# Mental questions

**1** Multiply seven by seven.

_____

**2** How many nines are there in fifty-four?

_____

**3** What number should you add to negative three to get the answer five?

_____

**4** Add two point five to three quarters.

_____

**5** I think of a number. I call it *n*.
I square my number and then add four.
Write an expression to show the result.

_____

# Car parking

A car park shows this sign.

```
┌─────────────────────────────┐
│         Car parking         │
│                             │
│            70p              │
│                             │
│   Pay using any of these    │
│           coins:            │
│   ┌─────────────────────┐   │
│   │  10p    20p    50p  │   │
│   └─────────────────────┘   │
│                             │
│      No change given        │
└─────────────────────────────┘
```

Complete the table to show all the different ways of paying exactly 70p.

| Number of 10p coins | Number of 20p coins | Number of 50p coins |
|---|---|---|
| 7 | 0 | 0 |
| | | |
| | | |
| | | |
| | | |
| | | |

2 marks

# Numbers

Look at these number cards.

| +3 | 0 | −5 | +9 | +2 | −8 | +7 | −2 |
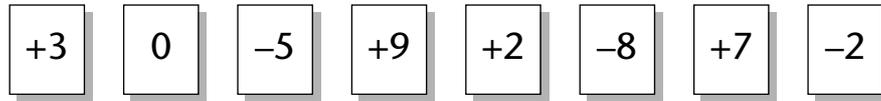
**(a)** Choose a card to give the answer 4.

$$+2 \;+\; -5 \;+\; \boxed{\phantom{0}} \;=\; 4$$

1 mark

**(b)** Choose a card to give the lowest possible answer.
Fill in the card below and work out the answer.

$$-2 \;+\; \boxed{\phantom{0}} \;=\; \rule{2cm}{0.4pt}$$

2 marks

# Mental questions

**1** What is three fifths of forty pounds?

_____

**2** What is the volume of a cuboid measuring five centimetres by six centimetres by seven centimetres?

_____

**3** Look at these numbers.  **37  69**
Add them.

_____

**4** I start at one point seven and count up in equal steps.
'One point seven, one point eight, one point nine, …'
What is the next number?

_____

**5** Write the ratio *twelve to six* in its simplest form.

_____

# Survey

Hakan asked 30 pupils which subject they liked best.

| Subject | Number of boys | Number of girls |
|---------|----------------|-----------------|
| Maths | 4 | 7 |
| English | 2 | 4 |
| Science | 3 | 3 |
| History | 0 | 1 |
| French | 1 | 5 |
| | **Total 10** | **Total 20** |

**(a)** Which subject did 20% of boys choose?
Read the answer from the table.

_____                                                              1 mark

**(b)** Which subject did 35% of girls choose?
Read the answer from the table.

_____                                                              1 mark

**(c)** Hakan said: 'In my survey, science was equally
popular with boys and girls.'
Explain why Hakan was wrong.

Make comparisons by using *percentages*, not the raw numbers.

1 mark

**(d)** Which subject was equally popular with boys and girls?
Again, make comparisons by using percentages.

_____                                                              1 mark

# Survey

# Triangles

Look at the diagram.

Triangle ABD is the reflection of triangle ABC in the line AB.



**Not drawn accurately**
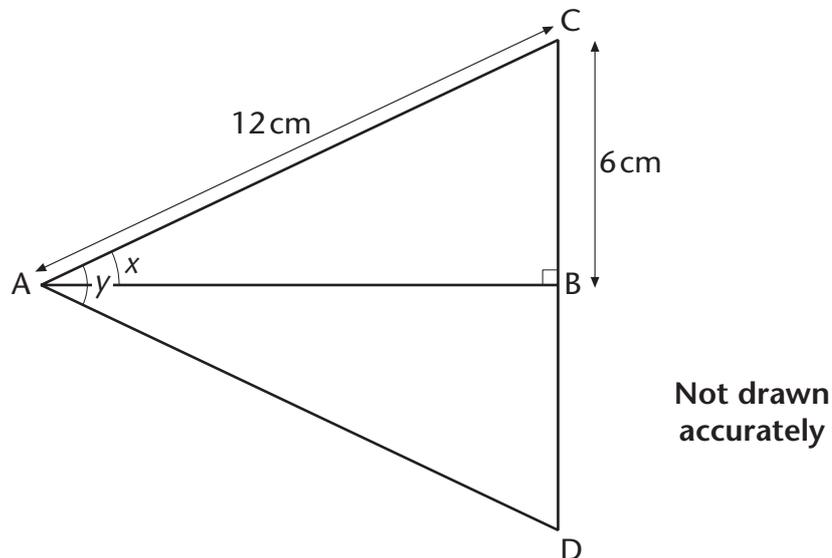
Fill in the gaps below to explain how to find angle *x*.

The length of AC is _____ cm.

The length of AD is _____ cm.

The length of CD is _____ cm.

ACD is an equilateral triangle because

_____ 1 mark

So angle *y* is **60°** because

_____ 1 mark

So angle *x* is **30°** because

_____ 1 mark

# Mental questions

**1** What is the square root of eighty-one?

_____

**2** I have a fair six-sided dice, with faces numbered one to six. I roll the dice. What is the probability that I roll a number less than five?

_____

**3** Look at this expression.   **6ab**
Double it.

_____

**4** Write two-fifths as a decimal.

_____

**5** Round eight point three seven to one decimal place.

_____

# Trip (non-calculator paper)

**(a)** A football club is planning a trip. The club hires 234 coaches.
Each coach holds 52 passengers.

How many passengers is that altogether?
Show your working.

_____ passengers                                       2 marks

**(b)** The club wants to put one first aid kit into each of the 234 coaches.
These first aid kits are sold in boxes of 18.

How many boxes does the club need?

_____ boxes                                            1 mark

# Growing shapes

Four squares join together to make a bigger square.
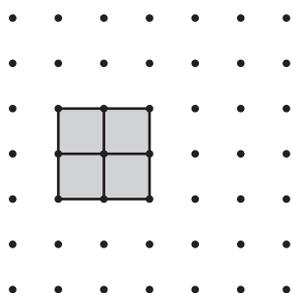
(a) Four congruent triangles join together to make a bigger triangle. Draw two more triangles to complete the drawing of the bigger triangle.
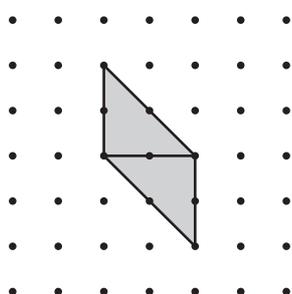
<div align="right">1 mark</div>

(b) Four congruent trapeziums join together to make a bigger trapezium. Draw two more trapeziums to complete the drawing of the bigger trapezium.
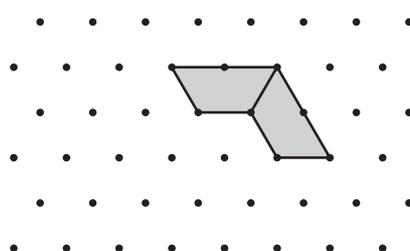
<div align="right">1 mark</div>

(c) Four congruent trapeziums join together to make a parallelogram. Draw two more trapeziums to complete the drawing of the parallelogram.
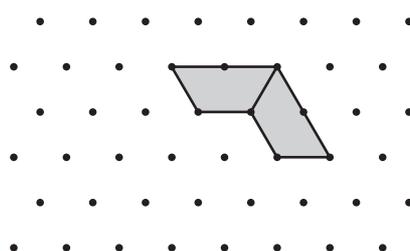
<div align="right">1 mark</div>

# Mental questions

**1**  How many faces has a cube?

   _____

**2**  When *m* equals three, what is the value of 3*m*?

   _____

**3**  How many pints are about the same as one litre?
   Ring the best answer.

      **1   2   3   4   5**

**4**  Look at the equation.     **y = 2x + 6**
   When *y* equals twenty-six, what is the value of *x*?

   _____

**5**  The scale on my map is four centimetres to one kilometre.
   On the map the distance to the rail station is twenty centimetres.
   How many kilometres is it to the rail station?

   _____

# Spinning

**(a)** A spinner has eight equal sections.
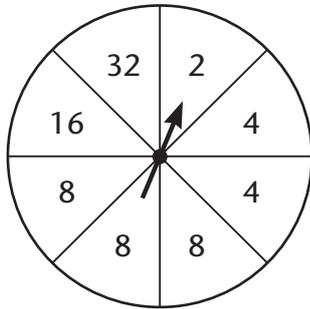


What is the probability of scoring 4 on the spinner?

_____      1 mark

What is the probability of scoring an even number on the spinner?

_____      1 mark

**(b)** A different spinner has six equal sections and six numbers.

On this spinner, the probability of scoring an even number is $\frac{2}{3}$.

The probability of scoring 4 is $\frac{1}{3}$.

Write what numbers could be on this spinner.
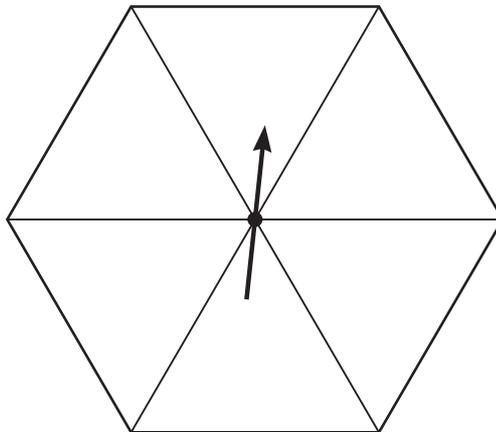


2 marks

# Travel (non-calculator paper)

**(a)** I pay £16.20 to travel to work each week.
I work for 45 weeks each year.

How much do I pay to travel to work each year?
Show your working.

_____
2 marks

**(b)** I could buy one season ticket that would let me travel for all 45 weeks.
It would cost £630.

How much is that per week?

_____
2 marks

# Mental questions

**1** What is one hundred divided by negative five?

_____

**2** How many seconds are there in one and a half minutes?

_____

**3** How many pairs of parallel sides does a parallelogram have?



_____
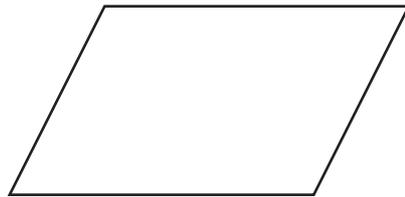
**4** In a quiz, I got eighteen out of twenty questions correct.
What percentage of the questions did I get correct?

_____

**5** Write down a number that is both a multiple of four
and a multiple of six.

_____

# Headwork

This is how Caryl works out 15% of 120 in her head.

> 10% of 120 is 12
> 5% of 120 is  6
>
> So   15% of 120 is 18
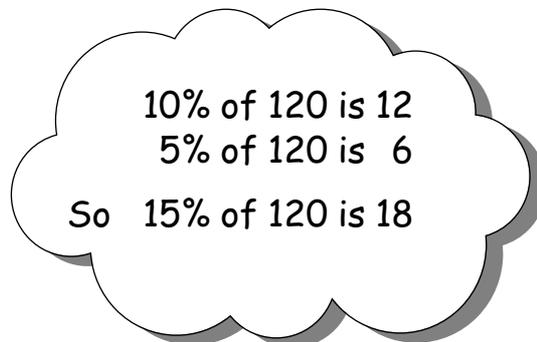
**(a)** Show how Caryl can work out $17\frac{1}{2}$% of 240 in her head.

_____ of 240 is _____

_____ of 240 is _____

_____ % of 240 is _____

So $17\frac{1}{2}$% of 240 is _____              2 marks

**(b)** Work out 35% of 520.
Show your working.

_____                              2 marks

# Filling up

15

I have a measuring jug that holds 400 ml when it is full.

Explain how I can use my measuring jug to obtain 1 litre of water.

I need exactly 1 litre of water.

400 ml

2 marks

## Filling up
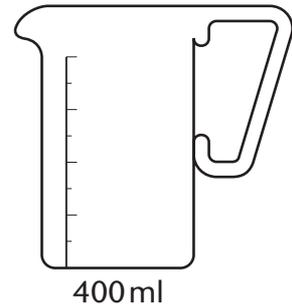
# Mental questions

**1** What is the total cost of three books at nine pounds ninety-nine pence each?

_____

**2** A bat flies at an average speed of thirty kilometres per hour. At this speed, how far would it fly in one minute?

_____

**3** Simplify the expression.   $3m + 6k + 2m + k$

_____

**4** What is the mean of these four numbers?   **60   40   10   10**

_____

**5** What is the approximate circumference of a circle with a diameter of one metre?

_____

# Areas

The diagram shows a rectangle 18 cm long and 14 cm wide.
It has been split into four smaller rectangles.

**(a)** Write the area of each small rectangle on the diagram.
One has been done for you.
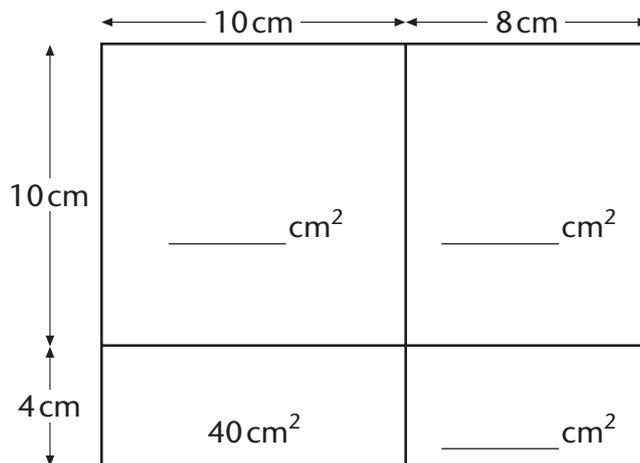


What is the area of the whole rectangle?

_____ cm$^2$                                                                    1 mark

**(b)** What is $18 \times 14$?

_____                                                                            1 mark

# Piles of cards

A teacher has a large pile of cards.
An expression for the total number
of cards is $6n + 8$.


$6n + 8$
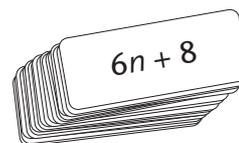
**(a)** The teacher puts the cards in two piles.
The number of cards in the first pile is $2n + 3$.



$2n + 3$                                        ?
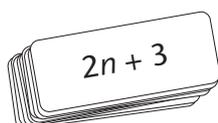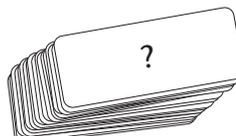
first pile                    second pile

Write an expression to show the number of cards in the second pile.

_____                                        1 mark

**(b)** The teacher puts all the cards together.
Then he uses them to make two equal piles.



$6n + 8$                    ?                    ?
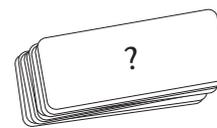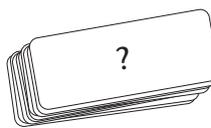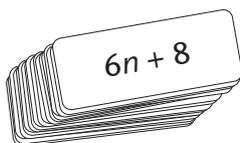
Write an expression to show the number of cards in one of the piles.

_____                                        1 mark

**(c)** The teacher puts all the cards together again, then he uses them to
make two piles, one with $n + 3$ cards and the other with $5n + 5$.
There are 23 cards in the first pile.

23 cards                                        ? cards



$n + 3$                    $5n + 5$
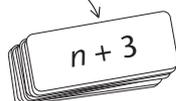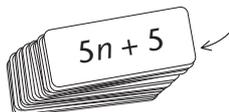
first pile                    second pile

How many cards are in the second pile?
Show your working.

_____                                        1 mark

# Mental questions

**1**   How many millimetres are there in nine centimetres?

_____

**2**   A lesson starts at nine fifty and finishes at ten fifteen.
How long is the lesson in minutes?

_____

**3**   I buy a book costing one pound forty-five.
What change should I get from a five pound note?

_____

**4**   Add together sixty-five and fifty-eight.

_____

**5**   One magazine costs one pound ninety-five.
What will be the cost of five of these magazines?

_____

# Dropping litter (1)

This advert was in a newspaper.

It does not say how the advertisers know that 93% of people drop litter every day.

Some pupils think the percentage of people who drop litter every day is much lower than 93%. They decide to do a survey.

93% of us drop litter every day

**Gang Up**

ON LITTER

Do your bit. Use a bin.
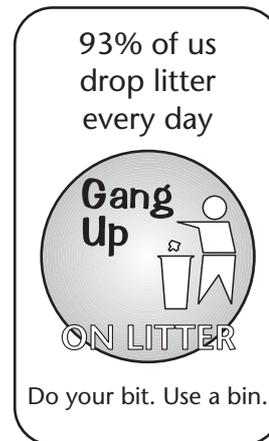
**(a)** Jack says: 'We can ask 10 people if they drop litter every day.'

Give two different reasons why Jack's method might not give very good data.

First reason

1 mark

Second reason

1 mark

# Dropping litter (2)

**(b)** Lisa says: 'We can go into town on Saturday morning. We can stand outside a shop and record how many people walk past and how many of those drop litter.'

Give two different reasons why Lisa's method might not give very good data.

First reason

1 mark

Second reason

1 mark

# Cubes

This shape is made from four cubes joined together.
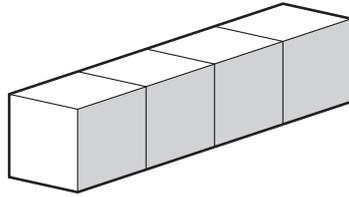
The table shows information about the shape.

| Volume | 4 cm³ |
|---|---|
| Surface area | 18 cm² |

The same four cubes are then used to make this new shape.
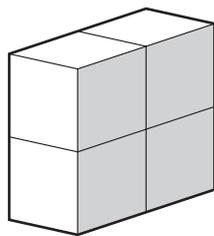
Complete the table for the new shape.

| Volume | _____ cm³ |
|---|---|
| Surface area | _____ cm² |

2 marks

# Mental questions

**1** What is five cubed?

_____

**2** Subtract zero point seven five from six.

_____

**3** Twenty-five per cent of a number is seven.
What is the number?

_____

**4** Look at this shaded triangle drawn on a square grid.
What is the area of the triangle?



_____
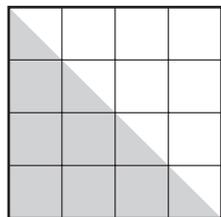
**5** A fair spinner has eight equal sections with a number on each section.
Five of the numbers are even.
Three of the numbers are odd.
What is the probability that I spin an even number?

_____

# Water (calculator paper)

**(a)** A glass holds 225 ml.

An adult needs about 1.8 litres of
water each day to stay healthy.
How many millilitres is that?

225 ml

How many glasses is that?
Show your working.

_____ 2 marks

**(b)** An adult weighs 80 kg.
60% of his total mass is water.
What is the mass of this water?

_____ kg     1 mark

# Halfway

The number 6 is halfway between 4.5 and 7.5.
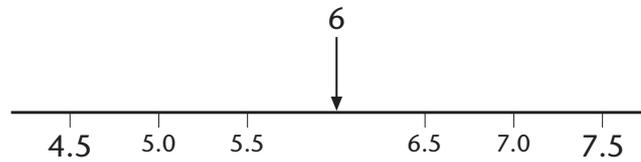


Fill in the missing numbers below.

The number 6 is halfway between 2.8 and _____                    1 mark

The number 6 is halfway between –12 and _____                    1 mark

|  *Holiday revision* | **10-4-10 question booklet**

# Mental questions

**1** Look at this expression.     $7a + 2b + 3a + 5b$
Simplify it.

—————

**2** AB is a straight line.
Work out the size of angle $x$.
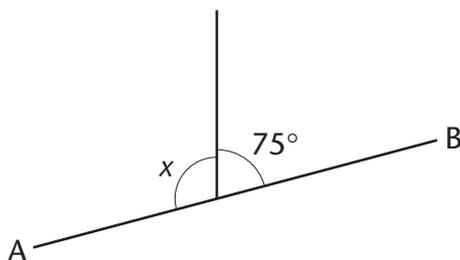


**3** What is the sum of the angles in a triangle?

—————

**4** Look at this expression.     $2k + 4$
What is the value of the expression when $k$ equals three?

—————

**5** What percentage is the same as the fraction one quarter?

—————

# Crosses (1)

Steve is making a series of patterns with black and grey square tiles.

**(a)** Each pattern has 1 black tile at the centre.
Each new pattern has more grey tiles than the one before.
How many more grey tiles does Steve add each time he makes
a new pattern?



pattern
1

pattern
2
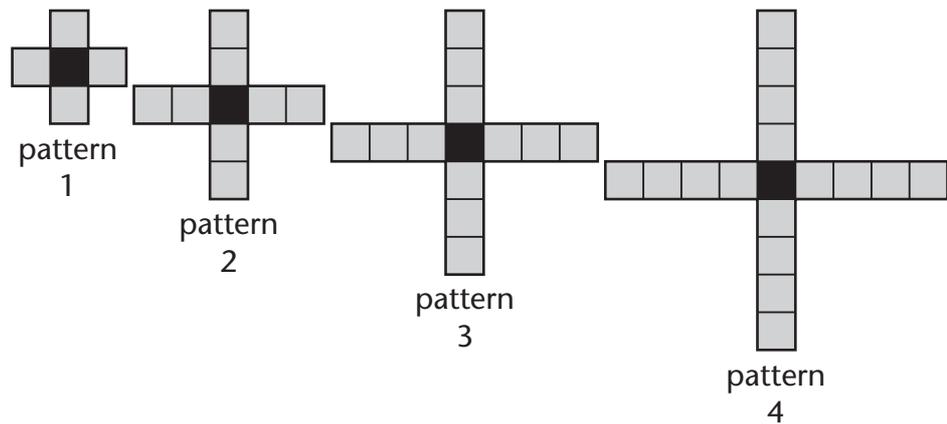
pattern
3

pattern
4

_____        1 mark

**(b)** Steve writes:
The rule for finding the number of tiles in pattern *N* is
number of tiles = $4 \times N + 1$

The 1 in Steve's rule represents the black tile.
What does the $4 \times N$ represent?

1 mark

# Crosses (2)

**(c)** Steve wants to make pattern 15.
How many black titles and how many grey tiles does he need?

_____ black and _____ grey tiles     1 mark

**(d)** Steve uses 41 tiles altogether to make a pattern.
What is the number of the pattern he makes?

Pattern _____     1 mark

**(e)** Steve has 12 black and 80 grey tiles.
What is the number of the biggest pattern Steve can make?

Pattern _____     1 mark

# Sign

How many kilometres are there in 5 miles?
Complete the missing part of the sign.

Footpath to Hightown

5 miles or ........... kilometres
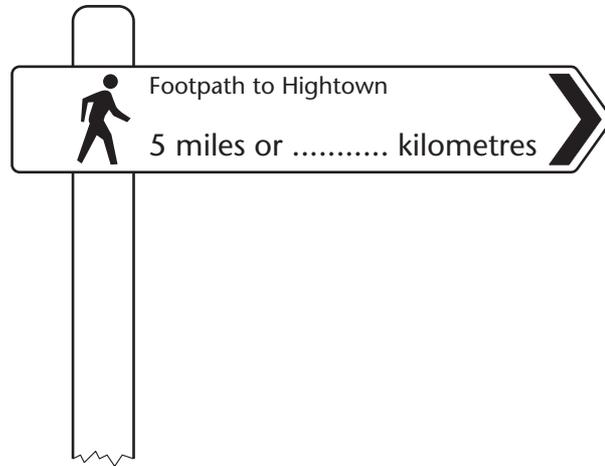
1 mark

# Mental questions

**1** Multiply zero point two by zero point three.

_____

**2** Double seventy-eight.

_____

**3** What number does the arrow point to on the number line?



_____

**4** There are red, blue and yellow balls in a bag.
I am going to take out one ball at random.
The table shows the probability of it being a red ball and the probability of it being a blue ball.
What is the probability of it being a yellow ball?

| red | blue | yellow |
|-----|------|--------|
| 0.2 | 0.5  |        |

_____

**5** One of the numbers below is the decimal equivalent of one eighth.
Ring it.

     0.125    0.18    0.215    0.8    1.8

_____

# Areas

**(a)** Tick (✔) any rectangles below that have an area of 12 cm².

3 cm

4 cm

2 cm

4 cm

2 cm

6 cm

4 cm

3 cm
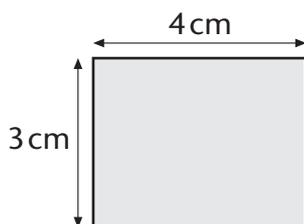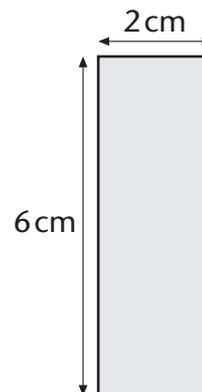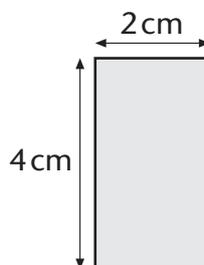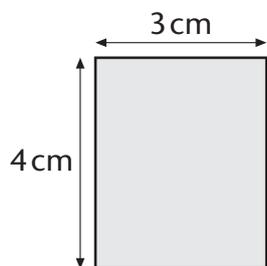
1 mark

**(b)** A square has an area of 100 cm².
What is its perimeter?
Show your working.

10

10
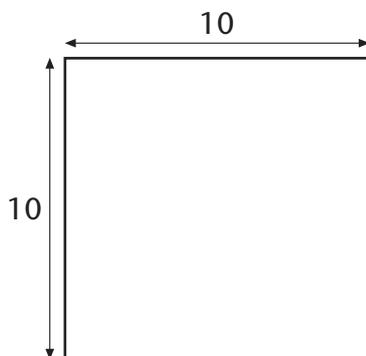
_____ cm

1 mark

# Coins

**(a)** Jo has these 4 coins.
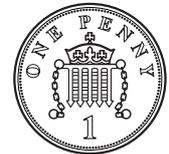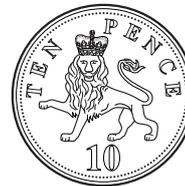
Jo is going to take one of these coins at random.
Each coin is equally likely to be the one she takes.

Show that the probability that it will be a 10p coin is $\frac{1}{2}$.

_____                                                  1 mark

**(b)** Colin has 4 coins that total 33p.
He is going to take one of his coins at random.

What is the probability that it will be a 10p coin?
You must show your working.

_____                                                  1 mark