St Mary's School
CAMBRIDGE

Entrance Assessment 2019

Year 8 Mathematics

Time allowed: 1 hour

Instructions:
- Calculators are not allowed
- Total Marks: 60

Name: _____

Q1.

Place value

Fill in the missing word.

0.07 is the same as   7   _hundredths_

0.7 is the same as   7   ....

1 mark

Q2.

Number grid

The diagram shows part of a number grid.

Fill in the missing numbers.

852	853	
842		844
	833	834

1 mark

Q3.

Percentages

(a)   Work out **5%** of **360**

....

1 mark

(b)   Work out **15%** of **360**

You can use part (a) to help you.

....

1 mark

Q4.

Missing numbers

Write the missing numbers in the boxes.

79   +   85   =   ☐

1 mark

$36 \quad + \quad \boxed{} \quad = \quad 90$

Q5.

Here are some temperatures.

$-15°C \qquad -9°C \qquad -24°C \qquad 7°C \qquad 0° C$

Starting with the coldest, write these temperatures in order.

_____

Answer _____ °C; _____ °C; _____ °C; _____°C; _____°C

2 marks

Q6.

Walking to school

The table shows whether pupils in a class walk to school.

	Walk to school	Do **not** walk to school
Boys	2	8
Girls	5	10

(a)   What percentage of the **boys** walk to school?

.... %

(b)   What percentage of the **pupils** in this class walk to school?

.... %

2 marks

Q7.

America

The chart shows the distances in miles between five cities in America.

	Chicago			
Denver	1015	Denver		
New York	797	1799	New York	
Seattle	2062	1329	2864	Seattle
Washington	701	1686	228	2769

Use the chart to answer these questions.

(a)   It is 1686 miles from Washington to Denver.
      How many miles is it from **Washington to Chicago**?

.... miles

1 mark

(b)   Which two cities have the **greatest distance** between them?

.... and ....

1 mark

Q8.

Matching

Draw lines to match the words to the correct numbers.

The first one is done for you.

thirty-six	3006
three hundred and six	36
three thousand and six	306
three thousand and sixty	3600
three thousand six hundred	3060

2 marks

Q9.

Matching expressions

Match each statement to the correct expression.

The first one is done for you.

Add **2** to a ———————————— $a + 2$

Subtract **2** from a

Multiply a by **2**

Divide a by **2**

Multiply a by **itself**

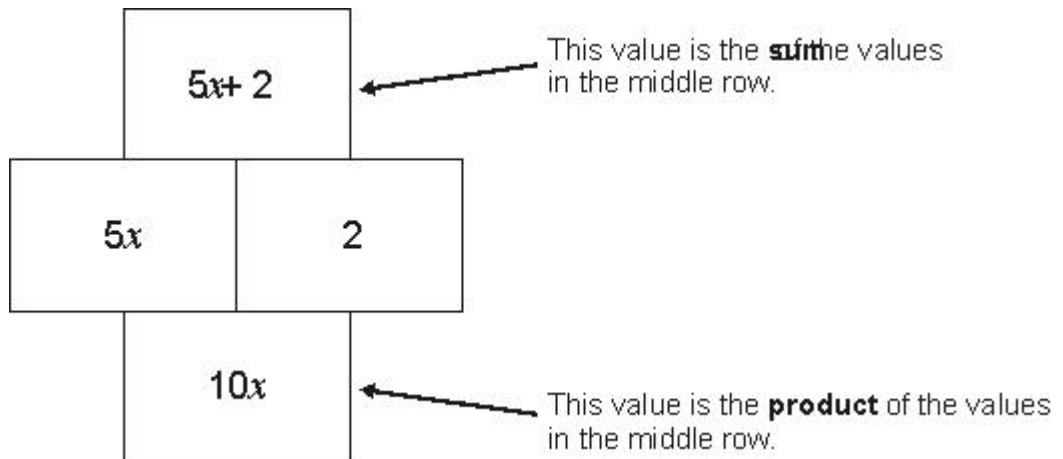2

$2 - a$

$a + 2$

$2a$

$a - 2$

$\dfrac{2}{a}$

a^2

$\dfrac{a}{2}$
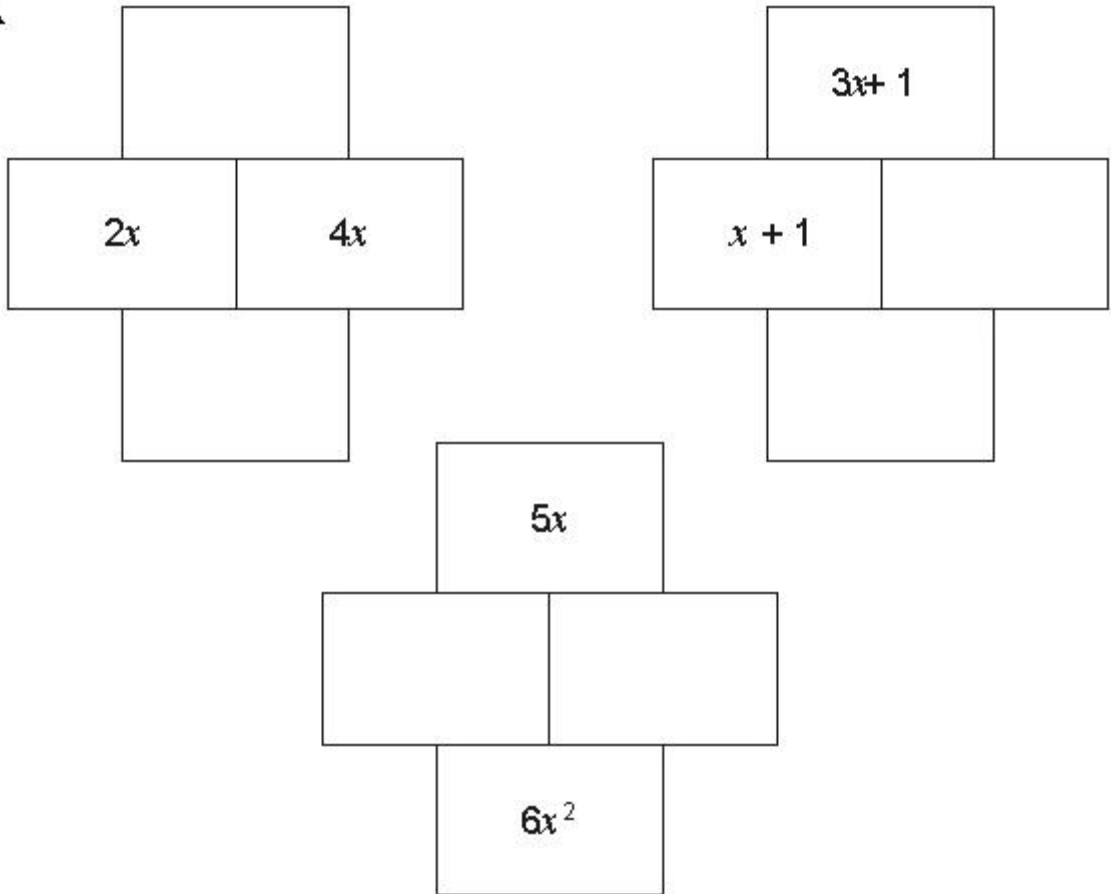
2 marks

Q10.

Algebra grids

Here are the rules for an algebra grid.
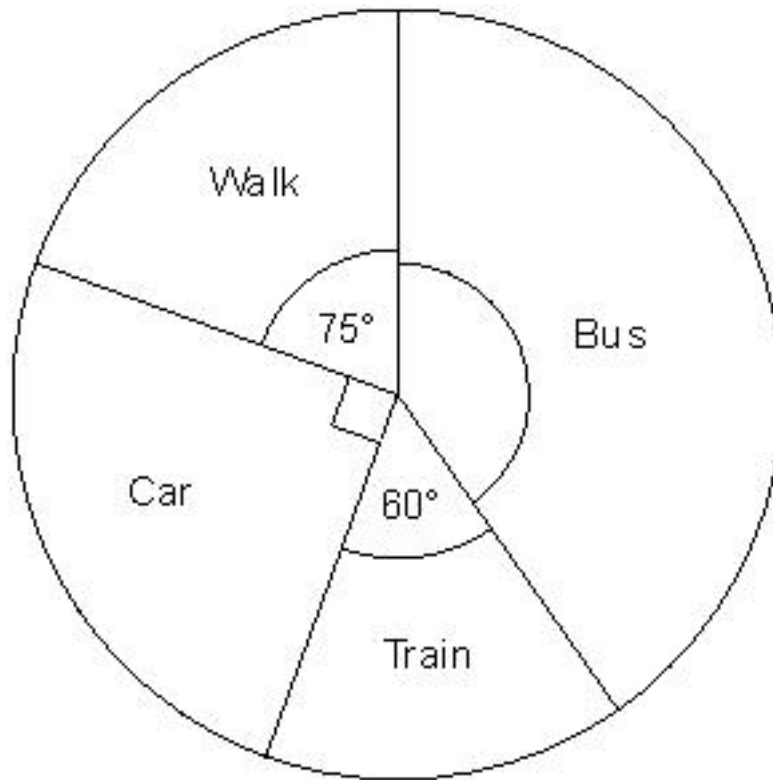

Use these rules to complete the algebra grids below.

Write your expressions as simply as possible.

2x   4x

3x+ 1

x + 1

5x

6x²

3 marks

Q11.

The pie chart shows how pupils in class 9A travelled to school one morning.

Not drawn accurately

5 pupils in class 9A **walked** to school.

Work out how many pupils in class 9A travelled by **bus**.
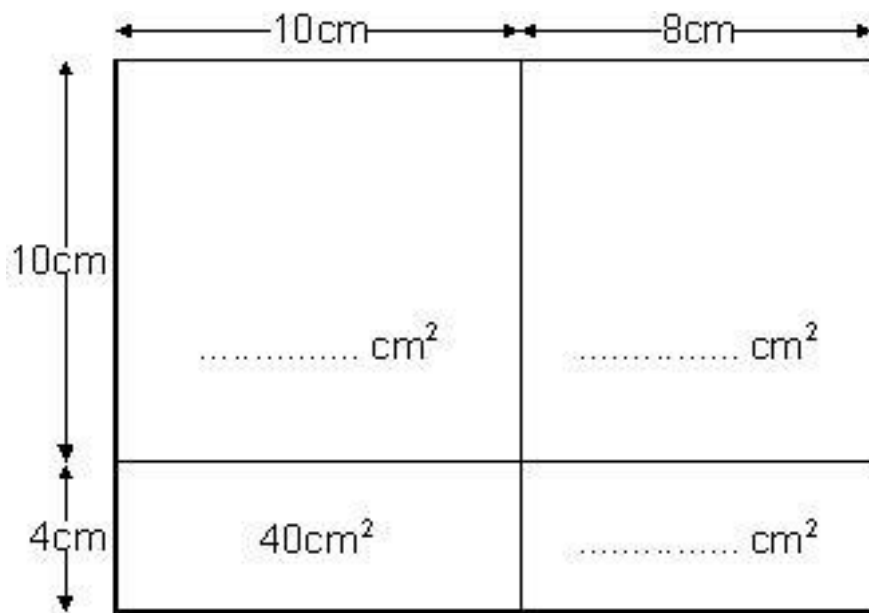
2 Marks

Q12.

Areas

(a) The diagram shows a rectangle **18cm** long and **14cm** wide.

It has been split into **four smaller rectangles**.

Write the **area** of each **small rectangle** on the diagram.

One has been done for you.

What is the area of the **whole** rectangle?

.... cm²

1 mark

What is **18 × 14**?

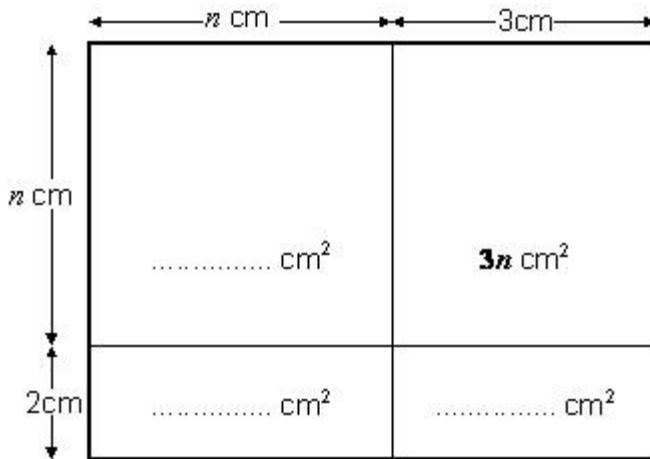18 × 14 = ...

1 mark

(b)   The diagram shows a rectangle **(n + 3)** cm long and **(n + 2)** cm wide.

It has been split into **four smaller rectangles**.

Write a **number** or an **expression** for the **area** of **each small rectangle** on the diagram.

One has been done for you.

n cm ⟶ ⟵ 3cm ⟶

n cm

.... cm^2 **3n** cm^2

2cm   .... cm^2 .... cm^2

2 mark

Q13.

Increases by 3

For each equation below, when **x increases by 3**, what happens to y?

Complete the sentences.

$y = x$

When x increases by 3, y increases by................

$y = 2x$

When x increases by 3, y increases by................

$y = 3x + 1$

When x increases by 3, y increases by................

3 marks

Q14.

Substituting

Write **numbers** in the boxes to make the statements true.

When $x =$ ☐   then $x + 3 =$ ☐
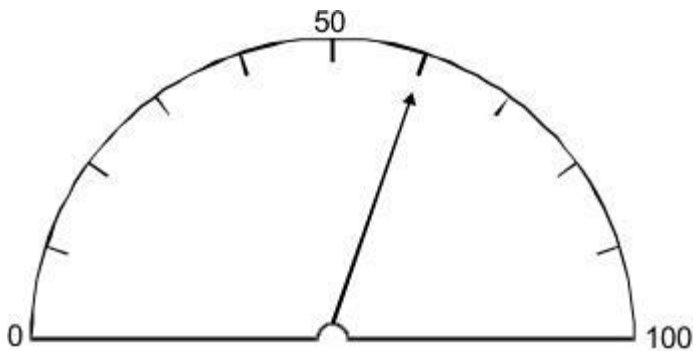
When $x =$ ☐   then $3x =$ ☐

When $x =$ ☐   then $\dfrac{x}{3} =$ ☐

2 marks

Q15.

Scales

(a) Look at this scale.

What value is the arrow pointing to on the scale?

....

1 mark

(b) Here is a different scale.

Draw an arrow (↓) so that it shows the **same value** as the arrow in part (a).

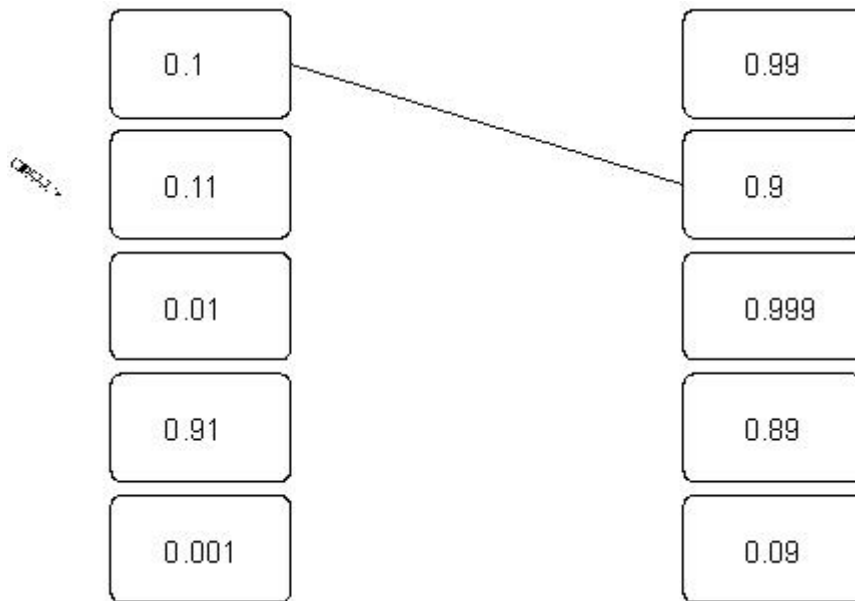**1 mark**

Q16.

Making 1

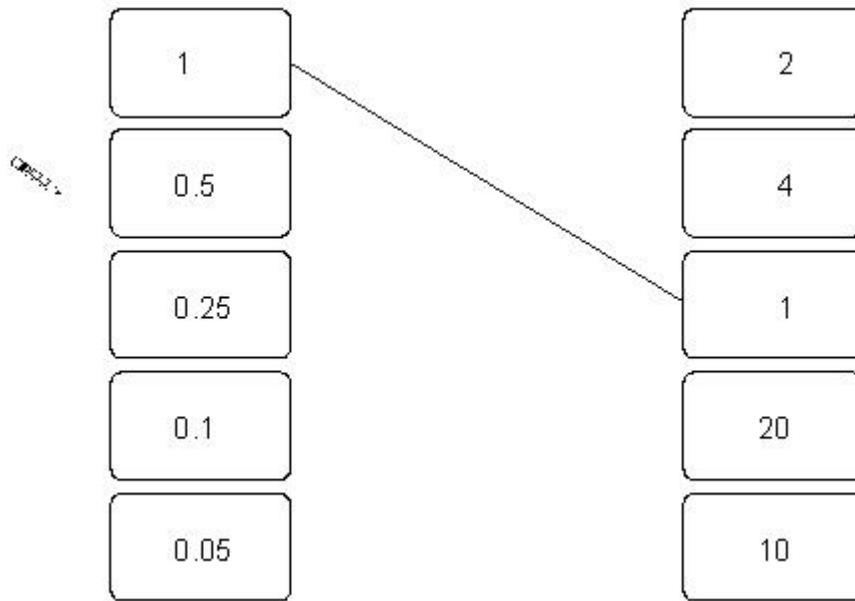(a)   Join all the pairs of numbers that **add** together to equal **1**

The first one is done for you.

2 marks

(b)   Now join all the pairs of numbers that **multiply** to equal **1**

The first one is done for you.

1	2
0.5	4
0.25	1
0.1	20
0.05	10

2 marks

Q17.

Which number?

(a) Which number is **closer to 100**?

Put a ring round it.

68   133

Explain how you know.

1 mark

(b) Which number is **closest to 10**?

Put a ring round it.

<div align="center">

−5   16   −9   0

</div>

<div align="right">1 mark</div>

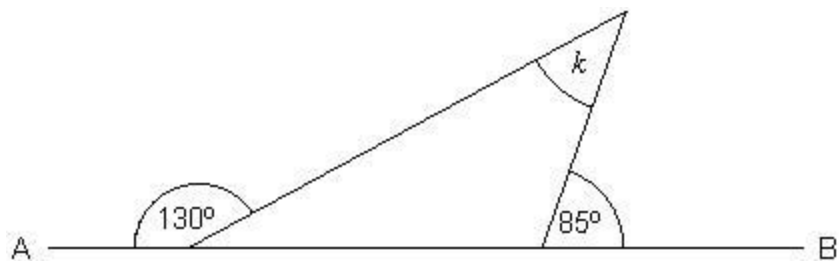(c) Which number is **closest to 1**?

Put a ring round it.

<div align="center">

1.4   1.35   0   1.65

</div>

<div align="right">1 mark</div>

Q18.

Angle _k_

Look at the diagram.

Not drawn accurately

AB is a straight line.

Work out the size of angle _k_

k = ... °

Q19.

The shaded rectangle is **twice as long** as it is wide.

The **perimeter** of the rectangle is **30cm**.

Not drawn accurately

What is the **area** of the rectangle?

.... cm²

Q20.

Triangle

Look at the triangle.

Not drawn accurately

Work out the value of a

a = ...

3 marks

Q21.

ands

Here is some information about all the pupils in class 9A.

	girls	boys
right-handed	13	14
left-handed	1	2

A teacher is going to choose a pupil from 9A at random.

(a) What is the probability that the pupil chosen will be a **girl**?

1 mark

(b) What is the probability that the pupil chosen will be **left-handed**?

1 mark

(c) The teacher chooses the pupil at random.

She tells the class the pupil is **left-handed**.

What is the probability that this left-handed pupil is a **boy**?

1 mark

Q22.

Solving Find the values of *x*

5*x* – 3 = 12

x = ...
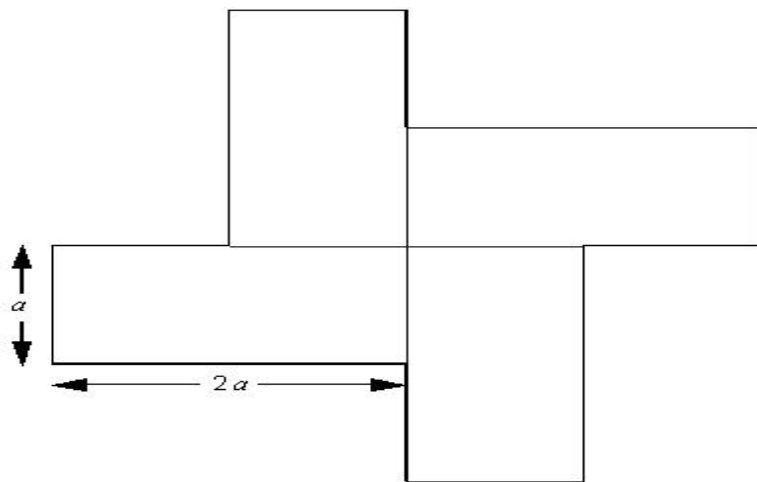
1 mark

$13 + 2x = 3$

x = ...

1 mark

Q23.

Shape

This shape is made of four congruent rectangles.

Each rectangle has side lengths $2a$ and a

Not drawn accurately

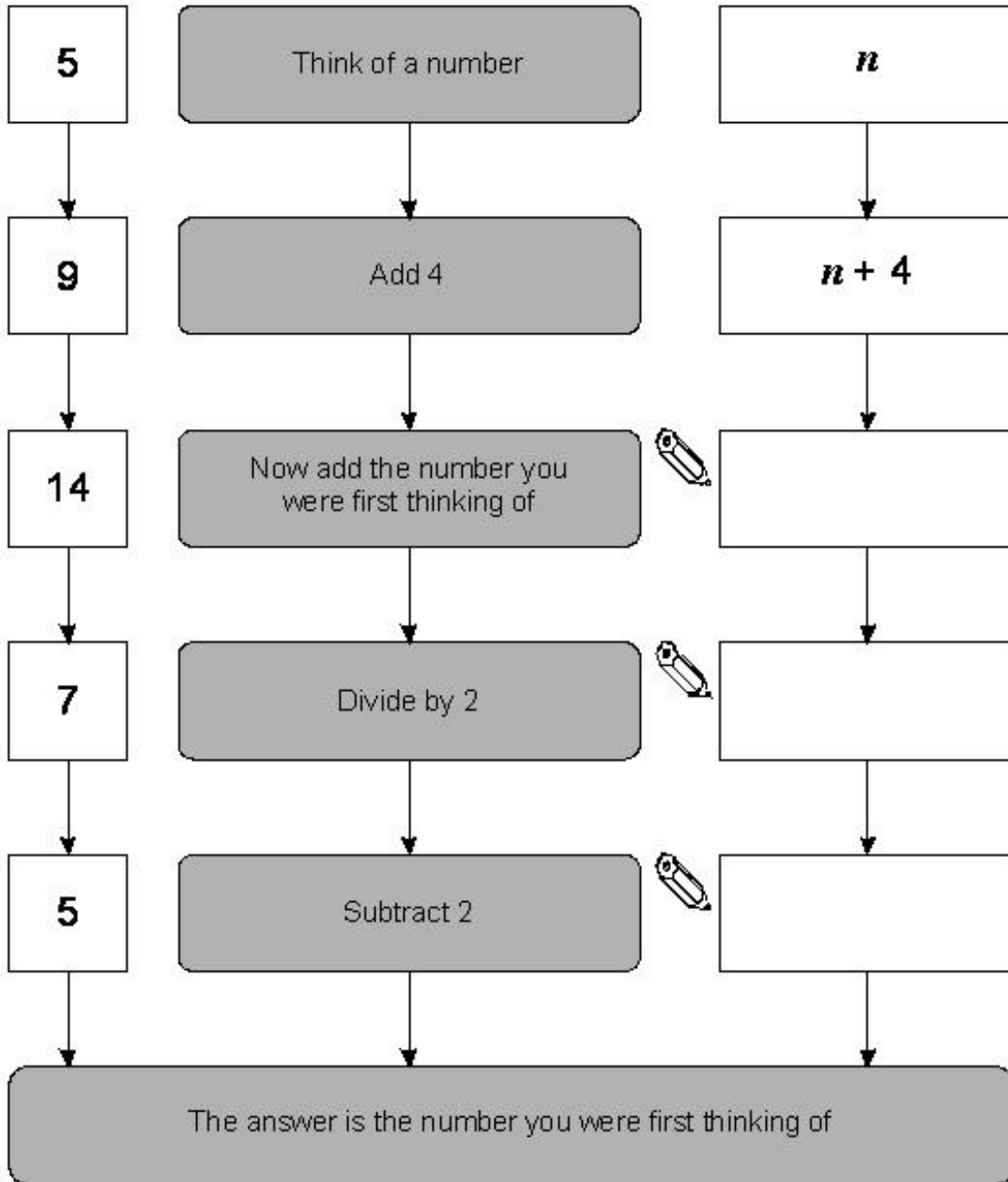The **perimeter** of the shape is **80cm**. Work out the **area** of the shape.

.... cm²

2 marks

Q24.

Puzzle

You can often use algebra to show why a number puzzle works.

Fill in the missing expressions.

Example: Algebra:

| 5 | Think of a number | n |

| 9 | Add 4 | $n + 4$ |

| 14 | Now add the number you were first thinking of | |

| 7 | Divide by 2 | |

| 5 | Subtract 2 | |

The answer is the number you were first thinking of

3 marks

Q25.

Finding b

Look at these equations.

$$11 = 6 + a$$

$$a + 7 = 10 + b$$

Use **both** equations to work out the value of b

b = ...

2 marks

END OF ASSESSMENT