Write your name here

Surname

Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9-1)

Centre Number

Candidate Number

Mathematics
Paper 3 (Calculator)
Aiming for 5

Foundation Tier

Spring 2023 Practice Paper
Time: 1 hour 30 minutes

Paper Reference
1MA1/3F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Information

- The total mark for this paper is 80. There are 26 questions.
- Questions have been arranged in an ascending order of mean difficulty, as found by students achieving Grade 4 in the Summer and November 2022 examinations.
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Answer ALL TWENTY SIX questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Here is the shoe size of each of 12 boys in a class.

    4   5   6   6   6   7   7   8   8   8   8   9

(*a*) Find the median.

....
(1)

(*b*) Work out the range.

....
(1)

For the shoe sizes of each of 12 girls in the class,

    the median size is 6
    the range is 3

(*c*) Compare the distribution of the shoe sizes of the boys with the distribution of the shoe sizes of the girls.

....

....

....

....

....

....
(2)

(Total for Question 1 is 4 marks)

2 *ABCD* is a quadrilateral.
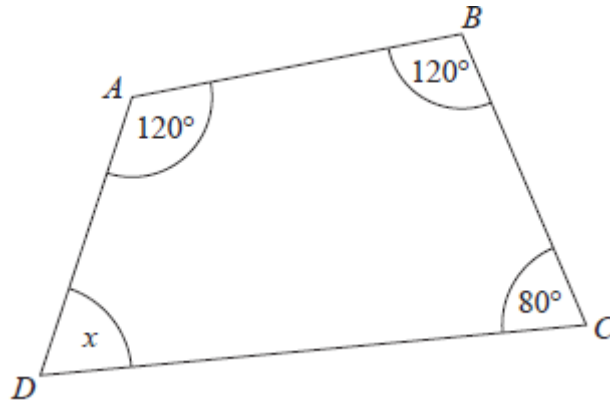
(*a*) (i) Work out the size of angle *x*.

....°
(1)

   (ii) Give a reason for your answer.

   ....

   ....
(1)

The diagram below shows a triangle.
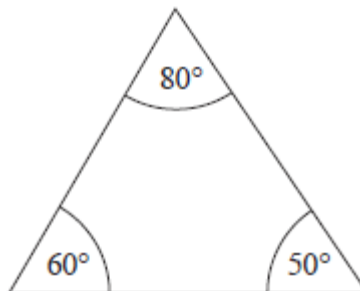
The diagram is wrong.
(*b*) Explain why.

....

....

....
(1)

(Total for Question 2 is 3 marks)

3   Work out the lowest common multiple (LCM) of 24 and 56

....

(Total for Question 3 is 2 marks)

4   The accurately drawn map shows the positions of three points, *A*, *B* and *C*, in a field.
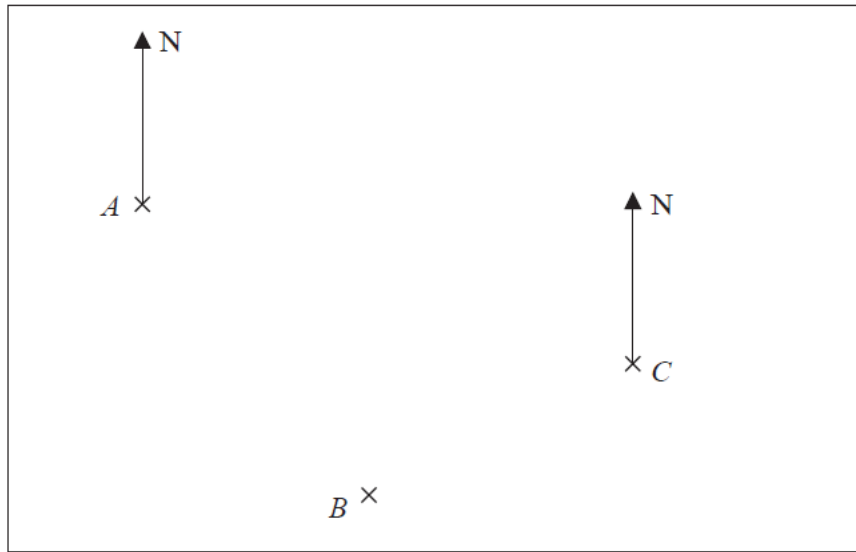
Scale: 1 cm represents 150 metres

Parveen walks in a straight line from *A* to *B*.
She then walks in a straight line from *B* to *C*.

Susan walks in a straight line from *A* to *C*.

Parveen walks more metres than Susan.

(*a*) How many more?

.... metres

(3)

(*b*) Find by measurement the bearing of *A* from *C*.

....°

(1)

(Total for Question 4 is 4 marks)

5

$$\mathbf{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 2 \end{pmatrix} \quad \mathbf{c} = \begin{pmatrix} 4 \\ 1 \end{pmatrix}$$

(*a*) Work out as a column vector

   (i) $\mathbf{a} + \mathbf{b}$

(1)

   (ii) $2\mathbf{a} - \mathbf{c}$

(2)

The vector **d** is drawn on the grid.
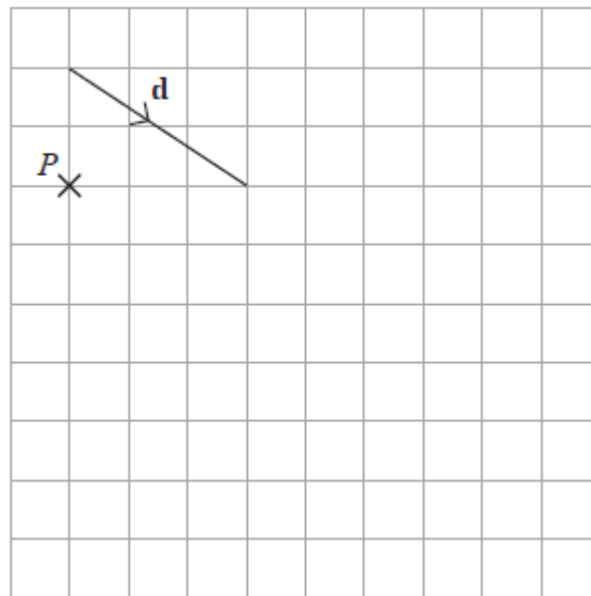
(*b*) From the point *P*, draw the vector 2**d**
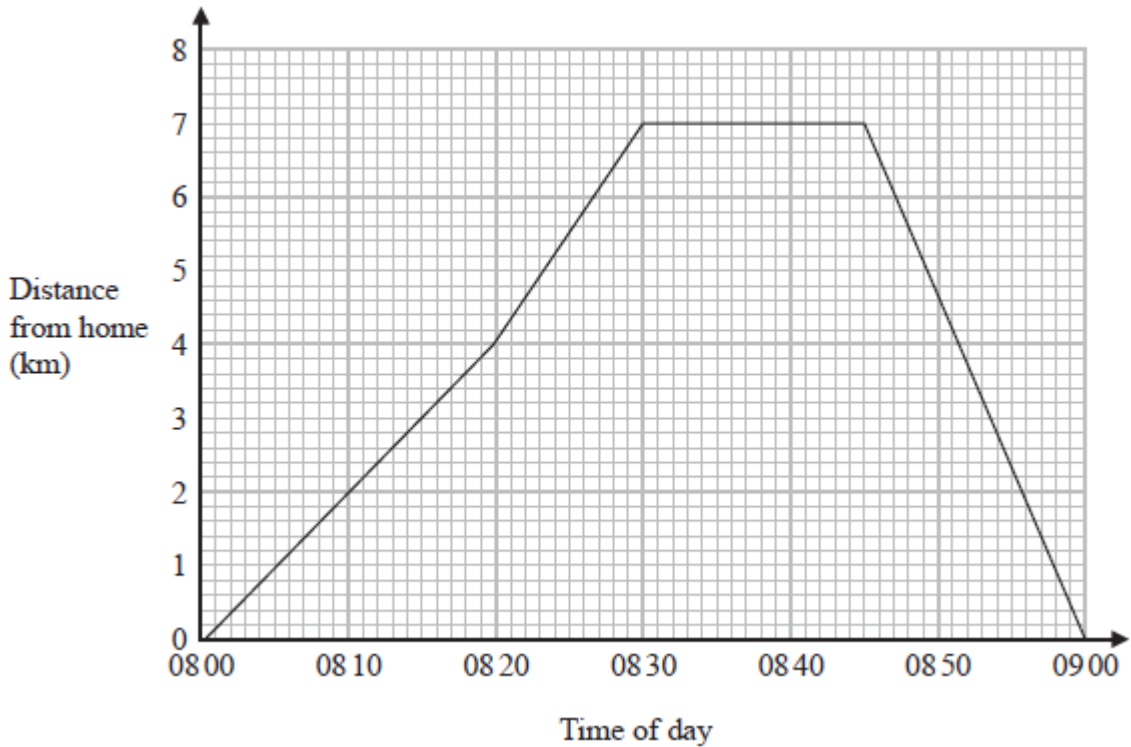
(1)

(Total for Question 5 is 4 marks)

6   Carly cycles to her friend's house.

She stays at her friend's house for a number of minutes.
Then she cycles home.

Here is the travel graph for her journey.

(a) For how many minutes did Carly stay at her friend's house?

.... minutes

(1)

(b) How far is Carly from her home at 08 50?

.... km

(1)

(c) Work out Carly's speed, in km/h, for the first 20 minutes of her journey.

.... km/h

(2)

(Total for Question 6 is 4 marks)

7 On the centimetre grid, draw an isosceles triangle with an area of 12 cm^2
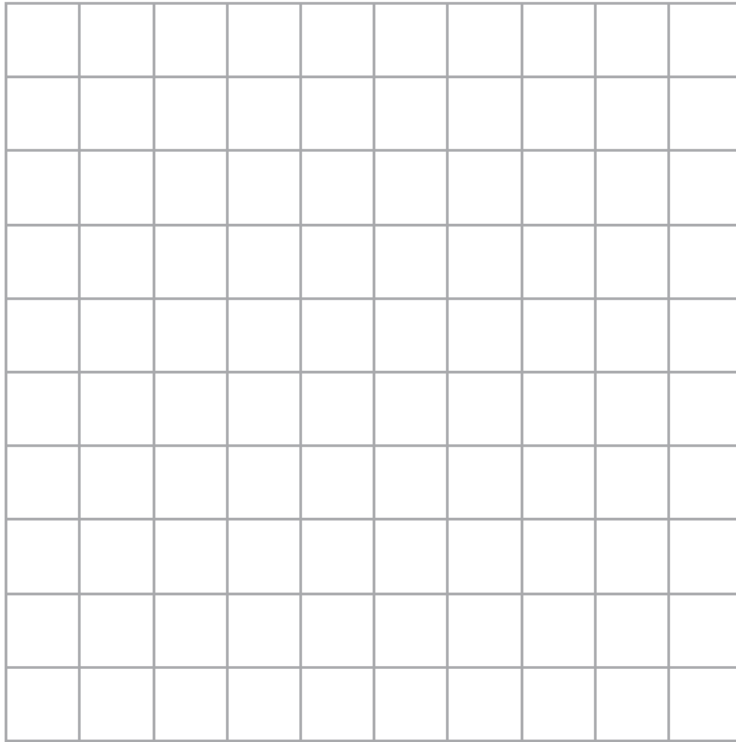
(Total for Question 7 is 2 marks)

8 (*a*) Write 2530 correct to 2 significant figures.

....
(1)

(*b*) Write 0.0874 correct to 1 significant figure.

....
(1)

(Total for Question 8 is 2 marks)

9   One weekend the Keddie family is going to do a sports quiz and a music quiz.

The probability that the family will win the sports quiz is 0.3
The probability that the family will win the music quiz is 0.35

(*a*) Complete the probability tree diagram.

Sports quiz   Music quiz

```
                                          0.35      win
                          win        <
              0.3                          ........   do not win
        <
              ........   do not win  <
                                          0.35      win
                                          ........   do not win
```

(2)

(*b*) Work out the probability that the Keddie family will win both the sports quiz and the music quiz.

....

(2)

(Total for Question 9 is 4 marks)

10   (*a*) Write 6.75×10^{-4} as an ordinary number.

....
(1)

(*b*) Work out $\dfrac{2.56\times10^{6}\times4.12\times10^{-3}}{1.6\times10^{-2}}$

Give your answer in standard form.

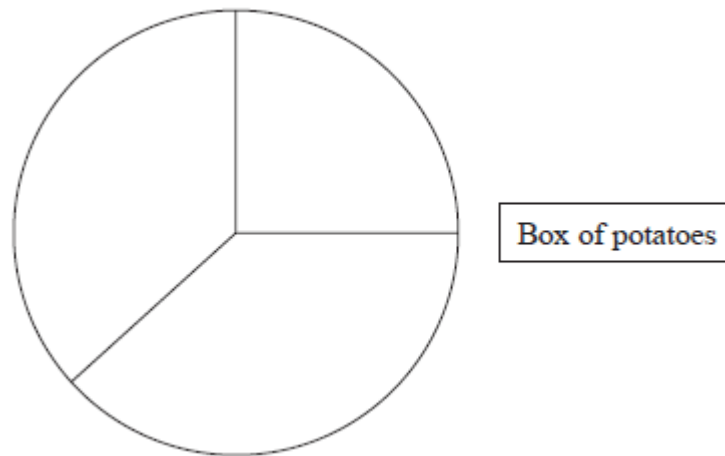...
(2)

(Total for Question 10 is 3 marks)

11 There are three different types of potato in a box.
The table gives the number of each type of potato.

Type of potato	Number of potatoes
Jersey Royal	90
Charlotte	105
Maris Piper	105

Salim draws this pie chart for the information in the table.

Box of potatoes

Write down two different things that are wrong or misleading with this pie chart.

1...

....

2...

....
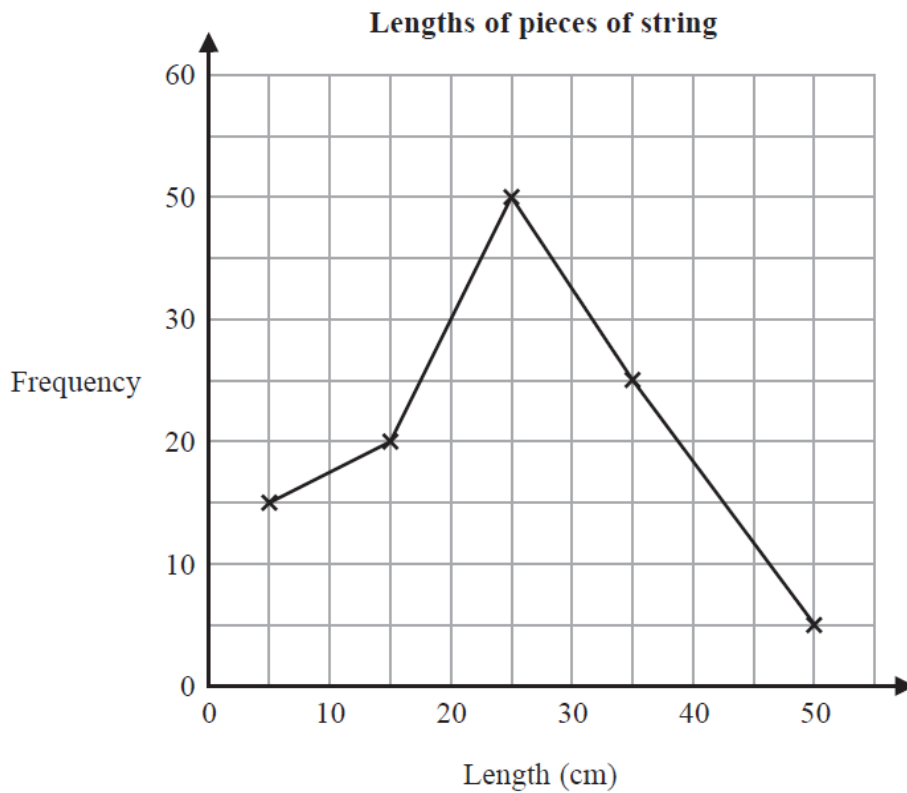
(Total for Question 11 is 2 marks)

12 The table gives information about the lengths, in cm, of some pieces of string.

Length (t cm)	Frequency
$0 < t \leq 10$	15
$10 < t \leq 20$	20
$20 < t \leq 30$	50
$30 < t \leq 40$	25
$40 < t \leq 50$	5

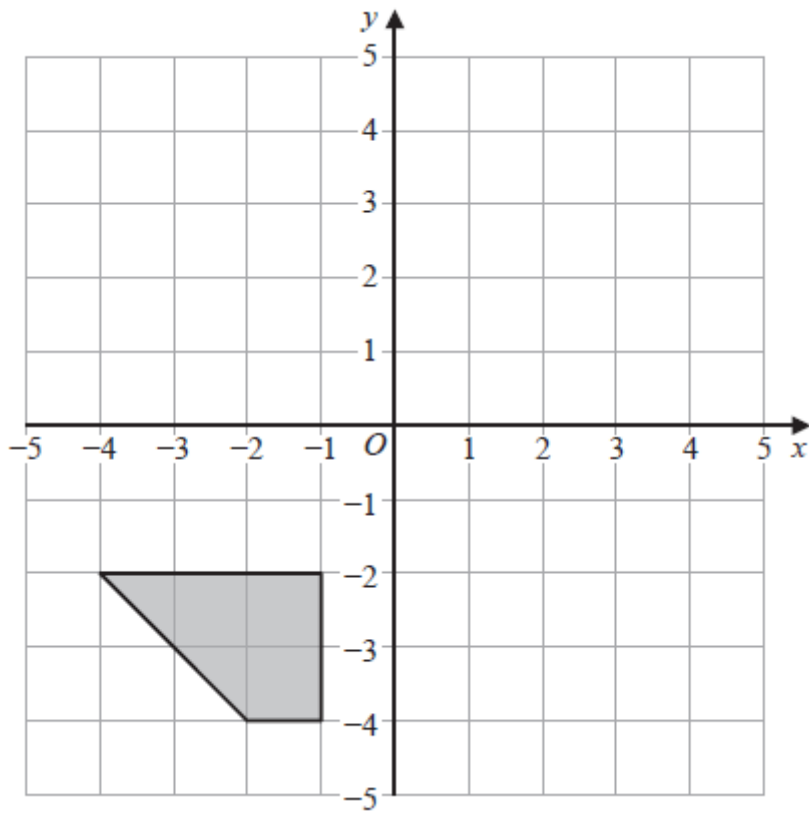Amos draws a frequency polygon for the information in the table.

Lengths of pieces of string

Write down **two** mistakes that Amos has made.

1...

....

2...

....

(Total for Question 12 is 2 marks)

13

Rotate the shaded shape 90° anticlockwise about (0, 0)

(Total for Question 13 is 2 marks)

14 Rick, Selma and Tony are playing a game with counters.

Rick has some counters.
Selma has twice as many counters as Rick.
Tony has 6 counters less than Selma.
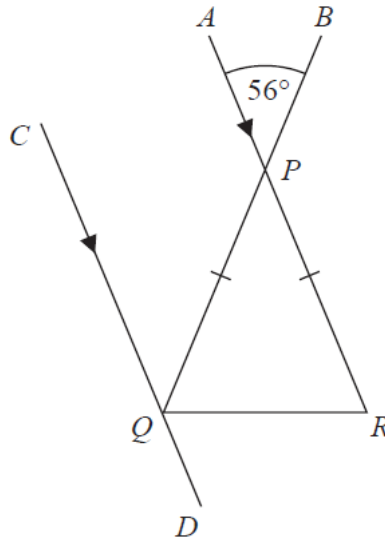
In total they have 54 counters.

the number of counters Rick has : the number of counters Tony has = 1 : p

Work out the value of p.

$p =$ ....

(Total for Question 14 is 5 marks)

15 In the diagram, *PQR* is an isosceles triangle with *PQ* = *PR*.

APR and *CQD* are parallel lines.
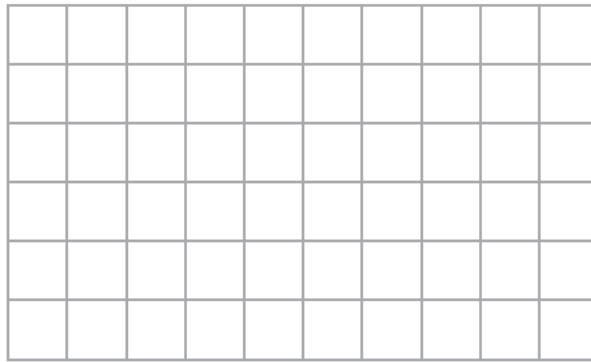*BPQ* is a straight line.

Angle *APB* = 56°

Work out the size of angle *CQR*.
Give a reason for each stage of your working.

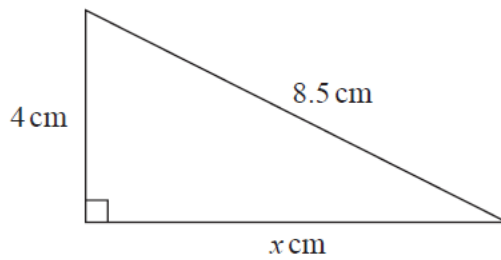**(Total for Question 15 is 5 marks)**

16

On the grid, draw a quadrilateral with

no lines of symmetry
and rotational symmetry of order 2

(Total for Question 16 is 2 marks)

17 Here is a right-angled triangle.

4 cm

8.5 cm

x cm

Work out the value of x.

$x = $ ....

(Total for Question 17 is 2 marks)

18 $T = 4m^2 - 11$

(*a*) Work out the value of *T* when $m = -3$

$T = $ ....
(2)

(*b*) Make *p* the subject of the formula $d = 3p + 4$

....
(2)

(Total for Question 18 is 4 marks)

19 Jessica runs for 15 minutes at an average speed of 6 miles per hour.
She then runs for 40 minutes at an average speed of 9 miles per hour.

It takes Amy 45 minutes to run the same total distance that Jessica runs.

Work out Amy's average speed.
Give your answer in miles per hour.

.... miles per hour

(Total for Question 19 is 4 marks)

20 Make *a* the subject of the formula $p = 3a - 9$

....

(Total for Question 20 is 2 marks)

21 Change 30 metres per second to kilometres per hour.

.... kilometres per hour

(Total for Question 21 is 2 marks)

22 The value of Michelle's car has decreased by 15%
The car now has a value of £13 600

Work out the value of Michelle's car before the decrease.

£..

(Total for Question 22 is 2 marks)

23 (*a*) Change 8000 cm^3 to m^3

.... m^3

(1)

(*b*) Change a speed of 180 km per hour to metres per second.

.... metres per second

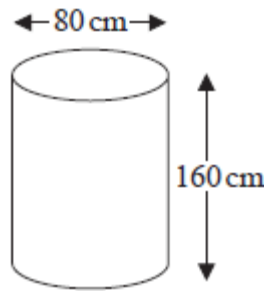**(3)**

(Total for Question 23 is 4 marks)

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24 There are 30 women and 20 men at a gym.

The mean height of all 50 people is 167.6 cm
The mean height of the 20 men is 182 cm

Work out the mean height of the 30 women.

.... cm

(Total for Question 24 is 3 marks)

---

25 Karina has 4 tanks on her tractor.
Each tank is a cylinder with diameter 80 cm and height 160 cm.

The 4 tanks are to be filled completely with a mixture of fertiliser and water.
The fertiliser has to be mixed with water in the ratio 1 : 100 by volume.

Karina has 32 litres of fertiliser.
1 litre = 1000 cm³

Has Karina enough fertiliser for the 4 tanks?
You must show how you get your answer.

(Total for Question 25 is 4 marks)

26 The diagram shows rectangle *STUV*.
TQU and *SRV* are straight lines.
All measurements are in cm.
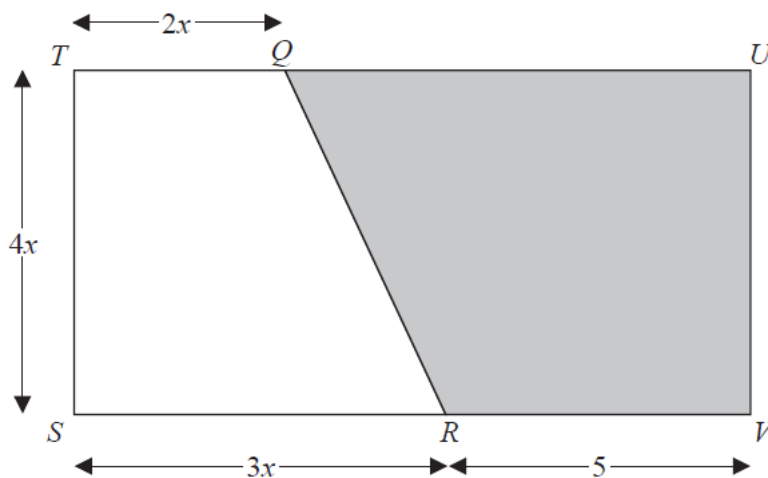
The area of trapezium *QUVR* is *A* cm²

Show that $A = 2x^2 + 20x$

(Total for Question 26 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS