Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

7549220925

MATHEMATICS **0580/21**

Paper 2 (Extended) **May/June 2018**

1 hour 30 minutes

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For π, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 70.

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1 Write down a prime number between 20 and 30.

..... [1]

2 Write 0.000 038 7 in standard form.

..... [1]

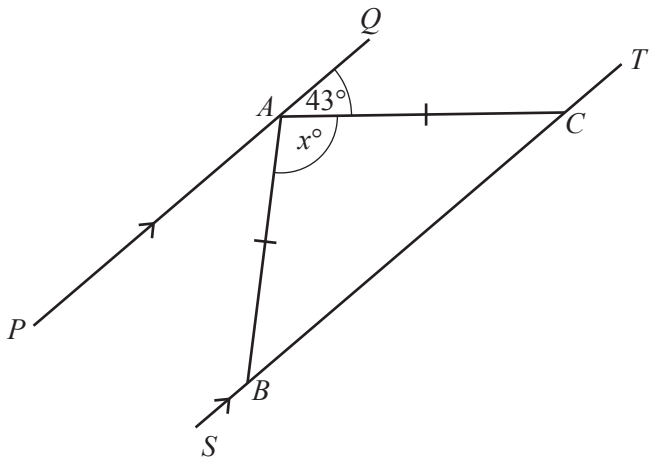
3 Write the recurring decimal $0.\dot{6}\dot{3}$ as a fraction.

..... [1]

4 Find the value of $7x + 3y$ when $x = 12$ and $y = -6$.

..... [2]

5



NOT TO SCALE

The diagram shows two parallel lines PAQ and $SBCT$.
$AB = AC$ and angle $QAC = 43°$.

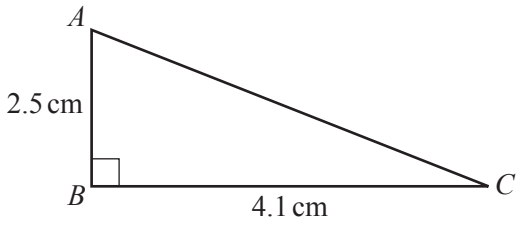
Find the value of x.

$x =$ ..... [2]

6 Calculate the area of a circle with radius 5.1 cm.

.....cm^2 [2]

7



NOT TO SCALE

Calculate the length of AC.

$AC =$ ..... cm [2]

8 Expand and simplify.

$$6(2y - 3) - 5(y + 1)$$

..... [2]

9 $3^{-q} \times \frac{1}{27} = 81$

Find the value of q.

$q =$ ..... [2]

10 **(a)** Calculate $\sqrt{2.38 + 6.4^2}$, writing down your full calculator display.

..... [1]

(b) Write your answer to **part (a)** correct to 4 decimal places.

..... [1]

11 Find the exact value of $8^{\frac{2}{3}} \times 49^{-\frac{1}{2}}$.

..... [2]

12 Solve the inequality.

$$3n - 5 > 17 + 8n$$

..... [2]

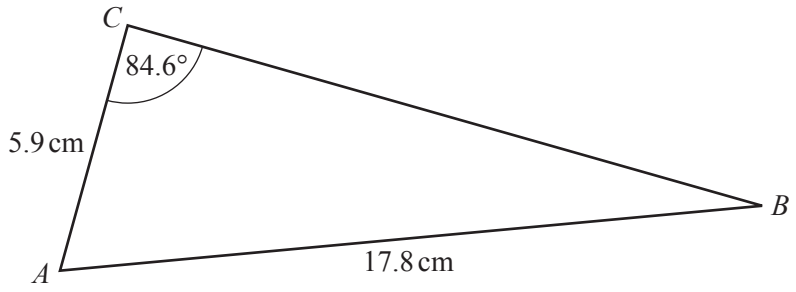
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13 **Without using your calculator**, work out $1\frac{3}{4} \times \frac{6}{35}$.

You must show all your working and give your answer as a fraction in its simplest form.

..... [3]

14



NOT TO SCALE

Use the sine rule to find angle ABC.

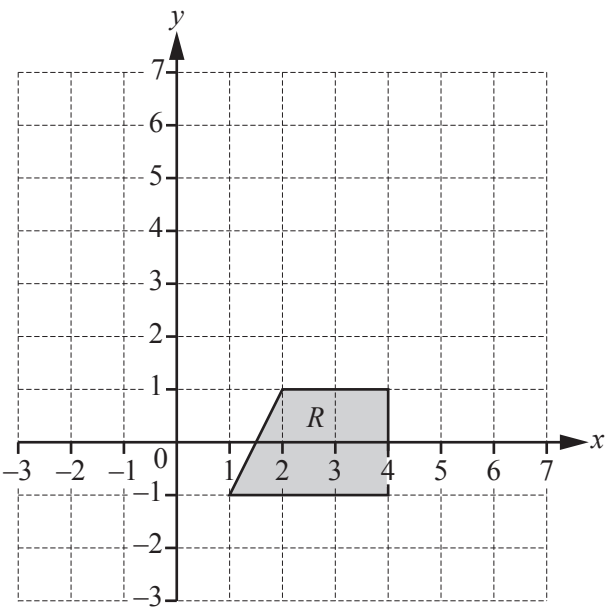
Angle ABC = ... [3]

15 y is directly proportional to $(x-1)^2$.
When $x = 5$, $y = 4$.

Find y when $x = 7$.

$y =$ ..... [3]

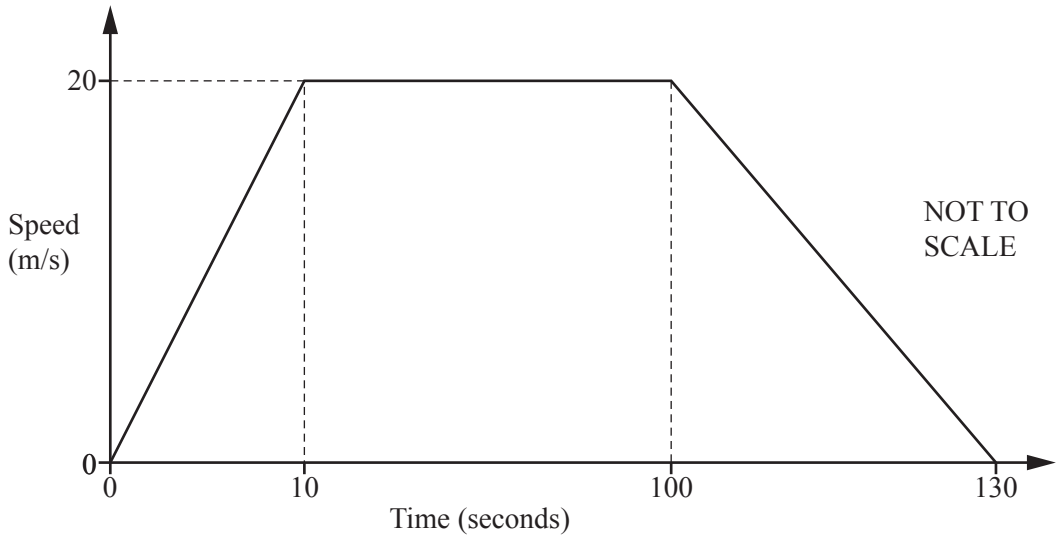
16



On the grid, draw the image of shape R after the transformation represented by the matrix $\begin{pmatrix} 0 & -1 \\ 1 & 0 \end{pmatrix}$. [3]

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17



The speed−time graph shows information about the journey of a tram between two stations.

(a) Calculate the distance between the two stations.

..... m [3]

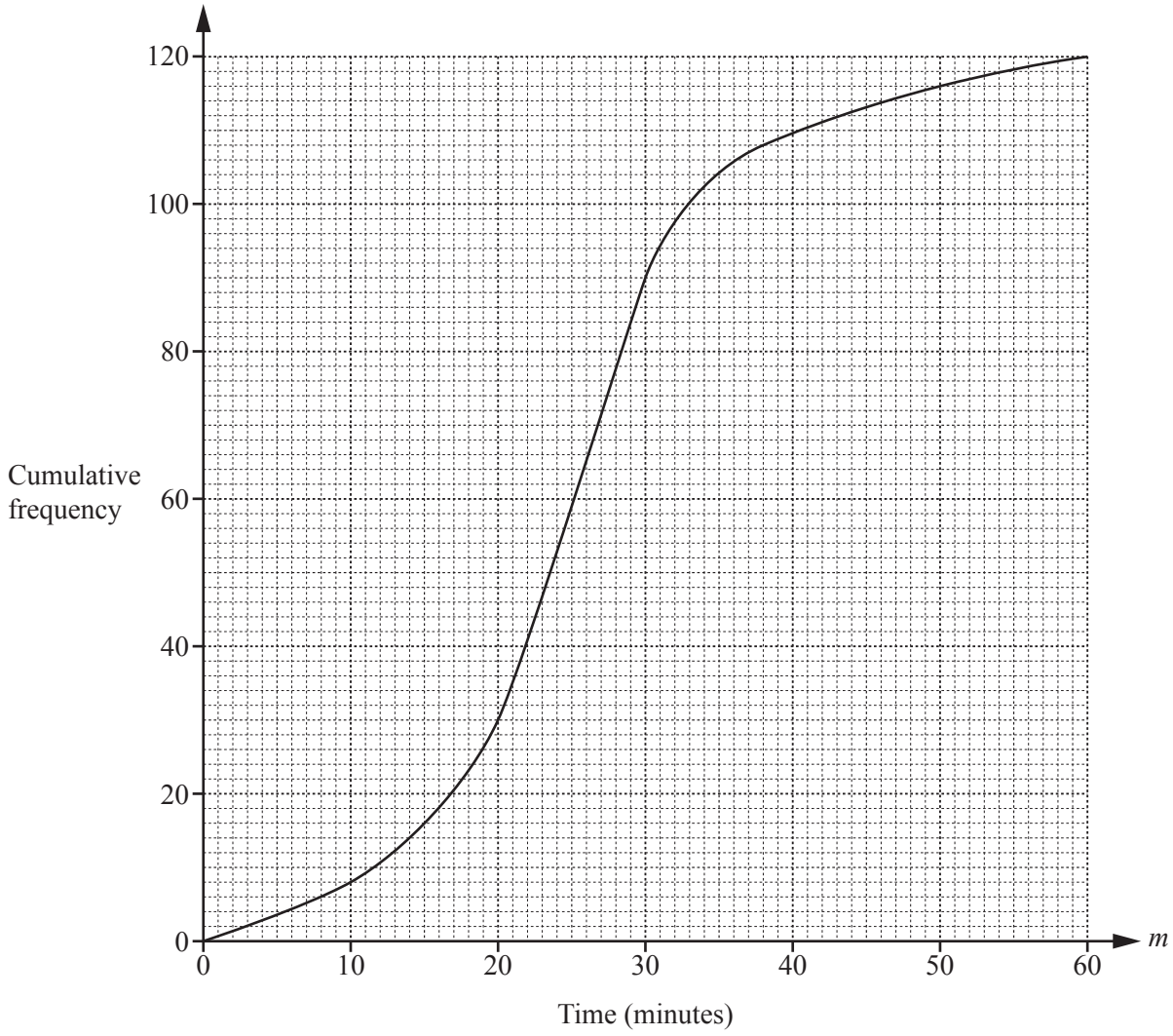
(b) Calculate the average speed of the tram for the whole journey.

..... m/s [1]

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[Turn over

18 The cumulative frequency diagram shows information about the time, m minutes, taken by 120 students to complete some homework.



Use the cumulative frequency diagram to find an estimate of

(a) the interquartile range,

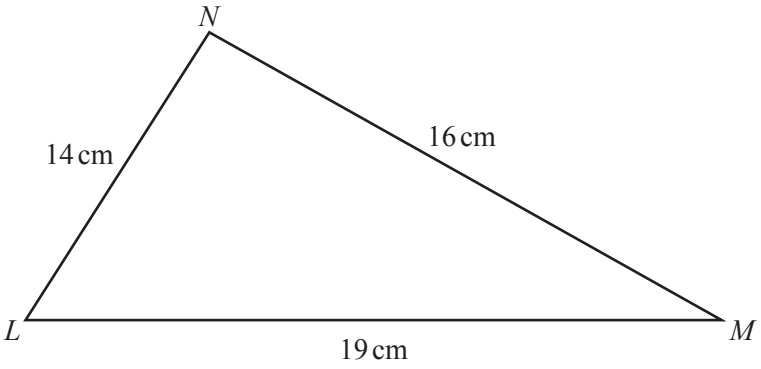
.....min [2]

(b) the number of students who took more than 50 minutes to complete the homework.

..... [2]

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19



NOT TO SCALE

Calculate angle *LMN*.

Angle *LMN* = ... [4]

20 **(a)** A box contains 3 blue pens, 4 red pens and 8 green pens only.
A pen is chosen at random from the box.

Find the probability that this pen is green.

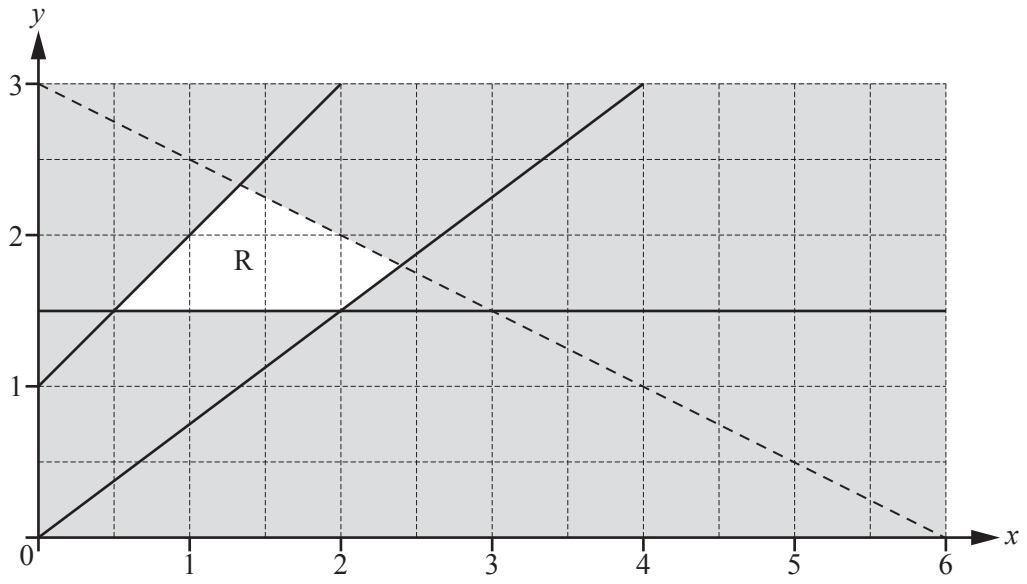
..... [1]

(b) Another box contains 7 black pens and 8 orange pens only.
Two pens are chosen at random from this box without replacement.

Calculate the probability that at least one orange pen is chosen.

..... [3]

21



There are four inequalities that define the region R.
One of these is $y \leqslant x + 1$.

Find the other three inequalities.

.....

.....

..... [4]

22 $f(x) = 5 - 2x$ $g(x) = x^2 + 8$

(a) Calculate $ff(-3)$.

..... [2]

(b) Find

(i) $g(2x)$,

..... [1]

(ii) $f^{-1}(x)$.

$f^{-1}(x) =$ ..... [2]

23 40 people were asked how many times they visited the cinema in one month.
The table shows the results.

Number of cinema visits	0	1	2	3	4	5	6	7
Frequency	5	5	6	6	7	3	6	2

(a) **(i)** Find the mode.

..... [1]

(ii) Calculate the mean.

..... [3]

(b) Omar wants to show the information from the table in a pie chart.

Calculate the sector angle for the people who visited the cinema 5 times.

..... [2]

Question 24 is printed on the next page.

24 **(a)** Point A has co-ordinates (1, 0) and point B has co-ordinates (2, 5).

Calculate the angle between the line AB and the x-axis.

..... [3]

(b) The line PQ has equation $y = 3x - 8$ and point P has co-ordinates (6, 10).

Find the equation of the line that passes through P and is perpendicular to PQ.
Give your answer in the form $y = mx + c$.

$y =$ ..... [3]

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