Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

1477753275

MATHEMATICS **0580/11**

Paper 1 (Core) **May/June 2014**

1 hour

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 56.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **12** printed pages.

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1 Work out.

$10 - 3 \times 2$

Answer ..... [1]

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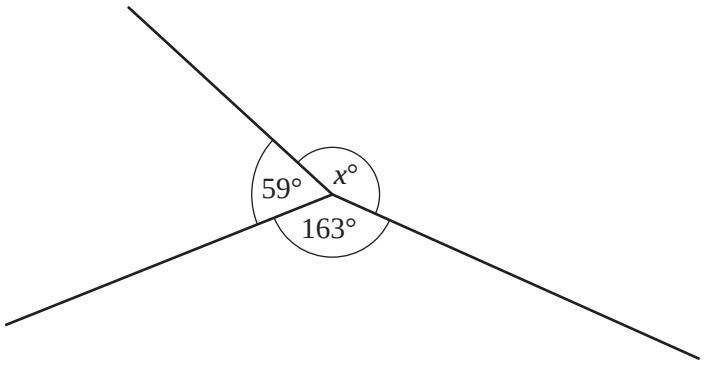
2 Write down the prime numbers between 20 and 30.

Answer ..... [1]

3



NOT TO SCALE

(a) Find the value of x.

Answer(a) $x =$ ..... [1]

(b) One of the angles is 163°.

What type of angle is this?

Answer(b) ..... [1]

---

4 A city has a population of five hundred and six thousand.

Write the size of the population

(a) in figures,

Answer(a) ..... [1]

(b) in standard form.

Answer(b) ..... [1]

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5 $$p = \frac{4.8 \times 1.98276}{16.83}$$

(a) In the spaces provided, write each number in this calculation correct to 1 significant figure.

Answer(a)

$$\frac{\text{.....} \times \text{.....}}{\text{.....}}$$

[1]

(b) Use your answer to **part (a)** to estimate the value of p.

Answer(b) ..... [1]

---

6 Solve the equation. $\frac{n-8}{2} = 11$

Answer n = ... [2]

---

7 $\mathbf{a} = \begin{pmatrix} 4 \\ -3 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} -1 \\ 5 \end{pmatrix}$

Work out $\mathbf{a} - 2\mathbf{b}$.

Answer $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [2]

---

8 The width, w cm, of a carpet is 455 cm, correct to the nearest centimetre.

Complete the statement about the value of w.

Answer ..... $\leqslant w <$ ..... [2]

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9 $y = \frac{2}{x^2} + \frac{x^2}{2}$

Find the value of y when $x = 6$.
Give your answer as a mixed number in its simplest form.

Answer $y =$ ..... [2]

---

10 Use your calculator to work out $\sqrt{\frac{3}{4}} + 2^{-1}$.

Give your answer correct to 2 decimal places.

Answer ..... [2]

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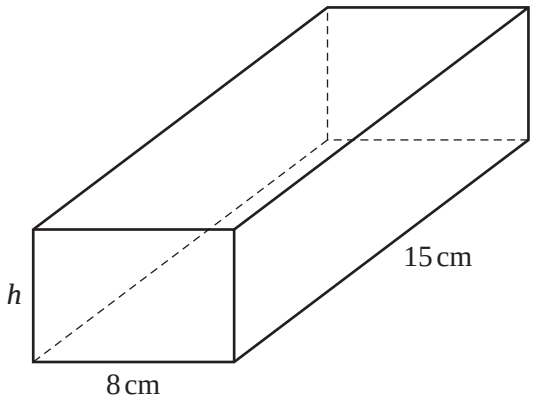
11 The diagram shows a cuboid.



NOT TO SCALE

The volume of this cuboid is 720 cm^3.
The width is 8 cm and the length is 15 cm.

Calculate h, the height of the cuboid.

Answer $h =$ ..... cm [2]

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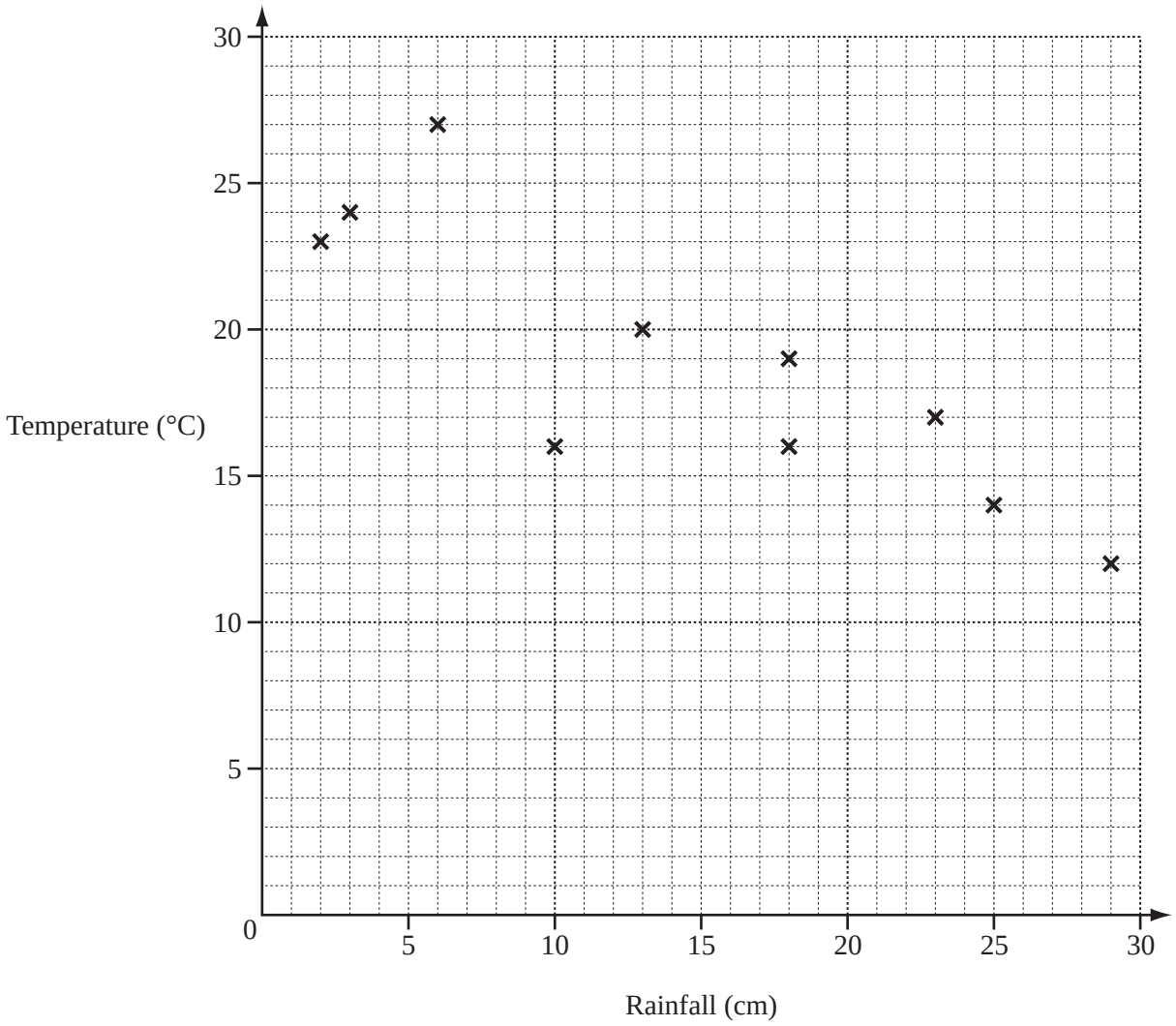
12 The scatter diagram shows the rainfall and the average temperature in a city for the month of June, over a period of 10 years.



(a) What type of correlation does this scatter diagram show?

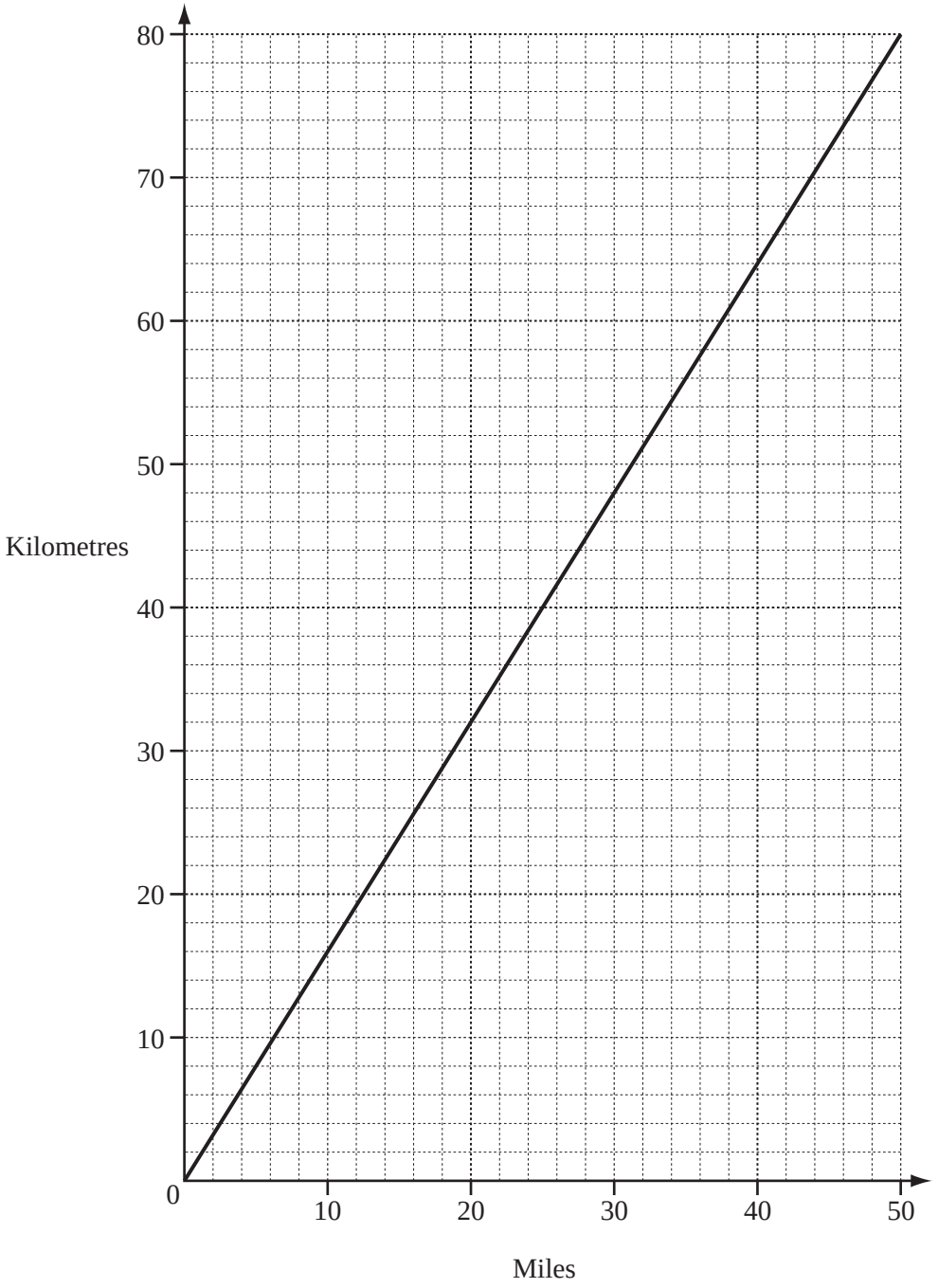
Answer(a) ..... [1]

(b) Describe the relationship between the rainfall and the average temperature.

Answer(b) .....

..... [1]

13 The graph can be used to convert between miles and kilometres.

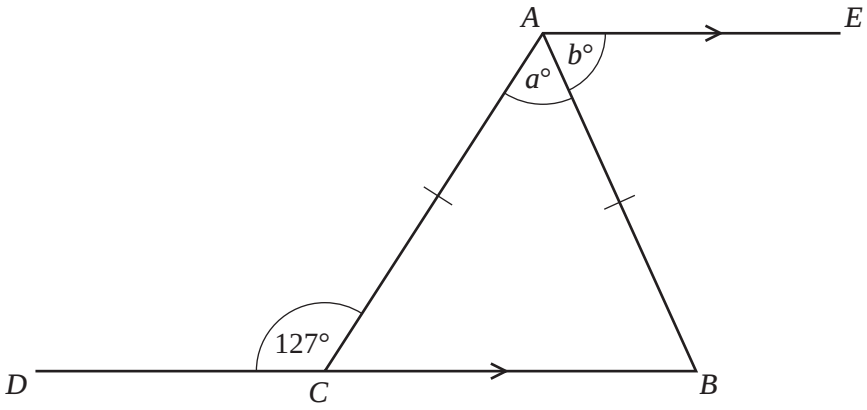


A train travels 24 miles in 20 minutes.

Find its average speed in **kilometres per hour**.

Answer ..... km/h [2]

14



NOT TO SCALE

The diagram shows an isosceles triangle *ABC*.
DCB is a straight line and is parallel to *AE*.
Angle *DCA* = 127°.

Find the value of

(a) *a*,

Answer(a) a = ... [2]

(b) *b*.

Answer(b) b = ... [1]

---

15 Carlo changed 800 euros (€) into dollars for his holiday when the exchange rate was €1 = $1.50 .
His holiday was then cancelled.
He changed all his dollars back into euros and he received €750.

Find the new exchange rate.

Answer €1 = $..... [3]

---

16 **(a)** Simplify the expressions.

(i) $p^3 \times p^7$

Answer(a)(i) ..... [1]

(ii) $t^5 \div t^8$

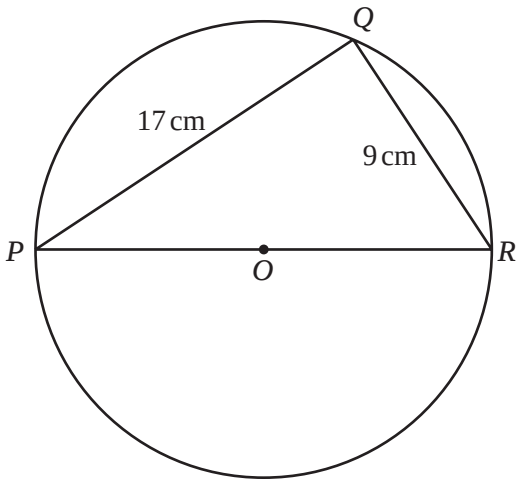
Answer(a)(ii) ..... [1]

(b) $(h^3)^k = h^{12}$

Find the value of k.

Answer(b) k = ... [1]

17



NOT TO SCALE

The diagram shows a circle, centre O.
P, Q and R are points on the circumference.
PQ = 17 cm and QR = 9 cm.

(a) Explain why angle PQR is 90°.

Answer(a) .....

..... [1]

(b) Calculate the length PR.

Answer(b) PR = ... cm [2]

---

18 In this question, do not use your calculator and show all the steps in your working.

(a) Show that $3\frac{1}{5} - 2\frac{5}{8} = \frac{23}{40}$.

Answer(a)

[2]

(b) Work out $\frac{7}{8} \div \frac{23}{40}$.

Give your answer as a mixed number in its simplest form.

Answer(b) ..... [2]

---

19 The table shows the average monthly temperature (°C) for Fairbanks, Alaska.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Temperature (°C)	–23.4	–19.8	–11.7	–0.8	9.2	15.4	16.9	13.8	7.5	–5.8	–21.4	–21.8

(a) Find

(i) the difference between the highest and the lowest temperatures,

Answer(a)(i) ..... °C [1]

(ii) the median.

Answer(a)(ii) ..... °C [2]

(b) A month is chosen at random from the table.

Find the probability that its average temperature is below zero.

Answer(b) ..... [1]

---

20 A bus company in Dubai has the following operating times.

Day	Starting time	Finishing time
Saturday	0600	2400
Sunday	0600	2400
Monday	0600	2400
Tuesday	0600	2400
Wednesday	0600	2400
Thursday	0600	2400
Friday	1300	2400

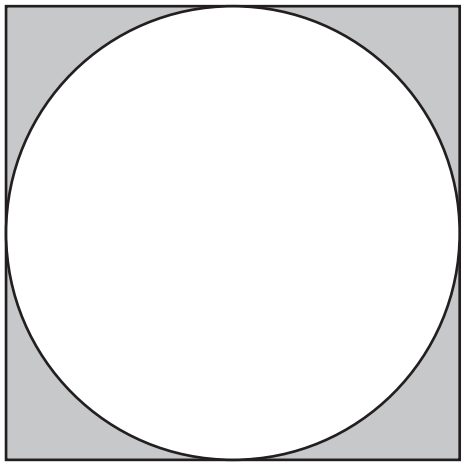
(a) Calculate the total number of hours that the bus company operates in one week.

Answer(a) ..... h [3]

(b) Write the starting time on Friday in the 12-hour clock.

Answer(b) ..... [1]

21



The diagram shows a circle inside a square.
The circumference of the circle touches all four sides of the square.

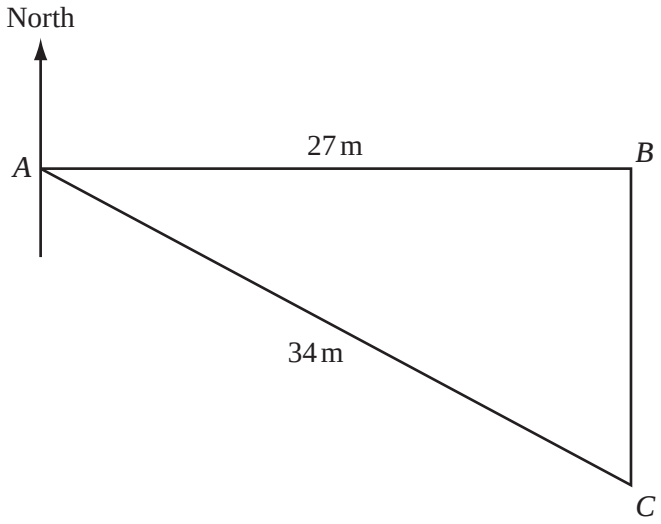
(a) Calculate the area of the circle when the side of the square is 15 cm.

Answer(a) ..... cm^2 [2]

(b) Draw all the lines of symmetry on the diagram. [2]

Question 22 is printed on the next page.

22



In the diagram, B is 27 metres due east of A.
C is 34 metres from A and due south of B.

(a) Using trigonometry, calculate angle ACB.

Answer(a) Angle ACB = ... [2]

(b) Find the bearing of C from A.

Answer(b) ..... [2]

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