NAME

Non-calculator

1 Here is a set of data.

  9   6   11   4   11   12   3

a Work out the range.

....

(1 mark)

b Write down the mode.

....

(1 mark)

c Find the median.

....

(1 mark)

d Work out the mean.

....
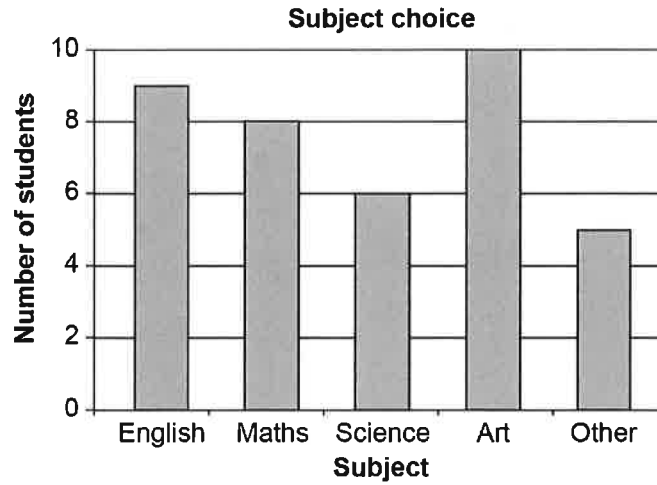
(1 mark)

2 Some students were asked, 'What is your favourite subject at school?'

The bar chart shows the results.

Subject choice

a Which subject is the mode?

....

(1 mark)

b How many more students chose English than chose Science?

....

(1 mark)

c Work out the total number of students that were asked.
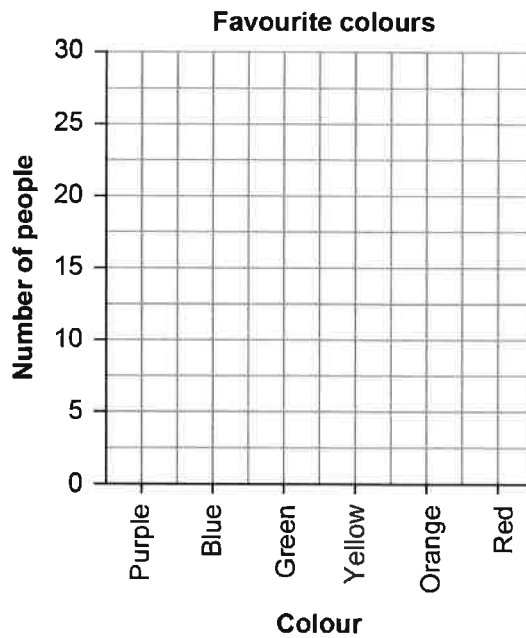
....

(1 mark)

3   Maya asked people their favourite colour.

The table shows her results.

Colour	Purple	Blue	Green	Yellow	Orange	Red
Number of people	5	25	20	30	10	15

Draw a bar-line chart for the data. Use the axes in the graph.

Favourite colours

(2 marks)

4 Sanjit records the temperature (°C) in a greenhouse every 2 hours.

The graph shows the temperatures (°C) for 24 hours, starting at midnight (0000).

Temperature in greenhouse
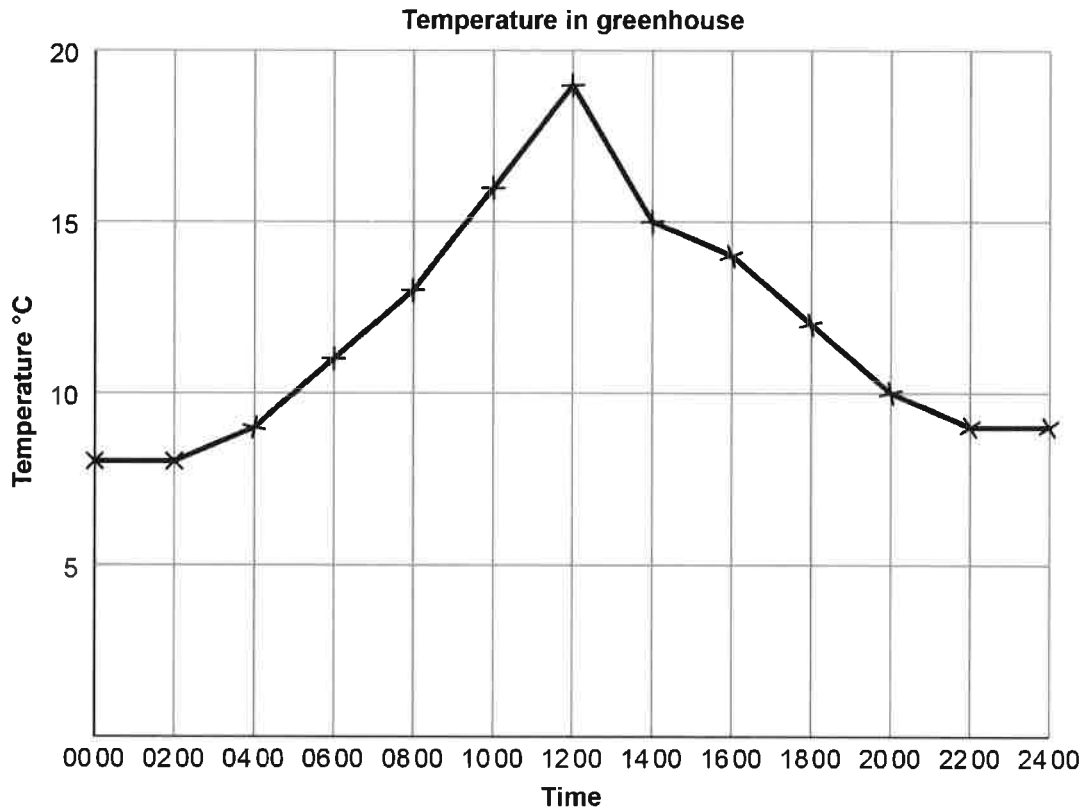
a What was the maximum temperature recorded?

..............................°C

(1 mark)

b Between 04 00 and 12 00, was the temperature increasing or decreasing?

....

(1 mark)

c For how many hours was the temperature 9 °C or warmer?

..............................°C

(1 mark)

5 The pictogram shows the number of donuts Andy sold on Monday, Tuesday, Wednesday and Thursday.

Monday	◎ ◎ ◎
Tuesday	◎ ◎ ◡
Wednesday	◎ ◎ ◎ ◎ ◎ ◎
Thursday	◎ ◎ ◎ ◗
Friday	
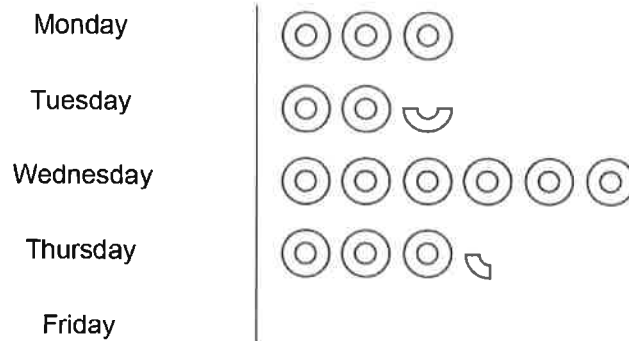
Key: ◎ symbol represents 4 donuts

a Find the number of donuts Andy sold on Tuesday.

....

(1 mark)

Andy sold 23 donuts on Friday.

b Complete the pictogram for Friday.

(1 mark)

6 Here are the ages of some of the children in a holiday club.

Children ages 4-6 and 10-12 have already been counted.

Their tallies and frequencies have been added to the table below.

8	9	7	8	8	7
8	7	9	7	7	

a Complete the table with the remaining data.

Age (years)	Tally	Frequency
4–6	ℍ III	8
7–9		
10–12	ℍ IIII	9

(1 mark)

b Find the modal class of the data.

....

(1 mark)

c Draw a bar chart to show the data on the axes in the grid below.

(2 marks)
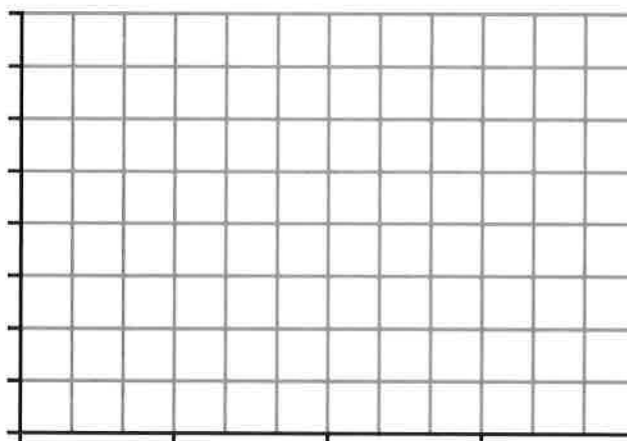
The range of the data is 7 years.
The youngest child is 4 years old.

d Work out the age of the oldest child.

....

(1 mark)

🖩 **Calculator**

7 Mr Brown and Mrs Patel grow pumpkins.

Here are the weights of Mr Brown's pumpkins.

6.0 kg   8.3 kg   5.1 kg   3.5 kg   5.9 kg   3.6 kg   5.6 kg   7.6 kg

a Work out the mean weight of Mr Brown's pumpkins.

..............................kg

(2 marks)

Here is some information about Mrs Patel's pumpkins.

Mean = 6.1 kg

Range = 5.0 kg

b Use the range and the mean for each set of data to compare the weights of Mr Brown's and Mrs Patel's pumpkins.

....

....

....

....

(2 marks)

8 Sally records the numbers of spam emails she gets every day for three weeks.

21	12	4	22	13	6	23
14	17	9	12	13	5	10
19	8	3	20	12	16	14

She groups the data in classes of equal width.

a Complete this list of classes for Sally's data.

Number of emails
1–5

(1 mark)

b Find the modal number of emails Sally gets in this three-week period.
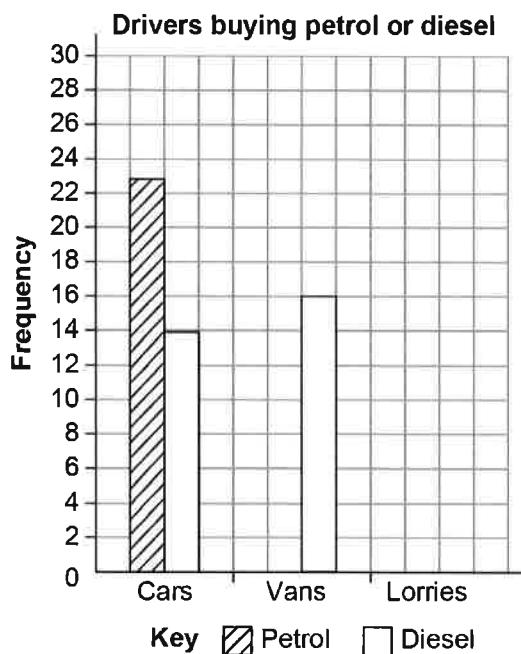
....

(1 mark)

9 A garage owner records the numbers of car, van and lorry drivers buying petrol or diesel.

The table and the dual bar chart show some of the information.

	Car	**Van**	**Lorry**
Petrol		7	4
Diesel			28

Drivers buying petrol or diesel

Key ▨ Petrol ☐ Diesel

a How many car drivers bought diesel?

....

(1 mark)

b Use the information to complete the table and the dual bar chart.

(2 marks)

c How many drivers bought petrol?

....

(1 mark)

d Show that fewer than half the drivers bought petrol.

....

(1 mark)

Overall mark	/30

NAME

Non-calculator

1 Work out 84 − 36

....
(1 mark)

2 Sara works out 135 + 28 like this

$$
\begin{array}{r}
135 \\
+\ 28 \\
\hline
415 \\
\end{array}
$$
  1

a What mistake has she made?

....

....
(1 mark)

b What is the correct answer?

....
(1 mark)

3 Round 4490 to the nearest 1000

....
(1 mark)

4 Work out 5 + 4 × 3

....
(1 mark)

5 Work out 143 × 7

....

(2 marks)

6 Work out 574 ÷ 7

....

(2 marks)

7 List all of the factors of 20

....

(2 marks)

8 Work out −9 + 6

....

(1 mark)

9 Work out $4^2 \times (8 + 7)$

....
(2 marks)

10 Work out $476 \div 14$

....
(2 marks)

11 Rohan says, 'The lowest common multiple of 6 and 10 is 60.'

Explain why Rohan is not correct.

....

....
(1 mark)

12 Grant says, 'Multiplying any number by 3 will always give an answer greater than zero.'

Grant is not correct.

Write down a calculation to show this.

(1 mark)

Calculator

13 Calculate $\sqrt{289}$

....

(1 mark)

14 Sam uses a calculator to work out the average length of a TV programme.

Sam is told that the average length of a TV programme is 45 minutes.

Sam's calculator screen shows an answer of ⌐0.75⌐.

Explain why.

....

....

(1 mark)

15 Two shops sell newspapers on Monday.

On Monday Shop **A** sold 1092 newspapers.

On Monday Shop **B** sold 217 fewer newspapers than Shop **A**.

Work out the total number of newspapers sold by the two shops on Monday.

....

(3 marks)

16 Amina buys a games console and some games.

The total cost is £650

Amina's mum pays £225 towards the cost.

Amina pays the remaining amount in two equal monthly payments.

a How much does she pay each month?

£............................

(3 marks)

b Explain why paying the remaining amount in six equal monthly payments would not be possible.

....

....

(1 mark)

17 New Street car park charges £7.20 per day.

Mr Taylor and his son both park their cars in New Street car park for the day.

Mr Taylor buys both their tickets. He pays with a £20 note.

How much change does he get?

....

(3 marks)

| **Overall mark** | **/30** |

NAME

Non-calculator

1 a Work out the output of this function machine.

input   output

8 → | subtract 3) → ☐

....
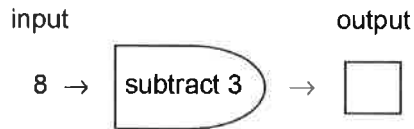
(1 mark)

b Write an expression in its simplest form for the output of this function machine.

input   output

y → | × 11) → ☐

....
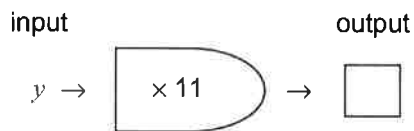
(1 mark)

c Write down the rule for this function machine.

input   output

2 →   → 8
3 →   ?   → 12
6 →   → 24

....
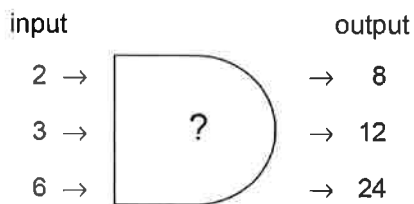
(1 mark)

2 The number of eggs is given by the formula

number of eggs = 6 × number of boxes

Work out the number of eggs in 4 boxes.

....
(1 mark)

3 Simplify

a $k + k + k + k$

....
(1 mark)

b $p + 5p - 3p$

....
(1 mark)

c $2a + 3b - 4 - 5a + b$

....
(2 marks)

4 Two sizes of bolt are used to make a table.

The first bolt has length p mm.

The second bolt is 3 times as long.

Write an expression for the length of the second bolt.

.... mm

(1 mark)

5 Three of these expressions have the same value when $x = 7$.

Which has a different value? Show working to explain.

A $3x$

B $x + x + x$

C $14 - x$

D $14 + x$

....

(2 marks)

6 Expand

   a $2(m + 3)$

....

(1 mark)

   b $4(3x + 2)$

....

(1 mark)

7 A shop sells large notebooks and small notebooks.

   A small notebook has 32 fewer pages than a large notebook.

   a A large notebook has w pages.

      Write an expression for the number of pages in the small notebook.

....

(1 mark)

   b A small notebook has k pages.

      Write an expression for the number of pages in the large notebook.

....

(1 mark)

8 In this addition pyramid, each brick is the sum of the two bricks below it.

Complete the addition pyramid.

$2x$	

	$x + 2$	3
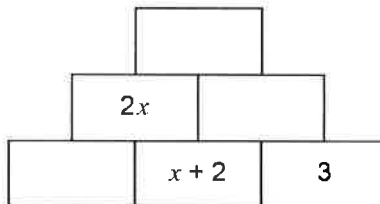
(2 marks)

9 In the multiplication pyramid, each brick is the product of the two bricks below it.

Complete the multiplication pyramid.

a	4	5
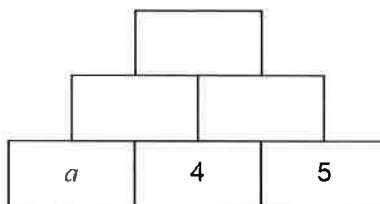
(2 marks)

10 Here is a square and a triangle.

$n + 2$ (square)

$n + 2$, $n + 9$, $2n - 3$ (triangle)
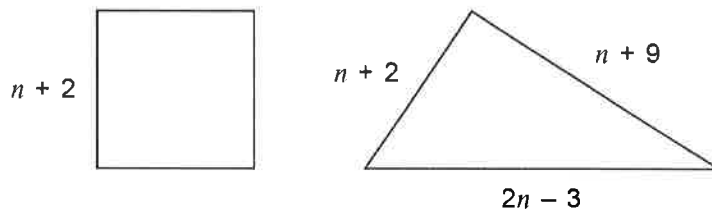
All measurements are in cm.

Show that the square and the triangle have the same perimeter.

(2 marks)

11 A regular pentagon is divided into five identical isosceles triangles.
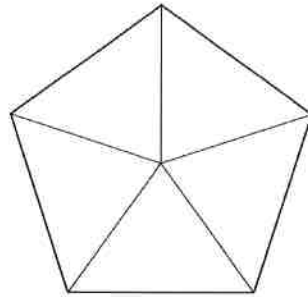
The area of the regular pentagon is B cm².

Write a formula for T, the area of one of the triangles.

...........................cm²

(1 mark)

🖩 **Calculator**

12 Simplify

a $t \times 4$

....

(1 mark)

b $3f \times 5$

....

(1 mark)

c $\dfrac{18x}{6}$

....

(1 mark)

13 Amy works in a factory.

She is paid £8 per hour.

When she works for h hours, her pay £p is given by the formula

$$p = 8h$$

Find Amy's pay when she works for 37 hours.

£...............................

(1 mark)

14 The perimeter (p cm) of an equilateral triangle is given by the formula

$$p = 3c$$

where c is the length of one of the sides in centimetres.

Work out the perimeter when $c = 6.4$ cm

...............................cm

(1 mark)

15 In a pond, the number of fish (f) after k years is given by the formula

$$f = 800 - 73k$$

Work out the number of fish after 6 years.

....

(2 marks)

16 A bus ticket costs £3

Write a formula for the total cost of n bus tickets.

Total cost = ...

(1 mark)

Overall mark	/30

NAME

Non-calculator

1 Write the measurement shown by the arrow.

....
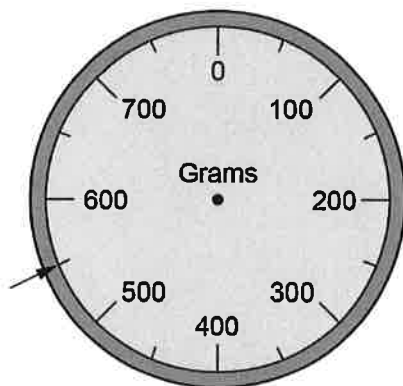
(1 mark)

2 a What is the value of the 6 in the number 29.16?

....

(1 mark)

  b Put these decimals in order of size. Start with the smallest decimal.

    0.6   0.32   0.38   0.7

(1 mark)

3 Work out

$$\begin{array}{r} 2.8 \\ + 1.6 \\ \hline \\ \hline \end{array}$$

....
(1 mark)

4 a Work out 3.7×10

....
(1 mark)

b Work out $625 \div 100$

....
(1 mark)

5 What is the missing number in this calculation?

$0.8 = 8 \div \boxed{}$

....
(1 mark)

6 A square cake tin has side lengths of 23 cm.

What is its perimeter?

..........................cm
(2 marks)

7 Work out the area of a square with side length 12 mm.

..................................mm²

(2 marks)

8 Write down the temperature shown by the thermometer.

4

0

−4

°C
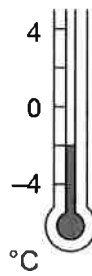
..............................°C

(1 mark)

9 Using a pencil and a ruler, draw a line 8.4 cm long.

(1 mark)

10 a Work out 5.62 ÷ 1000

....

(1 mark)

b Judy multiplies a number by 100. Her answer is 29.4

Write down her calculation.

....

(2 marks)

11 13 × 7 = 91

Without doing any calculations, write down the answer to 1.3 × 0.7

....

(1 mark)

12 Two students compare their heights.

Mike is 5 feet tall.

Anna is 5 cm taller than Mike.

Estimate Anna's height in cm.

....

(2 marks)

13 Jim says that 0.3 × 0.2 is 0.6

Explain why Jim is not correct.

....

....

(1 mark)

 Calculator

14 Sam needs 450 ml of water to mix with some floor cleaner.

He has $\frac{1}{2}$ litre of water in a bucket.

Does he have enough water?

You must show your working.

....
(2 marks)

15 A piece of string is 108.5 cm long.

It is cut into 7 equal pieces.

What is the length of each piece of string?

....
(2 marks)

16 A rug is in the shape of a regular hexagon.

It has side length 3.45 m.

Work out the perimeter of the rug.

Write down the units with your answer.

....

(3 marks)

17 Maneet says, 'It is possible to draw a rectangle 40 mm wide with area 20 cm^2.'

Show that Maneet is correct.

(3 marks)

Overall mark	/30

NAME

Non-calculator

1 a What percentage of this 100 square is shaded?

.... %
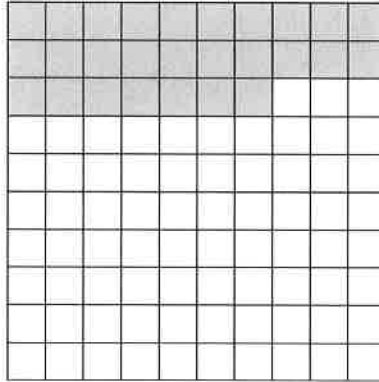
(1 mark)

b Shade another $\frac{1}{4}$ of the 100 square.

(1 mark)

c What percentage of the 100 square is now **not** shaded?

.... %

(1 mark)

2 Work out 25% of 20 kg.

.... kg

(1 mark)

3 Calculate 10% of 80p.

.... p

(1 mark)

4 a Write $\dfrac{31}{100}$ as a decimal.

....

(1 mark)

b Write $\dfrac{3}{20}$ as a decimal.

....

(1 mark)

5 Underline the fraction which is **not** equal to $\dfrac{2}{3}$

$\dfrac{8}{12}$ $\qquad\qquad$ $\dfrac{4}{6}$ $\qquad\qquad$ $\dfrac{15}{20}$ $\qquad\qquad$ $\dfrac{12}{18}$

(1 mark)

6 A dog has 9 puppies.

2 of the puppies are brown.

What fraction of the puppies are brown?

....

(1 mark)

7 Complete

$$\frac{3}{5} = \frac{12}{\Box}$$

(1 mark)

8 Write these fractions in ascending order.

$$\frac{3}{8}, \frac{1}{8}, \frac{7}{8}, \frac{5}{8}$$

....

(1 mark)

9 Write $\frac{14}{5}$ as a mixed number.

....

(1 mark)

10 An improper fraction is equal to a whole number and a fraction of $\frac{5}{6}$ as shown.

Work out the missing numbers.

$$\frac{17}{\Box} = \Box\frac{5}{6}$$

(2 marks)

11 Work out $\frac{1}{12} + \frac{7}{12}$

Give your answer in its simplest form.

....
(2 marks)

12 a Write 0.36 as a fraction in its simplest form.

....
(1 mark)

b Work out 0.36 × 25

....
(1 mark)

13 Work out $\frac{13}{15} - \frac{8}{15}$

Give your answer in its simplest form.

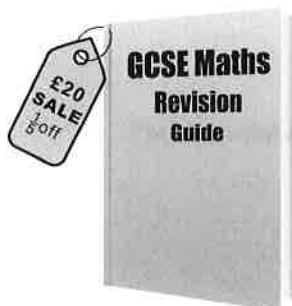**(2 marks)**

🖩 **Calculator**

14 Write $\frac{4}{3}$ as a mixed number.

....

(1 mark)

15 Mary says that 3% is equivalent to 0.3

Explain what Mary has done wrong.

....

....

(1 mark)

16 The original price of this book is £20.

The price of the book is reduced by $\frac{1}{5}$ in a sale.

What is the price of the book in the sale?

£ ....

(2 marks)

17 Find $\frac{1}{10}$ of 87 kg.

.... kg

(1 mark)

18 A shop has 120 books.

$\frac{3}{4}$ of the books are cookbooks.

How many of the books are cookbooks?

....

(2 marks)

19 There are 25 students in a class.

7 of the students are left-handed.

What percentage of the students are left-handed?

.... %

(2 marks)

20 Ray says, '70% of £45 is £3.15'

Ray is wrong. Explain why.

....

....

(1 mark)

Overall mark	/30

NAME

Non-calculator

1 Use a word from this list to describe each probability:

impossible   unlikely   even chance   likely   certain

a The day after Monday will be Tuesday.

....

(1 mark)

b You will be a millionaire before you are 20

....

(1 mark)

c When you flip an unbiased coin it will land heads up.

....

(1 mark)

2 Here is a spinner.
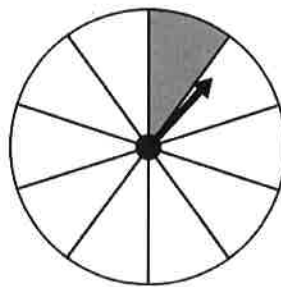
The spinner is spun once.

a Write down the probability word that best describes the chances of the arrow landing on white.

....

(1 mark)

b Shade the spinner so that the arrow has an even chance of landing on white.

(1 mark)

3 Here is a set of letter cards.

$$\boxed{A} \quad \boxed{C} \quad \boxed{E} \quad \boxed{T} \quad \boxed{U} \quad \boxed{W} \quad \boxed{X}$$

One of the letter cards is picked at random.

Which is more likely – picking a vowel, or picking a letter that is not a vowel?
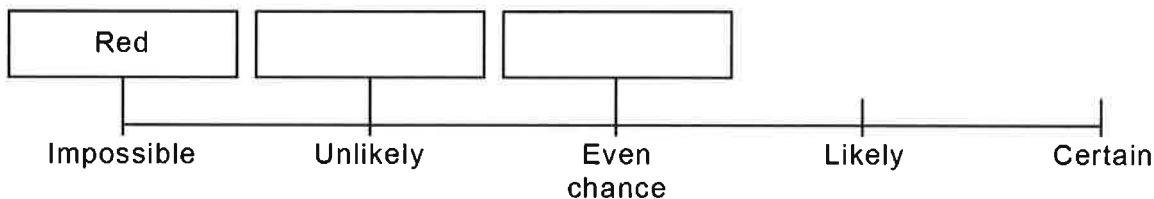
Show working to explain your answer.

....

....

....

....

(2 marks)

4 For this fair spinner, write an event in each box on the probability scale.

One has been done for you.

Red		

Impossible   Unlikely   Even chance   Likely   Certain
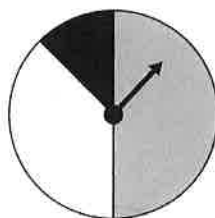
(2 marks)

5 Here is a set of cards.

The probability that a white or grey card is picked is $\frac{3}{5}$

Work out the percentage probability that the card picked is not grey.

.....................................%

(1 mark)

6 a The diagram shows a fair spinner.

The spinner is spun once.
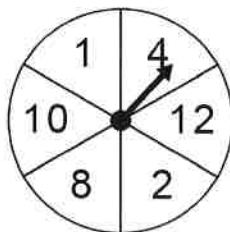
Write down the possibility that the spinner lands on

i a multiple of 4

....

(1 mark)

ii a 3

....

(1 mark)

b Write down an event for this spinner that has probability $\frac{5}{6}$

....

(1 mark)

7 A shape is picked at random from these five shapes.

a Work out P(not grey).

....

(1 mark)

b Show that the probability of picking a 2D shape is the same as the probability of picking a shape with no curved edges.

....

....

(1 mark)

c Work out P(shape with 6 vertices).

....

(1 mark)

8 A bag contains 8 blue counters and some yellow counters.

The probability of picking a blue counter is 25%.

How many counters are there altogether in the bag?

....

(1 mark)

9 Andy rolls a fair dice.

Match each letter on the probability scale to an outcome from the list below.


```
        A       B       C       D
  L___L___L___L___L___L___L___L___L
  0                               1
```
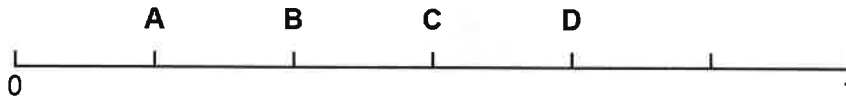
Rolling a prime number   ....

Rolling a number greater than 5   ....

Rolling a number less than 5   ....

Rolling a square number   ....

(3 marks)

Calculator

10 The probability of Reyan choosing a milk chocolate from a box is 0.38

What is the probability that Reyan does not choose a milk chocolate?

....

(1 mark)

11 In a probability experiment, Eve picked a counter from a bag without looking, and then replaced it.

The frequency table shows Eve's results.

Colour	Frequency	Experimental probability
Blue	13	
Red	5	
White	2	
Total frequency		

a Complete the table.

(2 marks)

b Explain how Eve could improve her experiment so she could calculate more accurate experimental probabilities.

....

....

(1 mark)

12 The diagram shows a fair spinner.

The spinner is spun 450 times and the colour the arrow lands on each time is noted.
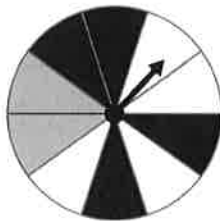
How many times would you expect the arrow to land on grey?

....
(2 marks)

13 The table gives information about the numbers of visitors to a zoo on Monday to Friday one week during term time.

Number of child visitors	Number of adult visitors
44	156

a Estimate the percentage probability that a visitor picked at random is a child.

.............................%
(2 marks)

b In another term time week, the zoo has 150 visitors.

Estimate the expected number of adult visitors this week.

....
(2 marks)

Overall mark	/30

NAME

Non-calculator

1 Complete to simplify the ratio.

$$\div \square \underset{\square : \square}{\overset{6 : 10}{\huge(\quad)}} \div \square$$

....
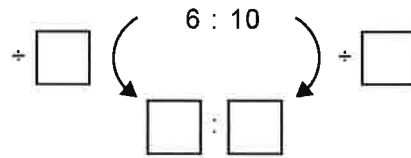
(2 marks)

2 The ratio of staff to visitors at a water park is 1 : 12

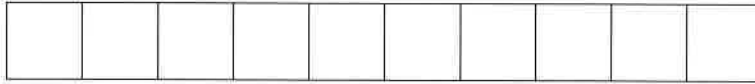   **a** What is the greatest number of visitors the park can have when there are 4 staff?

staff : visitors

$$\times \square \underset{4 : \square}{\overset{1 : 12}{\huge(\quad)}} \times \square$$

....
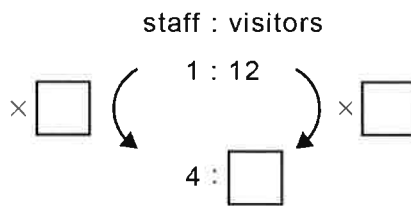
(1 mark)

    b How many staff are needed when there are 60 visitors?

staff : visitors

$$\times \square \underset{\square : \square}{\overset{1 : 12}{\huge(\quad)}} \times \square$$

....
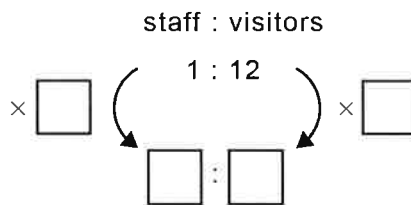
(2 marks)

3 **a** Shade this bar so that it shows the ratio grey to white as 3 : 7

(1 mark)

  b Write the proportion of the bar that is white.

  Give your answer as a percentage.

.... %

(1 mark)

4 A recipe for 4 people uses 350 g of mince.

  a How much mince is needed for 2 people?

.... g

(1 mark)

  b How much mince is needed for 6 people?

.... g

(2 marks)

5 Rohan says that the ratio 12 : 18 is equivalent to the ratio 3 : 6

  Show working to explain why Rohan is not correct.

....

....

....

....

(2 marks)

6 There are 20 different trails in a forest.

6 of the trails are easy.

What proportion of the trails are easy?

Give your answer as a percentage.

.... %

(2 marks)

7 A 200 ml can of energy drink contains 12 g of sugar.

How much sugar is there in a 300 ml can of the same energy drink?

.... g

(3 marks)

8 Ali makes a salad dressing.

He uses vinegar and oil in the ratio 1 : 3

What proportion of Ali's salad dressing is oil?

....

(1 mark)

🖩 **Calculator**

9 There are 44 counters in a box.

22 of these counters are red.

Write the proportion of counters that are red:

a as a fraction in its simplest form.

....
(2 marks)

b as a percentage.

................................%
(1 mark)

10 Here is a board for a game.
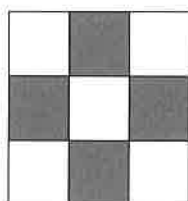
a Write the ratio of grey to white squares on the board.

....
(1 mark)

b What proportion of squares on the board are grey?

....
(1 mark)

11 Write the ratio 30 : 18 : 42 in its simplest form.

....
(2 marks)

12 Judy can make 4 tree swings with 98 m of rope.

How many metres of rope will she need to make 5 tree swings?

.... m
(3 marks)

13 The ratio of fiction to non-fiction books on a shelf is 8 : 1

There are 63 books in total.

How many fiction books are there?

....
(2 marks)

Overall mark	/30

NAME

Non-calculator

1 Here are angles A, B, C and D.
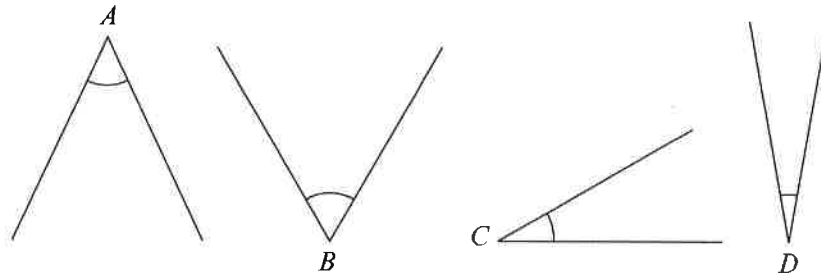
Write the letters of the angles in order, from the smallest angle to the largest.

....

(2 marks)

2 Measure this angle.

.............................°
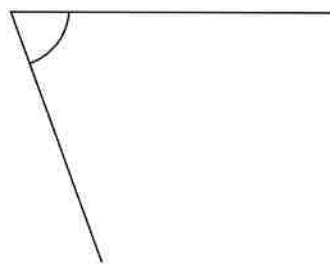
(1 mark)

3 Which two lines are perpendicular to each other?
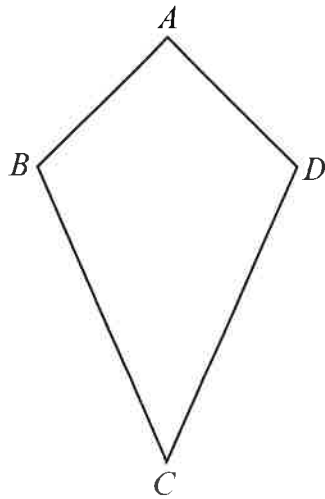
.... and ....

(1 mark)

4 Use a ruler and protractor to draw an angle of 45°.

(1 mark)

5 Choose the properties of this quadrilateral.

Write down the letters from the list.
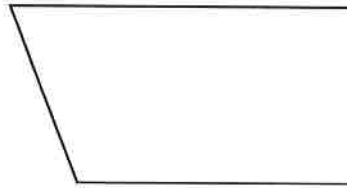
A Has two pairs of parallel sides

B Has one pair of parallel sides

C Has no parallel sides

D Has two right angles

E Has no right angles

F All sides have equal length

G Opposite angles are equal

....

(2 marks)

6 ABC is a triangle.

$AC = 5$ cm

$BC = 7$ cm

Angle $ACB = 100°$

Make an accurate drawing of triangle ABC.

(3 marks)

7 Write down the mathematical name of this quadrilateral.

....
(1 mark)

8 $ABCD$ is a rectangle.
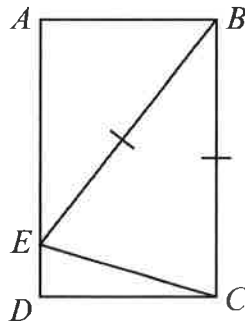
a Write down two lengths that are equal to BC.

.... and ....
(2 marks)

b Write down two angles that are equal.

.... and ....
(1 mark)

9 *ABDE* is a rectangle.

BCD is an equilateral triangle.
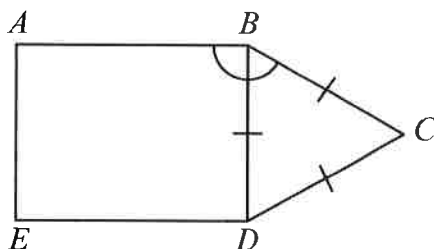
Work out the size of angle *ABC*.

Give a reason for each step of your working.

................................°

(3 marks)

10 Write down the reason why angle x is equal to angle y.

....

....
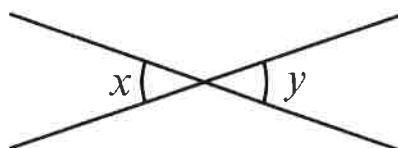
(1 mark)

Calculator

11 Work out the size of angle x.

.......................°
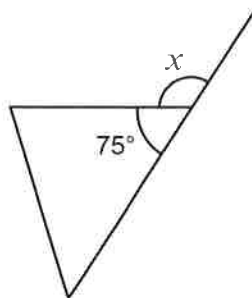
(1 mark)

12 Work out the size of angle t.

.......................°
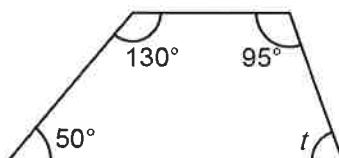
(2 marks)

13 Work out the size of angle y.

225°

...................................°
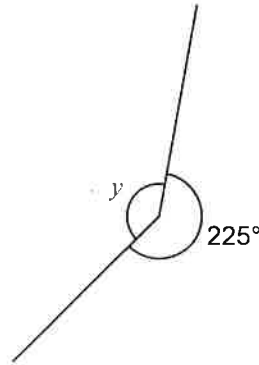
(2 marks)

14 $ABCD$ is a kite.
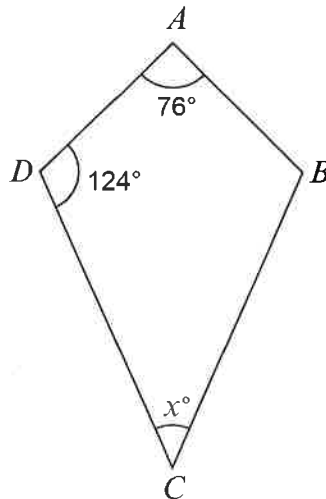
Work out the size of angle x.

Give a reason for each step of your working.

....

(2 marks)

15 Work out the sizes of the unknown angles.

Write down a reason for each angle you find.
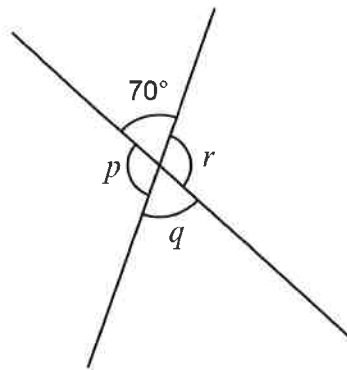
$p =$ ....$^\circ$

Reason: ....

$q =$ ....$^\circ$

Reason: ....

$r =$ ....$^\circ$

Reason: ....

(3 marks)

16 DEF is an isosceles triangle.
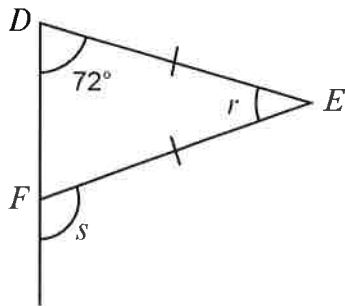
Work out the size of angle r and the size of angle s.

Give reasons.

$r =$ ....°

Reason: ....

....

$s =$ ....°

Reason: ....

....

(2 marks)

Overall mark	/30

NAME

Non-calculator

1 Calculate 3 × 2000

....
(1 mark)

2 a Write down the value of 4 in the number 3.46

....
(1 mark)

b Round £11.50 to the nearest £1.

£.............................
(1 mark)

c Round 14.667 to 1 decimal place.

....
(1 mark)

3 a Work out

$7\overline{)791}$

....
(2 marks)

b Work out $\sqrt{36}$

....
(1 mark)

4 Here is a list of numbers.

            2   3   8   9   12

From the list write down

a a square number

....
(1 mark)

b a prime number

....
(1 mark)

c a multiple of 6

....
(1 mark)

5 Work out $20 - 8 \div 4$

....
(1 mark)

6 Simplify

a $7m - 4m$

....
(1 mark)

b $3 \times 4s$

7 One football costs £3.54

A football team has £30

Can the team buy 8 footballs?

You must show your working.

....
(3 marks)

8 Expand $5(x + 2)$

....
(1 mark)

9 Work out the missing value.

$3.2 +$ ☐ $= 5.1$

....
(2 marks)

10 In a competition Jo gets p points.

   a Sam gets 6 points more than Jo.

     Write an expression in terms of p for Sam's points.

     ....

     (1 mark)

   b Whitney gets twice as many points as Jo.

     Write an expression in terms of p for Whitney's points.

     ....

     (1 mark)

Calculator

11 Write down the missing rule for this function machine.

input		output
2 →	?	→ 4
3 →		→ 6
5 →		→ 10

....
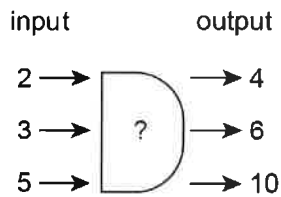
(1 mark)

12 Here is a list of numbers.

1   7   2   8   2   3   5

a Work out the range.

....
(1 mark)

b Work out the mean.

....
(2 marks)

c Li says, 'The median is the number in the middle of the list. The median is 8.'

Explain why Li is not correct.

....

....
(1 mark)

13 A piece of rope is 4 metres long.

The rope is cut into pieces.

Each piece is 60 cm long.

How much rope is left over?

....
(3 marks)

14 Here are the temperatures on three different days.

Day	Temperature
Monday	3°C
Tuesday	−5°C
Wednesday	−2°C

a Which day was coldest?

....

(1 mark)

b Write the numbers 3, −5, −2 in order from smallest to largest.

....

(1 mark)

15 Here is a triangle.
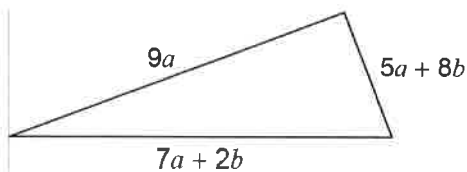
Write an expression for the perimeter of this triangle.

Write your answer in its simplest form.

....

(2 marks)

16 The grouped frequency table shows some students' heights.

Height (cm)	Frequency
110–119	2
120–129	1
130–139	4
140–149	5
150–159	3

a Draw the bar for heights 140–149 cm.
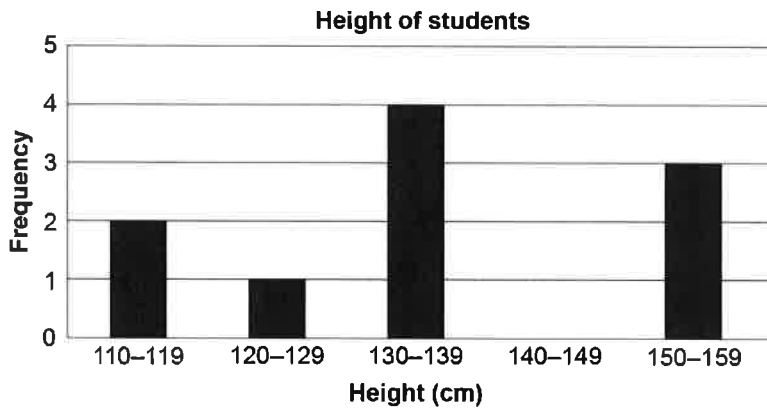
Height of students

(1 mark)

b Lucy writes four more students' heights in the table.

The heights are

126 cm   132 cm   138 cm   150 cm
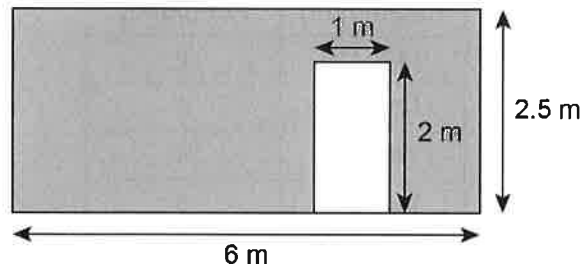
Does the modal class change?

Explain your answer.

....

....

....

....

(2 marks)

c Explain why the tallest child may not measure 159 cm.

....

....

(1 mark)

17 The diagram shows a rectangular wall with a rectangular door.

The shaded area is to be painted.

Show that the area of the wall to be painted is 13 m².

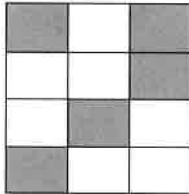**(3 marks)**

Overall mark	/40

NAME

Non-calculator

1 What fraction of this shape is shaded?

....

(1 mark)

2 a Write 0.57 as a fraction.

....

(1 mark)

b Write $\dfrac{3}{10}$ as a decimal.

....

(1 mark)

3   Use a word from this list to describe each probability.

impossible   unlikely   even chance   likely   certain

When you roll a fair dice you will get

a   a number less than 7

....

(1 mark)

b   an odd number

....

(1 mark)

c   4

....

(1 mark)

4   Three identical train tickets cost £45

a   What is the cost of one train ticket?

£................................

(2 marks)

b What is the cost of five train tickets?

£............................

(2 marks)

5 Calculate 4% of 1200 mm.

...........................mm

(2 marks)

6 Work out 21% of 300

....

(2 marks)

7 There are 18 sweets in a packet.

8 of the sweets are mint.

What fraction of the sweets are not mint?

Give your answer in its simplest form.

....

(2 marks)

8 The ratio of men to women working for a company is 2 : 3

There are 30 women.

How many men are there?

....

(2 marks)

9 In a game, players pay 50p to roll a dice.

They win £1 if they roll a 6

a What is the expected number of wins in 30 rolls?

....

(1 mark)

b How much profit do you expect the game to make in 30 rolls?

£.....................................

(2 marks)

10 Alice makes porridge from milk and oats.

The ratio of milk to oats is 1 : 2

What proportion of Alice's porridge is milk?

....

(1 mark)

11 In an art class, the ratio of those who use a pencil to those who use paint is 3 : 7

What percentage of the art class use paint?

.................................%

(2 marks)

12 A brass coin is made from 2 grams of tin and 5 grams of copper.

What is the ratio of tin to copper?

....

(1 mark)

Calculator

13 There are 80 diners in a restaurant.

20 of the diners do not eat meat.

Write the proportion of diners who do not eat meat as

a a fraction in its simplest form

....

(2 marks)

b a percentage

.............................%

(1 mark)

14 Johan spins a spinner.

He records the colour it lands on.

The frequency table shows his results.

Colour	Frequency	Experimental probability
Red	6	
Orange	10	
White	4	
Total frequency		

a Complete the table.

(3 marks)

Amy spins the same spinner.

Here are her results.

Colour	Frequency
Red	8
Orange	15
White	7

b Explain why Amy and Johan would get more accurate experimental probabilities if they combined their results.

....

....

(1 mark)

c Calculate the more accurate estimate for the experimental probability of landing on red.

....

(2 marks)

15 Show that only one of these values is greater than 50%.

$$\frac{9}{20}$$ 0.49   0.6

(3 marks)

16 A 200 g block of cheese contains 60 g of fat.

How much fat is there in a 500 g block of the same cheese?

...............................g

(3 marks)

Overall mark	/40

NAME

Non-calculator

1 Describe each translation.
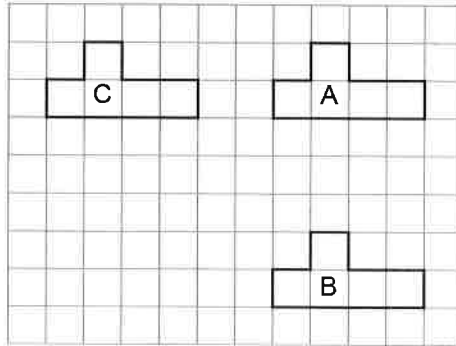
a A to B

....

....

(1 mark)

b A to C

....

....

(1 mark)

2 Which two sides are parallel?
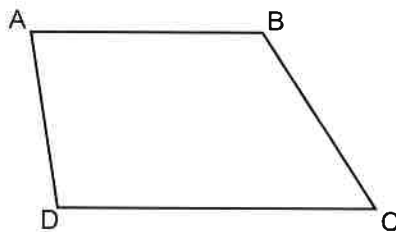
.... and ....

(1 mark)

3 Give the size of the angle the protractor is measuring.

.................................°
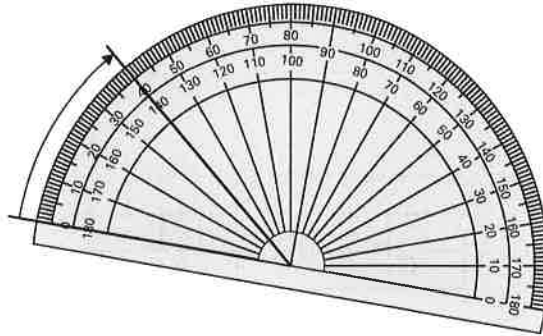
(1 mark)

4 a Complete the coordinates of the points marked A, B and C.
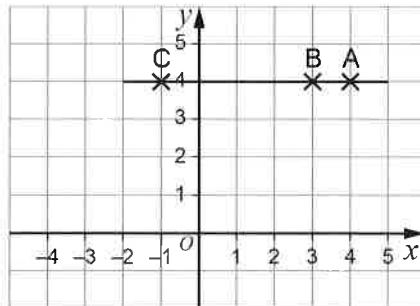
A (4, ...)   B (........., ...)   C (........., ...)

(2 marks)

b Complete the equation of the line through A, B and C.

$y = $ ....

(1 mark)

5   On the grid, draw an enlargement of triangle ABC with scale factor 3
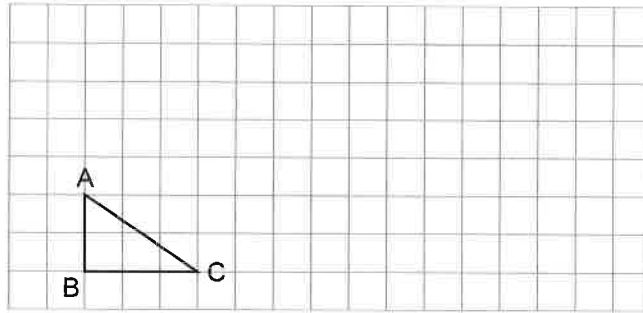
(2 marks)

6   Find the size of angle d.

110°

.... °
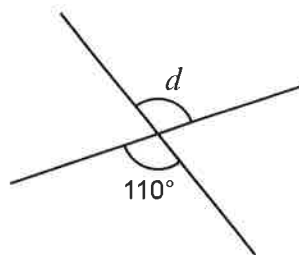
(1 mark)

7   A sequence has position-to-term rule $n + 10$.

Complete the table to work out the first three terms of this sequence.

Position (n)	1	2	3
Term ($n + 10$)			

(1 mark)

8 Measure the angle marked x.

Give your answer to the nearest degree.

.................................°
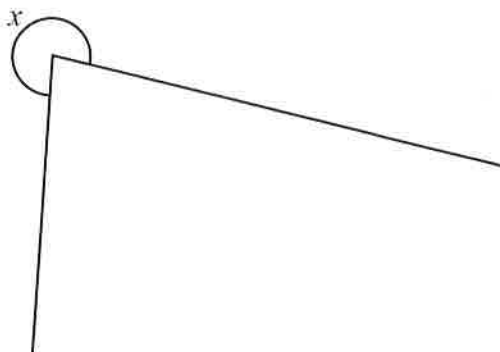
(1 mark)

9 Make an accurate drawing of triangle XYZ, with

Angle XYZ = 50°

Angle XZY = 60°

YZ = 6 cm

(3 marks)

10 Draw all the lines of symmetry on this shape.
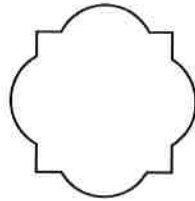
(2 marks)

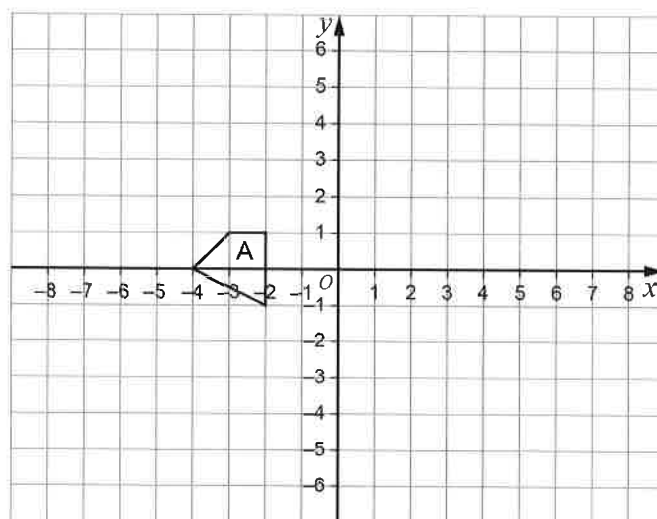**11** Work out the nth term of each sequence.

a 6, 12, 18, 24, 30, …

....
(1 mark)

b 6, 5, 4, 3, 2, …

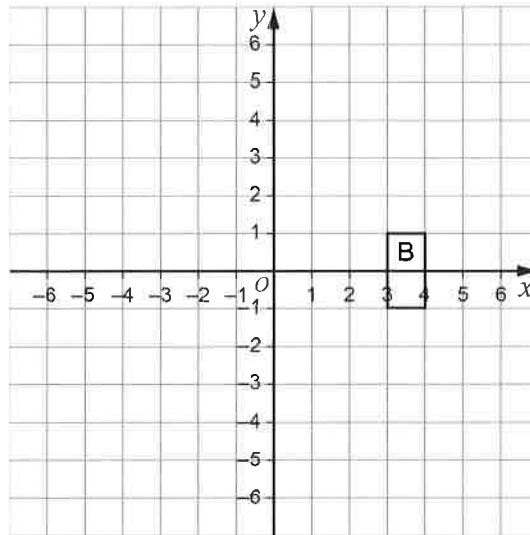......................................
(1 mark)

12 Reflect shape A in the line $y = 2$

(2 marks)

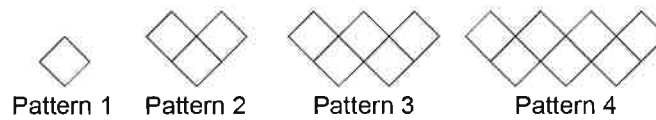**13** Fred rotates an object A, 90° anticlockwise, about the point (4, 4).

The rectangle B is the image.

Draw the object A that Fred rotated.

(2 marks)

14 Here is a pattern sequence.

Pattern 1   Pattern 2   Pattern 3   Pattern 4

a Describe how the sequence continues.

....

....

(1 mark)

b How many squares will there be in Pattern 6?

....

(1 mark)

🖩 **Calculator**

15 Work out the size of the angle marked a.

............................°
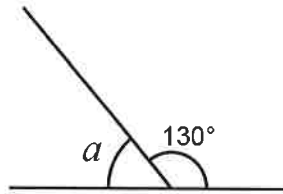
(1 mark)

16 Work out the size of the angle marked x.

............................°
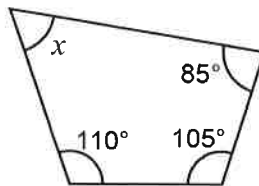
(2 marks)

17 Work out the size of the angle marked t.

...........................°
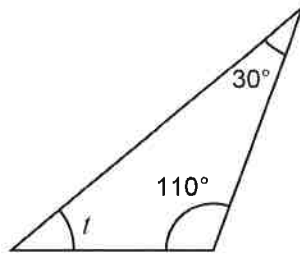
(2 marks)

18 Work out the size of the angle marked m and the size of the angle marked n.
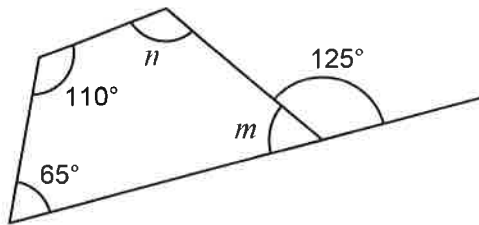
Give a reason for each of your answers.

$m = $ ....°

Reason: ....

$n = $ ....°

Reason: ....

(4 marks)

19 Tara is trying to work out the size of the angle marked x in this quadrilateral.

105°

x

80°
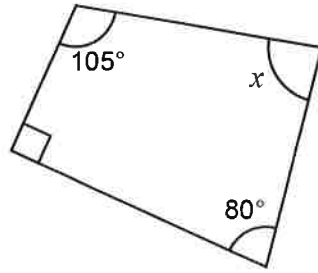
$x = 180 - 105 - 90 - 80 = -95$

What mistake has she made?

....

....

(1 mark)

20 Samira starts the week with £21 in coins.

She uses the coins to pay £3.50 each day for parking.

a Work out the amount Samira has at the end of days 1, 2 and 3.

Day 1: £..............................
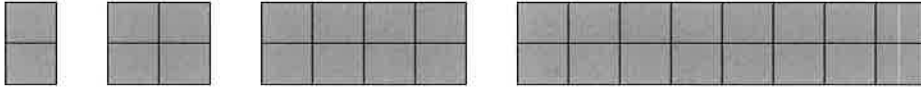
Day 2: £..............................

Day 3: £..............................

(2 marks)

b When does Samira run out of money?

At the end of day ....

(1 mark)

21 Here is a sequence of growing rectangles.

a Ashley says, 'The sequence grows by adding 2 squares each time.'

Is Ashley correct? Explain your answer.

....

....

(1 mark)

b Find the number of squares in the 5th rectangle in the sequence.

....

(1 mark)

Overall mark	/40