Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

Cambridge
IGCSE

CANDIDATE
NAME

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MATHEMATICS (US) **0444/11**

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

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments

READ THESE INSTRUCTIONS FIRST

Write your Center number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use a #2 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.
CALCULATORS MUST NOT BE USED IN THIS PAPER.
All answers should be given in their simplest form.
If work is needed for any question it must be shown in the space provided.

The number of points is given in parentheses [ ] at the end of each question or part question.
The total of the points for this paper is 56.

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

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[Turn over

Formula List

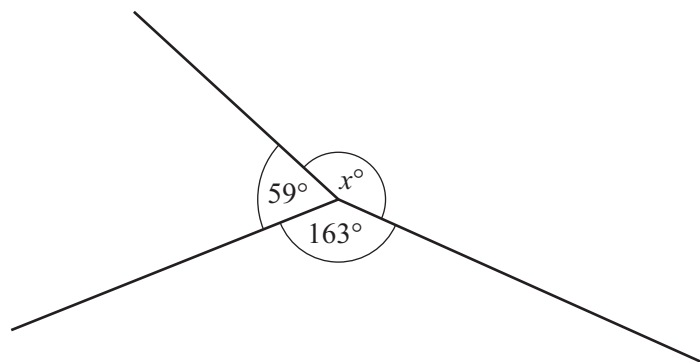|	
Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle, radius r.	$A = \pi r^2$
Circumference, C, of circle, radius r.	$C = 2\pi r$
Lateral surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$

1 Simplify.

$$10 - 3 \times 2$$

Answer .... [

_____

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]

_____

[Turn over

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)

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

[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 $$-4 \leqslant x < 3$$

Write down all the integer values of *x*.

Answer .... [2]

8 Find the least common multiple of 24 and 30.

Answer .... [2]

9 Write down an expression for the total length, in millimeters, of *n* nails each of length 35 millimeters and *s* screws each of length 6 centimeters.

Answer .... mm [2]

10
$$z = \frac{2}{x} - \frac{y}{72}$$

Find the value of z when $x = 12$ and $y = -6$.
Give your answer as a fraction in simplest form.

Answer z = ... [3]

---

11 A carpet cleaning machine costs $100 to hire for one day.
The machine uses cleaning fluid that costs $35 per bottle.
It takes from 1 to 10 bottles of cleaning fluid to clean a carpet.

Let x be the number of bottles of cleaning fluid purchased.

Julie thinks the function

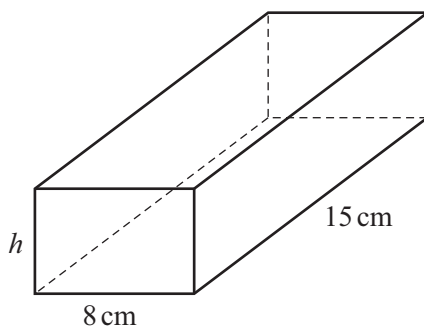$$f(x) = 35x + 100 \text{ with the domain } 1 \leqslant x \leqslant 10$$

is appropriate for the total cost of hiring the machine for one day and purchasing the fluid to clean a carpet.

Explain why Julie is not correct.

Answer ....

.... [1]

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12 The diagram shows a rectangular prism.
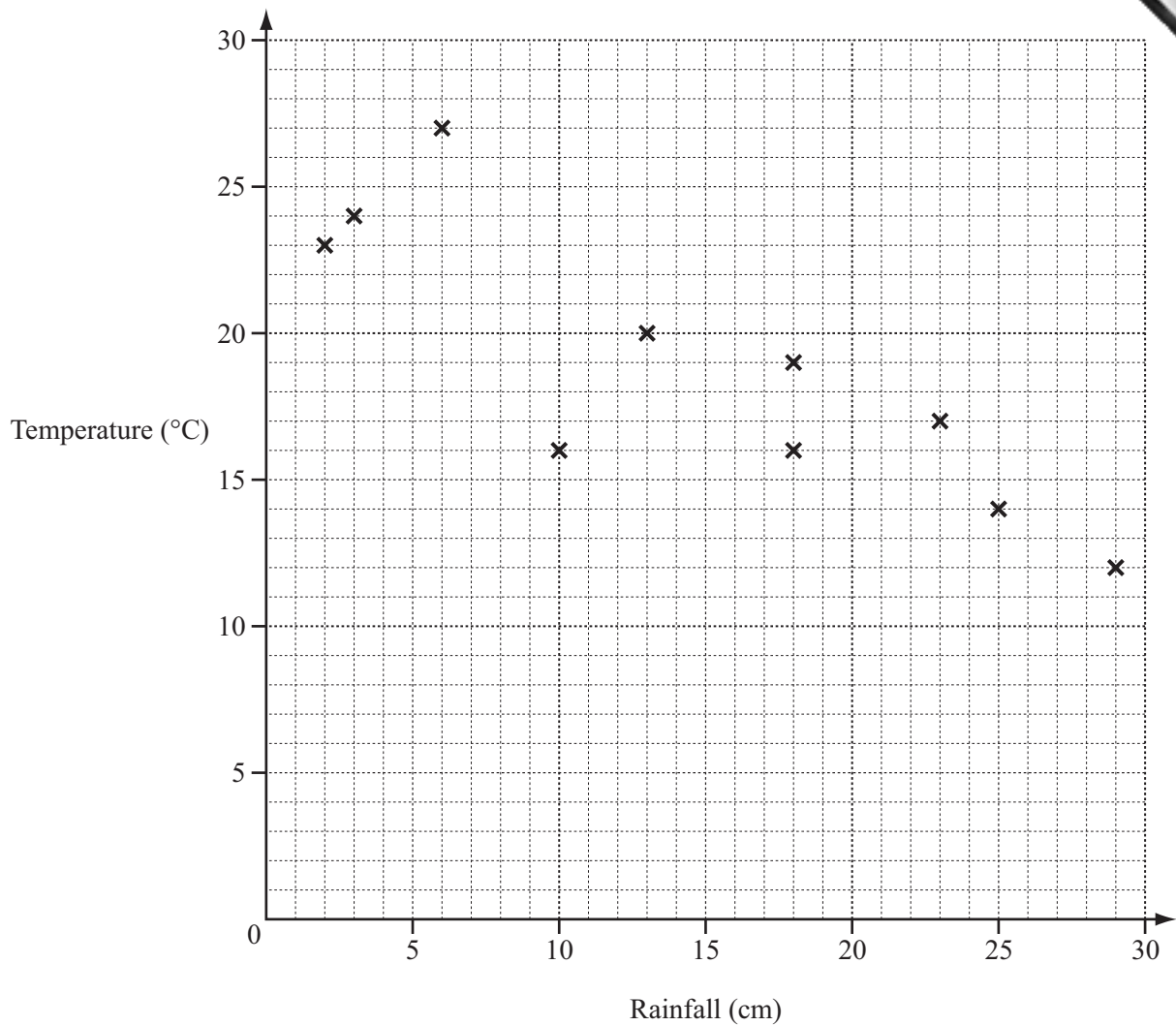

NOT TO SCALE

The volume of this rectangular prism is 720 cm³.
The width is 8 cm and the length is 15 cm.

Work out the height, h.

Answer h = ... cm [2]

[Turn over

13 The scatter diagram shows the rainfall and the average temperature in a city for the m... over a period of 10 years.
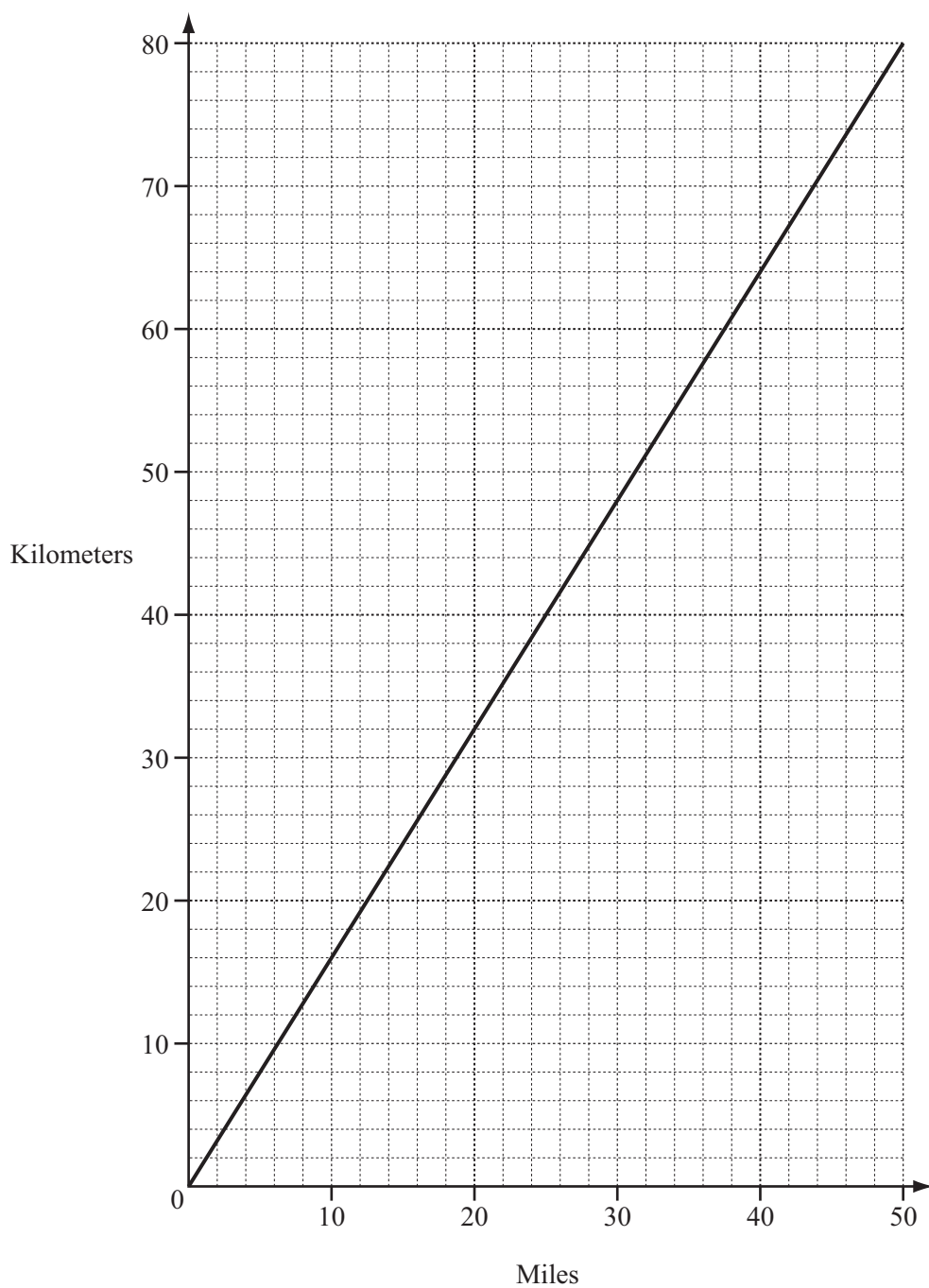

(a) What type of correlation does this scatter diagram show?

Answer(a) .... [1]

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

Answer(b) ....

.... [1]

14 The graph can be used to convert between miles and kilometers.

A train travels 24 miles in 20 minutes.

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

Answer .... km/h [2]

[Turn over

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

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	
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.

(a) (i) Find the difference between the highest and the lowest temperatures.

Answer(a)(i) .... °C [1]

(ii) Which month's average temperature is 14.6 °C warmer than April?

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

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

Find the probability that its average temperature is below zero.

Answer(b) .... [1]

16 Carlo changed 80 euros (€) into dollars when the exchange rate was €1 = $1.50 .
He spent $88.
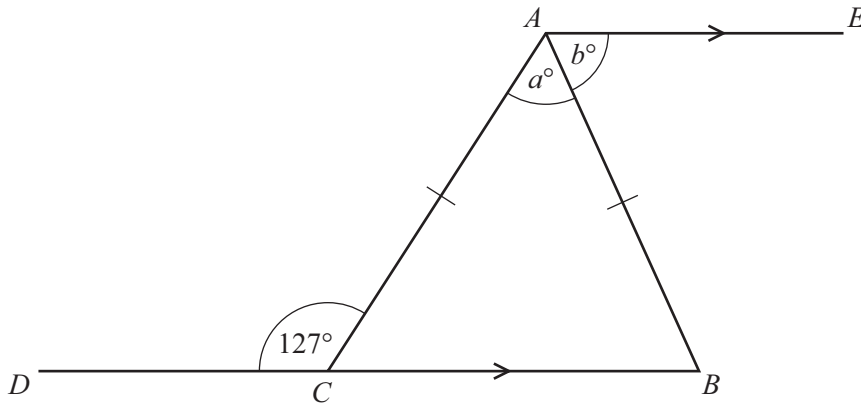He changed his remaining dollars back into euros when the exchange rate was €1 = $1.60 .

Work out how many euros he received.

Answer € .... [3]

17

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]

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18 (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]

[Turn over

19 Solve the system of equations.

$$5x + 3y = 1$$
$$4x + 5y = 6$$

Answer x = ...

y = ... [4]

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20 Simplify, giving each answer as a fraction in lowest terms.

(a) $3\frac{1}{5} - 2\frac{5}{8}$

Answer(a) .... [2]

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

Answer(b) .... [2]

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21 **(a)** A bus company in Dubai has the following operating times.

Day	Starting time	Finishing time
Saturday	06 00	24 00
Sunday	06 00	24 00
Monday	06 00	24 00
Tuesday	06 00	24 00
Wednesday	06 00	24 00
Thursday	06 00	24 00
Friday	13 00	24 00

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

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

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

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

(b) Another bus company operates Desert Safari tours.
A tour starts at 6 am on 5 July and ends at 9 pm on 7 July.

How long is this tour?
Give your answer in days and hours.

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

[Turn over

22 (a) Simplify.

$$5(3x - y) - 2(7x + 4y)$$

Answer(a) .... [2]

(b) Factor completely.

$$10xy^2 + 15y$$

Answer(b) .... [2]