8 in **8,423,025** than the value of the digit 8 in **3,086,504**?

|  |  |
|--|--|
|  |  |
|--|--|

1 mark

25 KS2 SATs Questions: Place Value

63 Place these numbers in ascending order

101,111    1,011,101    100,999    110,001

|  |  |  |  |  |
|--|--|--|--|--|
|  |  |  |  |  |
|--|--|--|--|--|

1 mark

64 Insert the symbol  $<$  or  $>$  in the missing space to make this statement correct

-27  -16

|  |
|--|
|  |
|--|

1 mark

65 Which number lies exactly halfway between **21,033** and **21,039**?

|  |  |
|--|--|
|  |  |
|--|--|

1 mark

25 KS2 SATs Questions: Place Value

66 Round **5,829,051** to the nearest 10,000

1 mark

67 How many times smaller is the value of the digit 2 in **578,209** than the value of the digit 2 in **256,414**?

1 mark

68 Circle two numbers that add together to equal **0.45**

0.4   0.5   0.41   0.05

1 mark

25 KS2 SATs Questions: Place Value

69 Order these numbers in descending order

4.01    4.6    4.16    4.101

|  |  |  |  |
|--|--|--|--|
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1 mark

70  $905 \div 1000 =$

|  |
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|  |
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1 mark

71 Write the number that is **exactly 3 less than ten million**

|  |
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|  |
|--|

1 mark

25 KS2 SATs Questions: Place Value

72 Which number lies exactly halfway between **18.7** and **18.8**?

1 mark

73 What is the difference between **403.6** and **403.54**?

1 mark

74 Round **35.72** to the nearest one decimal place

1 mark

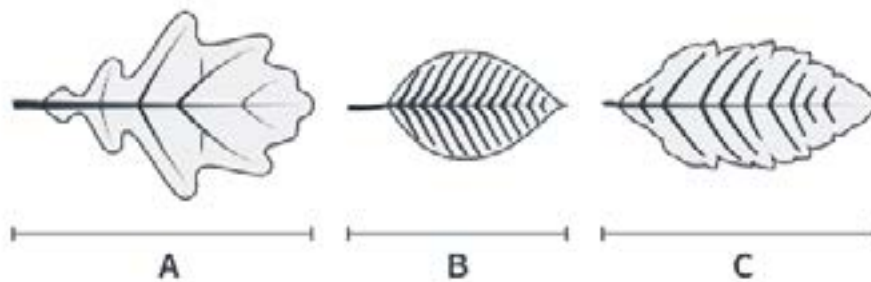
25 KS2 SATs Questions: Place Value

75 What number is exactly **0.005** greater than **423.096**?

1 mark

## 25 KS2 SATs Questions: Shape and Angle

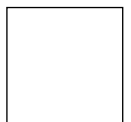
76 Here are three leaves.



Write  $<$ ,  $>$  or  $=$  to compare the lengths of the leaves.

Length A  Length B

Length B  Length C

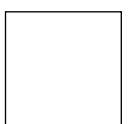


2 marks

77



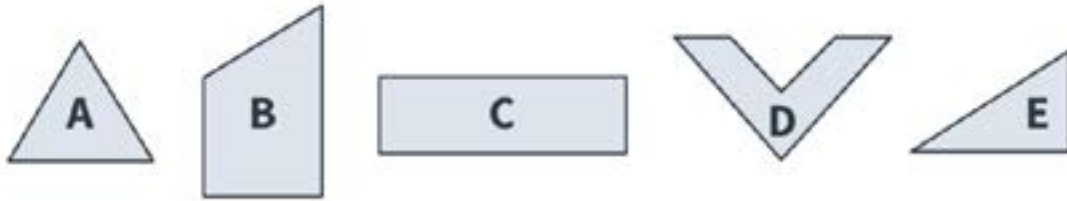
Which of these 2D shapes is not a hexagon?



1 mark

25 KS2 SATs Questions: Shape and Angle

78



Which of these shapes have vertical line symmetry?



1 mark

79

Name of 3D shape:

cylinder

triangular prism

cube

2D shape on its surface:

square

circle

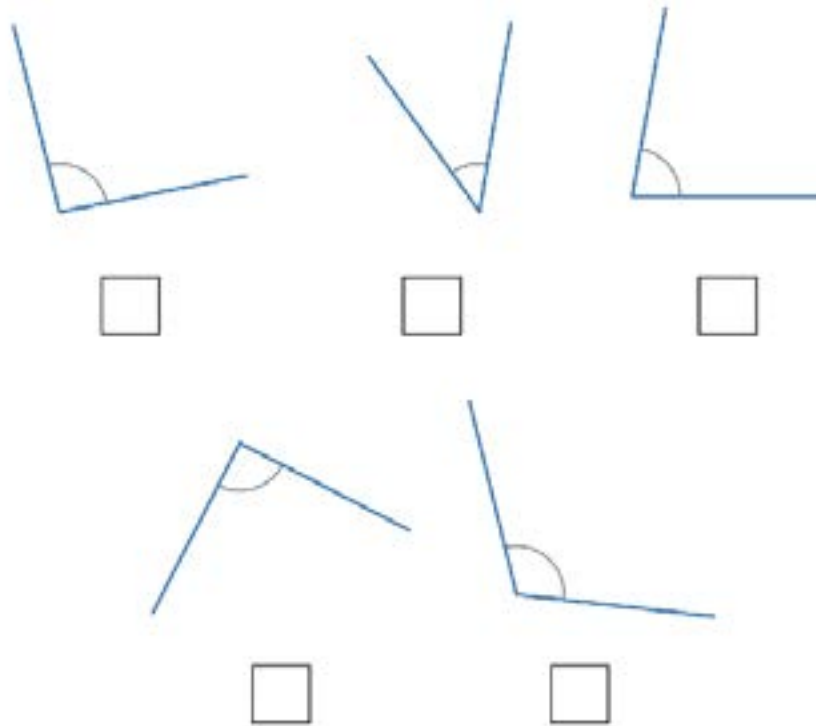
rectangle

Draw lines to match each 3D shape with a 2D shape that appears on its surface.

1 mark

25 KS2 SATs Questions: Shape and Angle

80 Tick the angles that are greater than a right angle.



1 mark

81



Calculate the perimeter of this shape.

cm

1 mark

25 KS2 SATs Questions: Shape and Angle

**82** Complete the sentences below by putting a number into the boxes.

Number of right angles in a half turn:

Number of right angles in a full turn:

Number of right angles in a quarter turn:



2 marks

**83** Write one quadrilateral name in each part of this diagram.

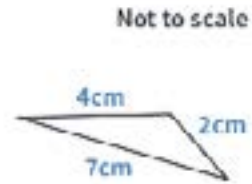
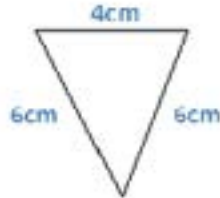
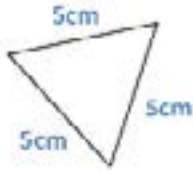
parallelogram   square   rhombus   rectangle

|                     | All sides are equal | Not all sides are equal |
|---------------------|---------------------|-------------------------|
| Has right angles    |                     |                         |
| Has no right angles |                     |                         |

2 marks

25 KS2 SATs Questions: Shape and Angle

84 Match up each triangle with its correct name and property.



scalene triangle

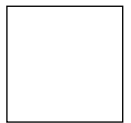
equilateral triangle

isosceles triangle

all sides the same length

no sides the same length

two sides the same length



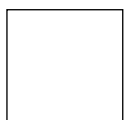
1 mark

85 A rectangular sticky label has a width of 7cm and length of 12cm.



What is the perimeter of the label?

cm



1 mark

25 KS2 SATs Questions: Shape and Angle

86 Fran wants to make a **rectangular** enclosure for her rabbit to run around in the garden safely.

She has 20m of wire fence.

The length and width of the rectangle must be in whole metres.

Explain how Fran could find all the possible rectangles she could make using the wire.

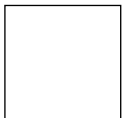
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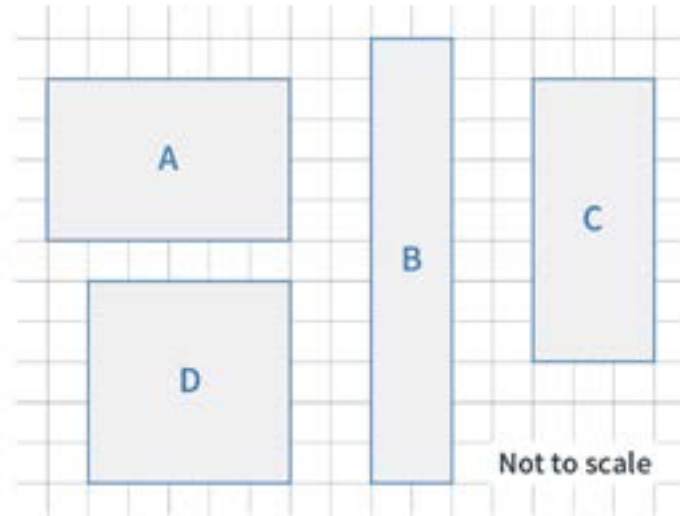
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1 mark

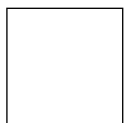
25 KS2 SATs Questions: Shape and Angle

87 Four pieces of paper are placed on a 1cm square grid.



Complete the table to show the areas of the pieces of paper.

| Shape | Area (cm <sup>2</sup> ) |
|-------|-------------------------|
| A     |                         |
| B     |                         |
| C     |                         |
| D     |                         |



2 marks

25 KS2 SATs Questions: Shape and Angle

88 A room has an area of  $24\text{m}^2$

Tick **all** of the dimensions that the room could have.

A) LENGTH = 6m, WIDTH = 4m

B) LENGTH = 6m, WIDTH = 6m

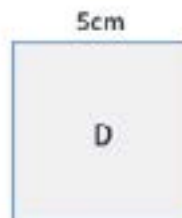
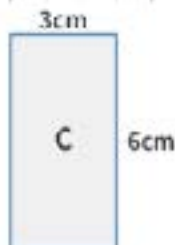
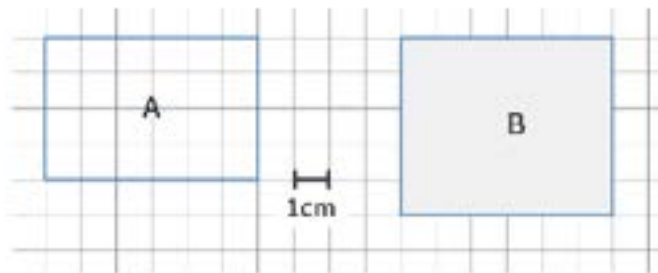
C) LENGTH = 10m, WIDTH = 2m

D) LENGTH = 8m, WIDTH = 3m



1 mark

89 Write the letters A to D in order of size, from largest to smallest area.



Not to scale

This is a square

Largest




Smallest

1 mark

25 KS2 SATs Questions: Shape and Angle

90 Complete these statements with the words **always**, **sometimes** or **never**.

An octagon is  a regular shape.

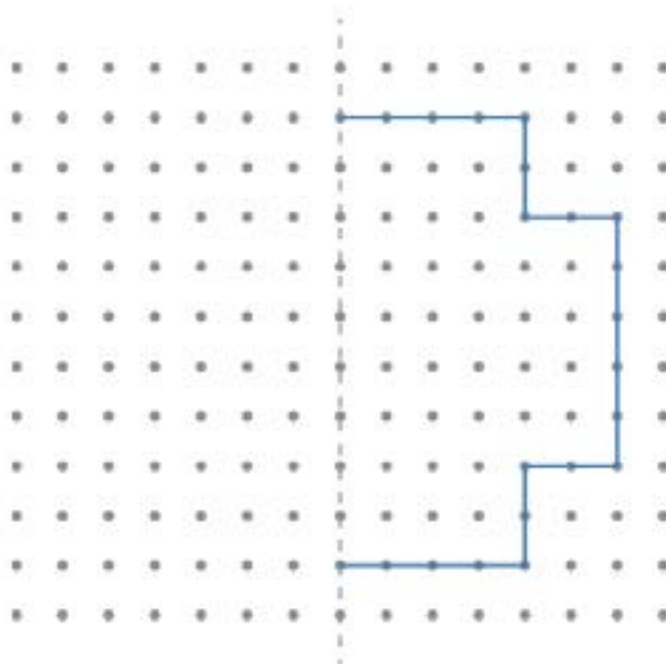
A square is  a regular shape.

An equilateral triangle is  an irregular shape.

A rhombus is  an irregular shape.

2 marks

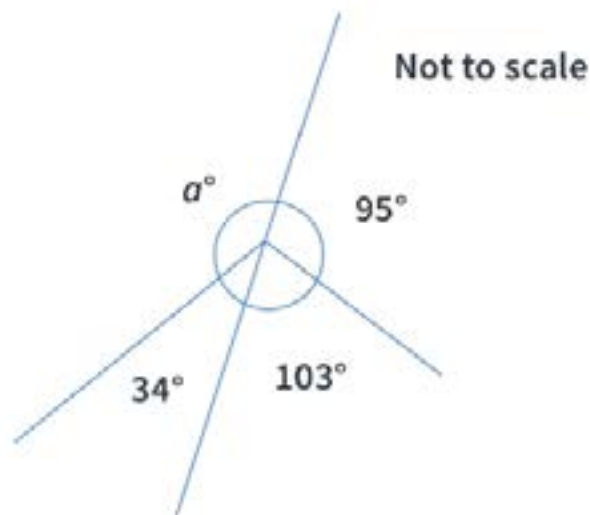
91 Complete the drawing so that it has **ONE** line of symmetry.




1 mark

25 KS2 SATs Questions: Shape and Angle

92



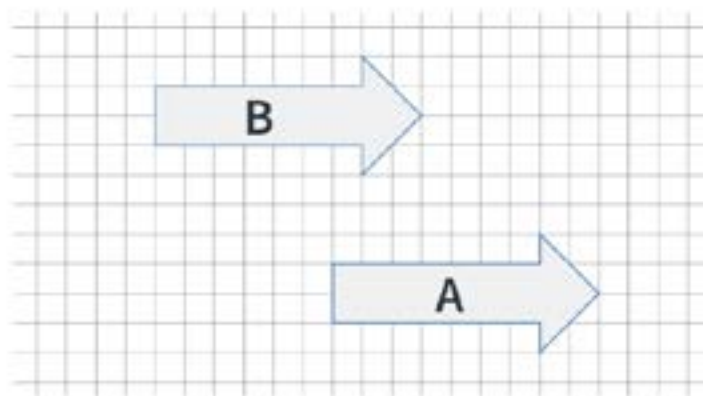
What is the value of angle  $a$ ?

Angle  $a =$

1 mark

93

These two arrows are identical.



Complete the boxes to describe the translation of arrow A to arrow B.

The arrow has moved  squares up

and  squares to the left.

1 mark

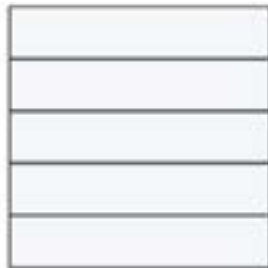
25 KS2 SATs Questions: Shape and Angle

94 The area of this square is  $100\text{cm}^2$ .



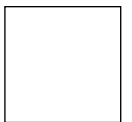
Not to scale

The square is split into five identical rectangles.



Not to scale

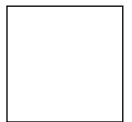
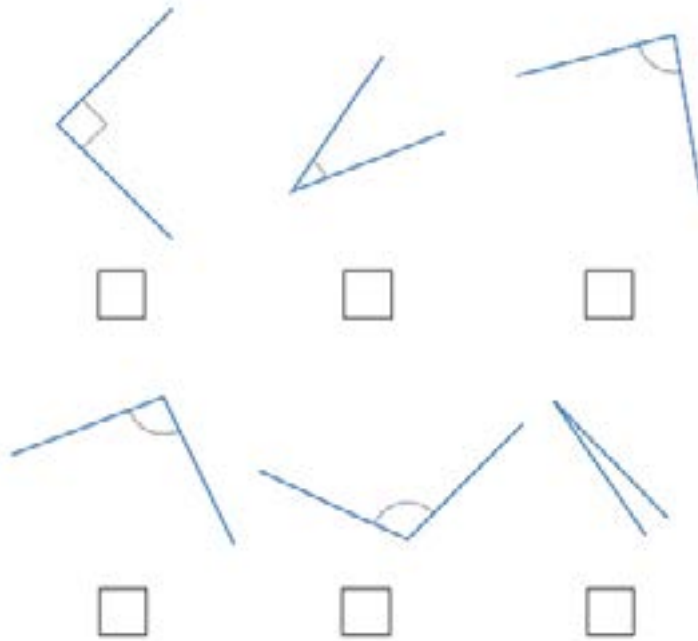
What is the **perimeter** of **one** of the rectangles?  
Don't forget your units.



2 marks

25 KS2 SATs Questions: Shape and Angle

95 Tick all the acute angles.



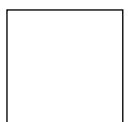
1 mark

96 Tallulah has drawn a rectangle.

The length of the rectangle is double its height.

The height of the rectangle is 6cm.

What is the area of Tallulah's rectangle? Don't forget your units.



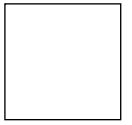
2 marks

## 25 KS2 SATs Questions: Shape and Angle

97 Finlay is playing a big game of snakes and ladders.

On his board, there are 13 squares in each row and 15 squares in each column.

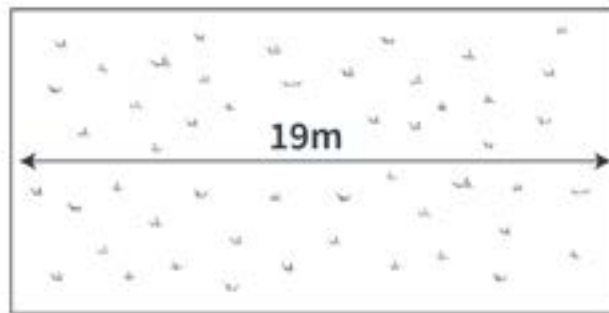
How many squares are there on the board altogether?



1 mark

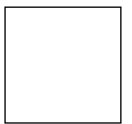
98 The area of a farmer's field is  $703\text{m}^2$ .

The field is rectangular. The width of the field is 19m.



Not to scale

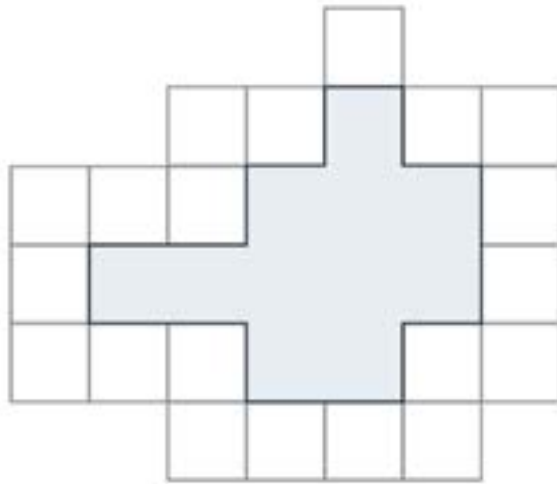
What is the height of the field? Don't forget your units.



2 marks

25 KS2 SATs Questions: Shape and Angle

99 Here is a set of squares around a shaded space.

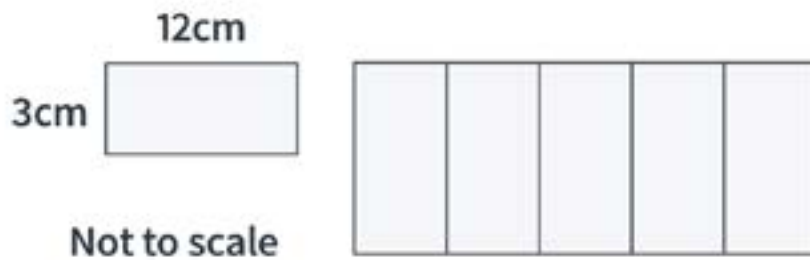


What is the area of the shaded space?



2 marks

100 A large rectangle is made up of five smaller rectangles.



What is the perimeter of the large rectangle?




2 marks


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