F

OCR

Monday 9 June 2014 – Morning

GCSE MATHEMATICS A

A502/01   Unit B (Foundation Tier)
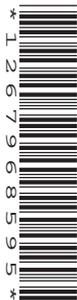
1267968595

Candidates answer on the Question Paper.

OCR supplied materials:
None

Other materials required:
*   Geometrical instruments
*   Tracing paper (optional)

Duration: 1 hour

A50201

Candidate forename		Candidate surname	

Centre number					Candidate number				

INSTRUCTIONS TO CANDIDATES

*   Write your name, centre number and candidate number in the boxes above. Please write clearly and in capital letters.
*   Use black ink. HB pencil may be used for graphs and diagrams only.
*   Answer **all** the questions.
*   Read each question carefully. Make sure you know what you have to do before starting your answer.
*   Your answers should be supported with appropriate working. Marks may be given for a correct method even if the answer is incorrect.
*   Write your answer to each question in the space provided. Additional paper may be used if necessary but you must clearly show your candidate number, centre number and question number(s).
*   Do **not** write in the bar codes.

INFORMATION FOR CANDIDATES

*   The number of marks is given in brackets **[ ]** at the end of each question or part question.
*   Your quality of written communication is assessed in questions marked with an asterisk (*****).
*   The total number of marks for this paper is **60**.
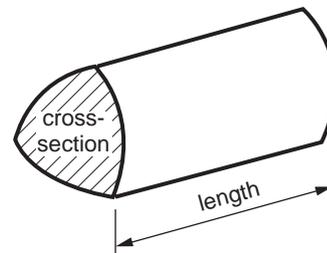*   This document consists of **20** pages. Any blank pages are indicated.

WARNING

No calculator can be used for this paper

OCR is an exempt Charity

Turn over

Formulae Sheet: Foundation Tier

Area of trapezium = $\frac{1}{2}(a + b)h$
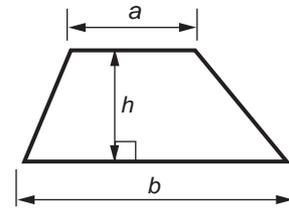
Volume of prism = (area of cross-section) × length

PLEASE DO NOT WRITE ON THIS PAGE

3

Answer **all** the questions.

1 (a) Work out.

$$3.8 - 2.3$$

(a) .... **[1]**

(b) (i) Complete the following calculation.

$$\boxed{} \times 9 = 45$$

[1]

(ii) Rick shares £45 equally between his 5 grandchildren.

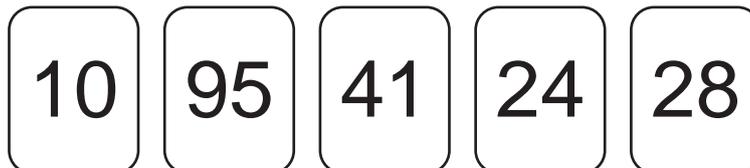How much money does each grandchild receive?

(b)(ii) £ .... **[1]**

Turn over

2 Mark and Laura play a game with number cards.

Mark has these cards.

| 85 | 72 | 53 | 47 | 5 |
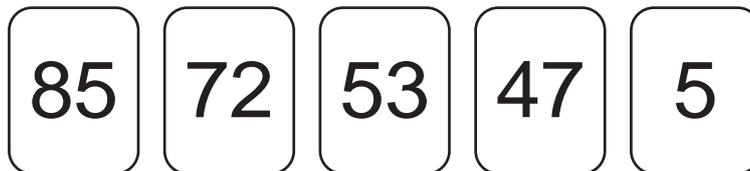
Laura has these cards.

| 10 | 95 | 41 | 24 | 28 |

Mark plays a card.
Laura then plays a card.
Laura wins if these two cards add up to 100.

(a) Mark plays this card.

| 72 |

Which card should Laura play to win?

(a) [ ] **[1]**

(b) Mark then plays this card.

| 53 |

Explain why Laura cannot win this time.

....

.... **[2]**

5

3   Point A is plotted on the grid.
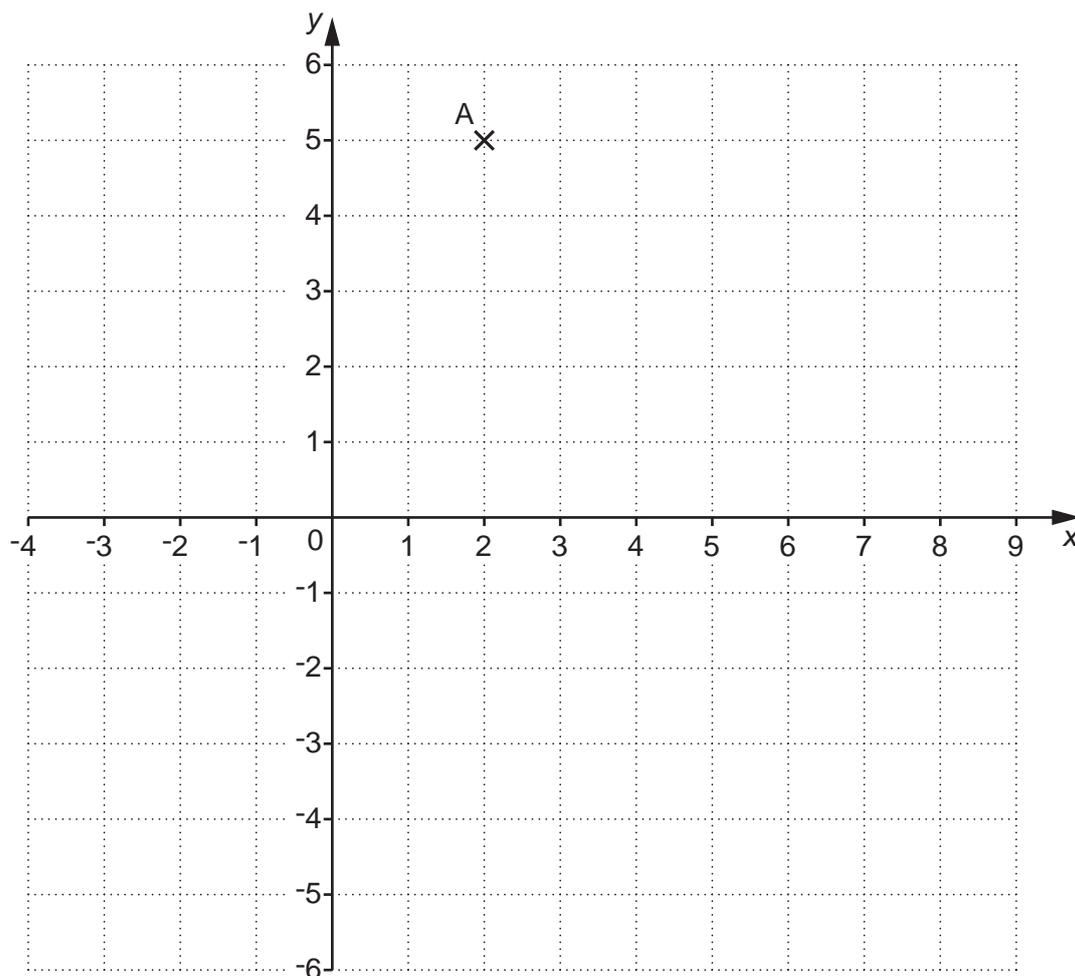
(a) (i)   Write down the coordinates of A.

(a)(i) (.................... , ...) **[1]**

   (ii)   Plot the point (2, ⁻5).
   Label it C. **[1]**

   (iii)   AC is a diagonal of the square ABCD.

   Write down the coordinates of one other vertex of the square.

(iii) (.................... , ...) **[2]**

(b)   A circle with centre at (0, 0) passes through (3, 0).

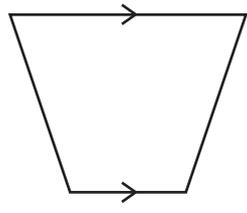Choose one word from this list to complete the sentence.

     tangent   radius   arc   diameter

The straight line joining (0, 0) and (3, 0) is a .... of the circle. **[1]**

Turn over

6

4 **(a)** Write down the mathematical name of this quadrilateral.

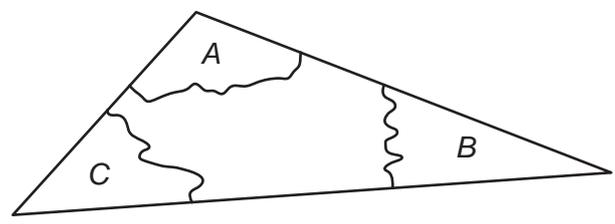**(a)** .... **[1]**

(b) Helen finds this definition of an obtuse angle in a book.
The last part is covered in ink.
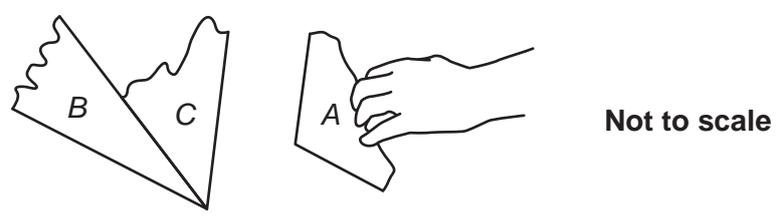
An obtuse angle is larger than 90° but smaller than

Write down the last part of the definition.

(b) .... **[1]**

(c) Andreas cuts a triangle from paper.
He writes the letters *A*, *B* and *C* in the corners and then tears the corners off.

He joins corners *A*, *B* and *C* so that they meet at a point, with no overlap.

Not to scale

What total angle will the three pieces make at the point?

(c) ....° **[1]**

(d) What is the mathematical name of this shape?

(d) .... **[1]**

(e) This **regular** shape has 8 sides.
One side of the shape is extended as shown.
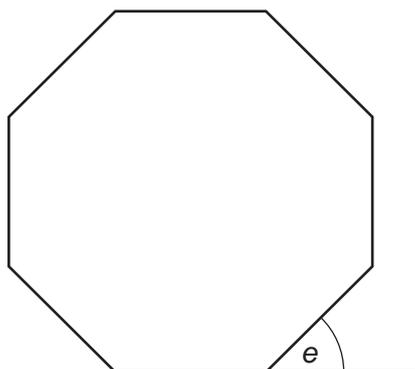
Not to scale

e

Work out the size of angle e.

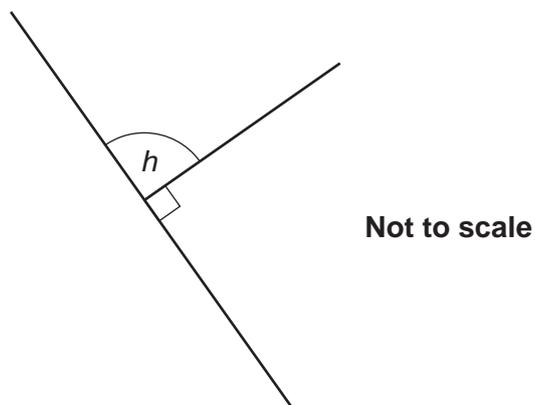**(e)** ....° **[2]**

5 **(a)** Find each angle marked by a letter in the following diagrams.

(i)

Not to scale

(a)(i) ....° **[1]**

(ii)

Not to scale

(ii) ....° **[1]**

(iii)

65°

j

Not to scale
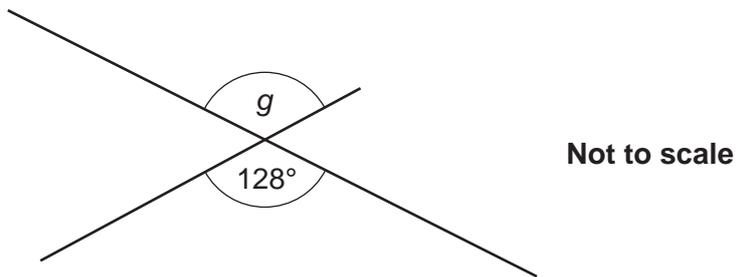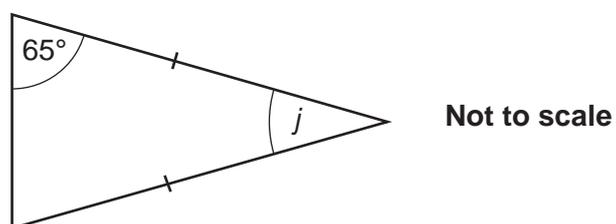
(iii) ....° **[2]**

(b) ABCD is a parallelogram and DCH is a straight line.

Work out angle f.

A ∠125° ... B

Not to scale

D ... C ... f ... H

(b) ....° **[2]**
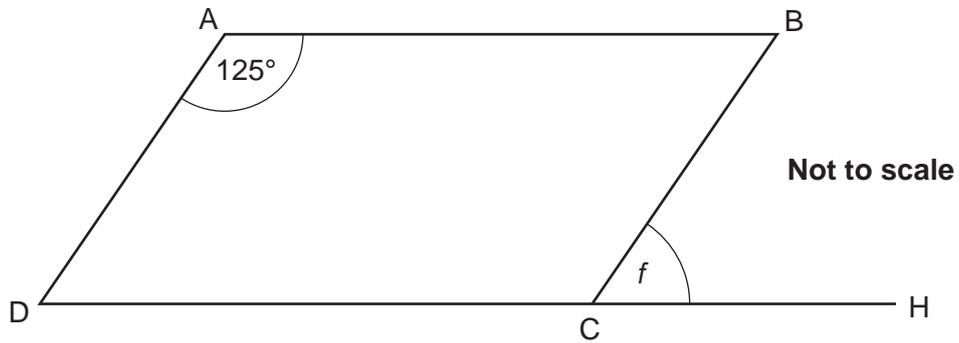
6 **(a)** In each row the two statements mean the same.

Write the two missing word statements in the table.

Statement in numbers and symbols	Word statement
15^2	Fifteen squared
10^3	
$\sqrt{19}$	

[2]

(b) Write the two missing values in this table.

Statement		Value
5^3	=	125
11^2	=	
$\sqrt{64}$	=	

[2]

(c) Work out this calculation.

$$\frac{2^4 \times 2}{2^2}$$

(c) .... [3]

7* Barry wants to buy a bedroom carpet.
He measures the length and width of his bedroom in feet (ft) and inches (in).

Plan of Barry's bedroom floor

Not to scale

Width = 6 ft 4 in

Length = 8 ft
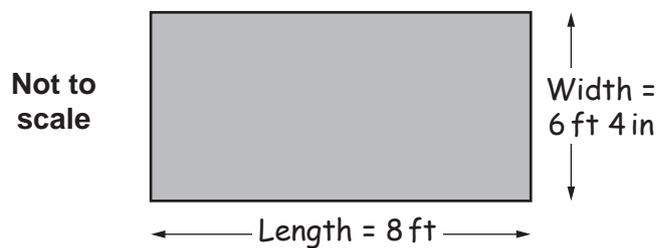
Conversions between units	
1 in	= 2.5 cm
1 ft	= 12 in
1 ft	= 30 cm
1 m	= 100 cm

In the carpet shop he sees a rectangular piece of carpet that is 2.5 m by 1.9 m.

From this, could Barry cut **one piece** of carpet to fit his bedroom floor? **[5]**

8 Anum has a job delivering leaflets.
He is paid £8 each week and then 4p for every leaflet he delivers.

(a) One week, Anum delivers 100 leaflets.
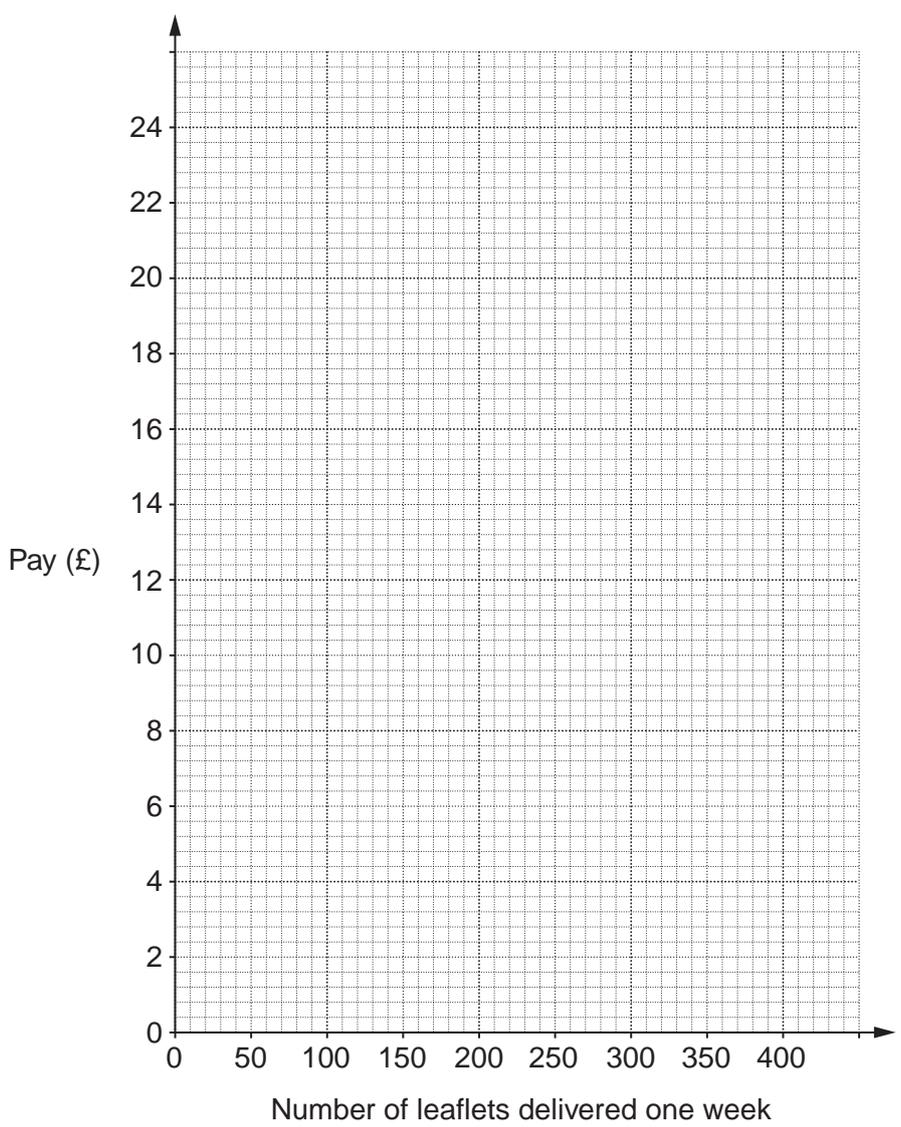
How much is his pay that week?

(a) £ .... **[2]**

(b) Complete this table.

Number of leaflets delivered one week	100	200	300	400
Pay (£)		16		

[2]

13

(c) Plot these values and draw a line graph showing Anum's pay for delivering up to 400 leaflets one week.

Pay (£) — vertical axis, labelled from 0 to 24 in steps of 2.

Number of leaflets delivered one week — horizontal axis, labelled 0, 50, 100, 150, 200, 250, 300, 350, 400.

[3]

(d) Another week Anum's pay is £18.

How many leaflets did Anum deliver that week?

(d) .... **[1]**

Turn over

14

(e) Anum writes down this formula for calculating his pay, £*w*, when he delivers *n* leaflets in a week.

$$w = 8 + 4 \times n$$

(i) Show that this formula does **not** give the correct pay for delivering 200 leaflets in a week.

[2]

(ii) Change Anum's formula so that it does give the correct pay for delivering 200 leaflets in a week.

(e)(ii) *w* = ... **[1]**

9 Julie asked three of her friends to estimate how much of the time it rained during their holidays. Their holidays were all the same length of time.

Eliot	40% of the time
Harpreet	$\frac{5}{12}$ of the time
Megan	$\frac{3}{8}$ of the time

Put these estimates in order, starting with the smallest.
You must show your method clearly.

.... **[4]**
 smallest

10 This empty container is filled with water at a constant rate.
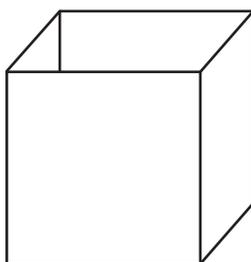
The graph of depth of water against time looks like this.
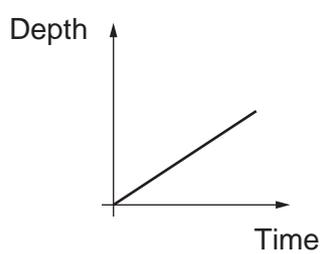
Four more empty containers are shown below.
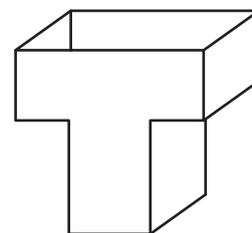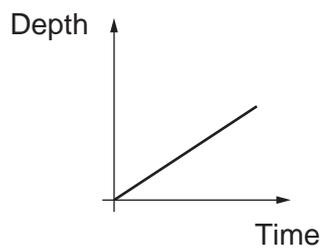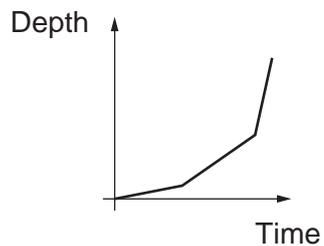Each of these containers is filled with water at a constant rate.

| A | B | C | D |

17
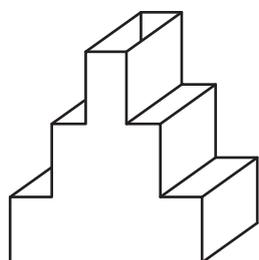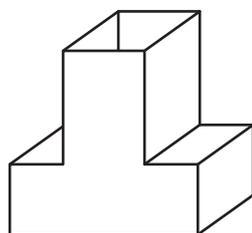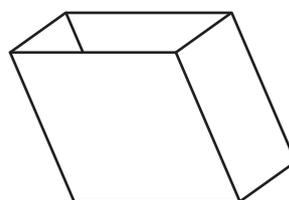
Choose which of these containers matches each of the graphs.

(a)

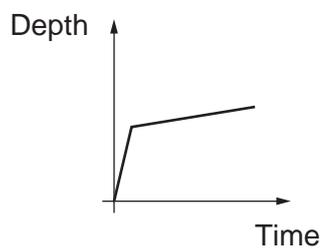**(a)** Container.. **[1]**

(b)

(b) Container.. **[1]**

(c)

(c) Container.. **[1]**

Turn over

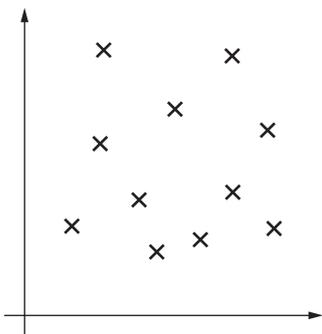**11 (a)** Describe the correlation shown in each of these scatter graphs.
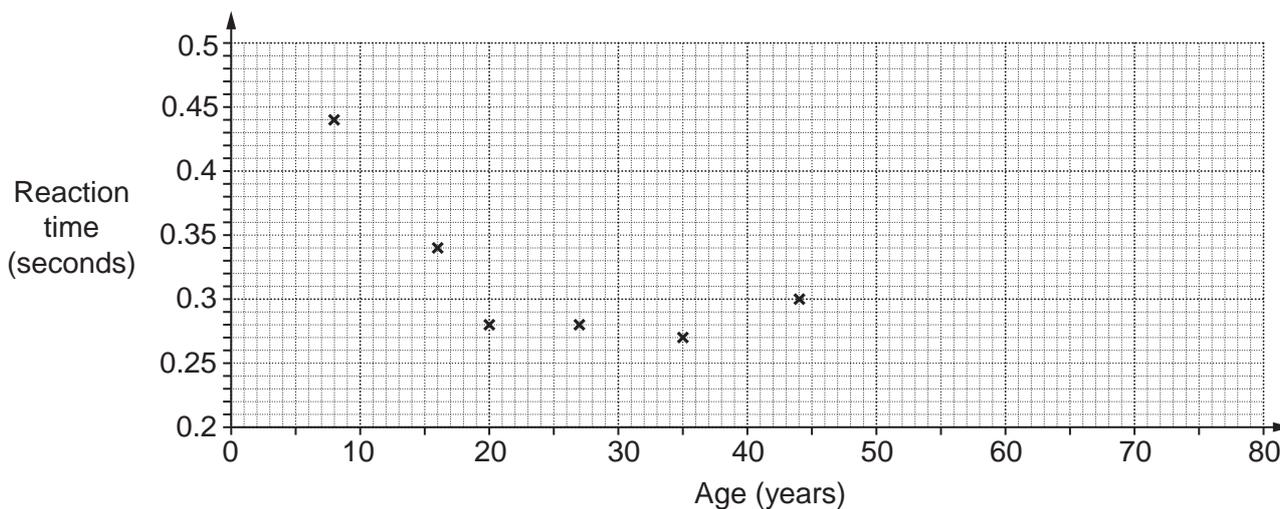If appropriate, also describe the strength of the correlation.

....

....

....

....

[3]
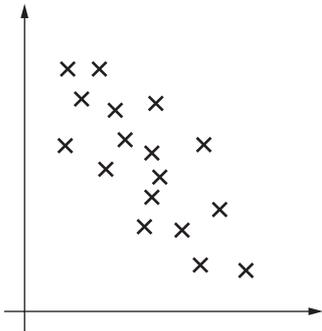
(b) A student measures the reaction time for each of ten people of different ages.
The results are given in this table.

Age (years)	8	16	20	27	35	44	56	65	70	79
Reaction time (seconds)	0.44	0.34	0.28	0.28	0.27	0.30	0.28	0.34	0.38	0.40

The results are plotted on a scatter graph.

(i) Complete the scatter graph.
The first six results have been plotted for you. **[2]**

(ii) Why is it not sensible to draw a line of best fit?

....

.... **[1]**

(iii) Describe the relationship between age and reaction time shown by your graph.

....

.... **[1]**

END OF QUESTION PAPER

PLEASE DO NOT WRITE ON THIS PAGE