Cambridge IGCSE

**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CANDIDATE NAME | | | | | | | | | |
| CENTRE NUMBER | | | | | | CANDIDATE NUMBER | | | | |

*1469358560*

**MATHEMATICS** **0580/22**

Paper 2 (Extended) **October/November 2015**

**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 $\pi$, 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.

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 **11** printed pages and **1** blank page.


© UCLES 2015

**1** Write down the difference in temperature between 8°C and −9°C.

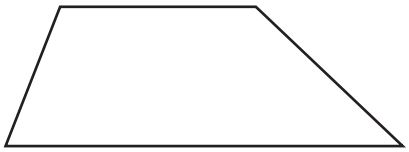
*Answer* ..... °C [1]

---

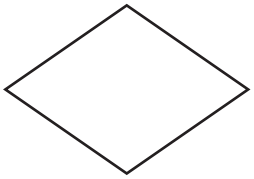
**2**



Parallelogram



Trapezium



Rhombus

Write down which one of these shapes has

- rotational symmetry of order 2

**and**

- no line symmetry.

*Answer* ..... [1]

---

**3** Carlos changed $950 into euros (€) when the exchange rate was €1 = $1.368 .

Calculate how many euros Carlos received.

*Answer* € ..... [2]

---

**4** $\overrightarrow{AB} = \begin{pmatrix} -3 \\ 5 \end{pmatrix}$

Find $|\overrightarrow{AB}|$.

*Answer* ..... [2]

---

© UCLES 2015

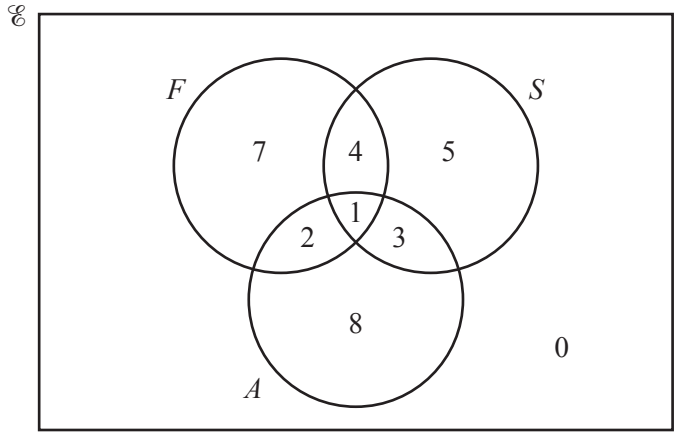
**5** Calculate the volume of a hemisphere with radius 5 cm.

[The volume, $V$, of a sphere with radius $r$ is $V = \frac{4}{3}\pi r^3$.]

*Answer* ..... $cm^3$ [2]

---

**6** The Venn diagram shows the number of students who study French ($F$), Spanish ($S$) and Arabic ($A$).




**(a)** Find $n(A \cup (F \cap S))$.

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

**(b)** On the Venn diagram, shade the region $F' \cap S$. [1]

---

**7** $\mathbf{M} = \begin{pmatrix} 3 & -4 \\ -2 & 4 \end{pmatrix}$ $\mathbf{N} = \begin{pmatrix} 5 & 0 \\ 1 & 2 \end{pmatrix}$

Calculate **MN**.

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

---

**8** Robert buys a car for $8000.
At the end of each year the value of the car has decreased by 10% of its value at the beginning of that year.

Calculate the value of the car at the end of 7 years.

*Answer* $ ..... [2]

---

**9** The scale on a map is 1 : 50 000.
The area of a field on the map is 1.2 square centimetres.

Calculate the actual area of the field in square kilometres.

*Answer* ..... $km^2$ [2]

---

© UCLES 2015

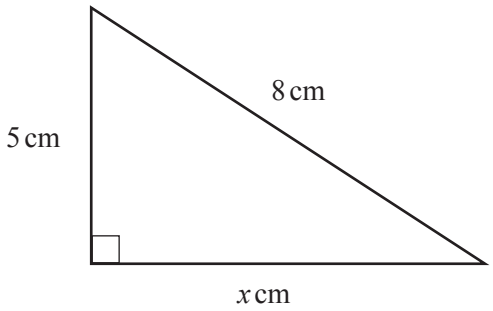
**10** Jason receives some money for his birthday.
He spends $\frac{11}{15}$ of the money and has \$14.40 left.

Calculate how much money he received for his birthday.

*Answer* \$ ..... [3]

---

**11**




NOT TO SCALE

Calculate the value of $x$.

*Answer* $x$ = ..... [3]

---

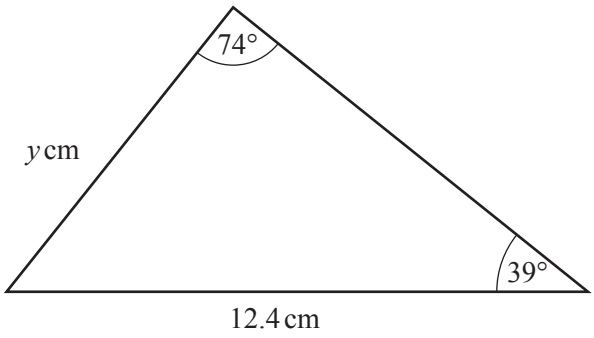
**12** Without using your calculator, work out $2\frac{1}{4} - \frac{11}{12}$.

You must show all your working and give your answer as a fraction in its lowest terms.

*Answer* ..... [3]

---

**13**




NOT TO SCALE

Calculate the value of $y$.

*Answer* $y =$ ..... [3]

---

**14** Jasjeet and her brother collect stamps.
When Jasjeet gives her brother 1% of her stamps, she has 2475 stamps left.

Calculate how many stamps Jasjeet had originally.

*Answer* ..... [3]

---

**15** Factorise

**(a)** $9w^2 - 100$,

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

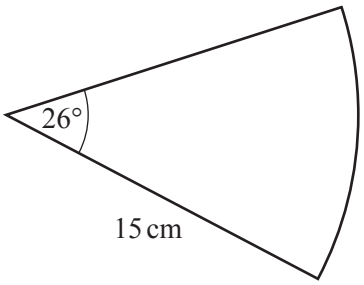
**(b)** $mp + np - 6mq - 6nq$.

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

---

© UCLES 2015

**16**




NOT TO SCALE

The diagram shows a sector of a circle with radius 15 cm.

Calculate the perimeter of this sector.

*Answer* ..... cm [3]

---

**17** $y$ is directly proportional to the square of $(x - 1)$.
$y = 63$ when $x = 4$.

Find the value of $y$ when $x = 6$.

*Answer* $y =$ ..... [3]

---

**18** A rectangle has length 5.8 cm and width 2.4 cm, both correct to 1 decimal place.

Calculate the lower bound and the upper bound of the perimeter of this rectangle.

*Answer* Lower bound ..... cm

Upper bound ..... cm [3]

---

© UCLES 2015

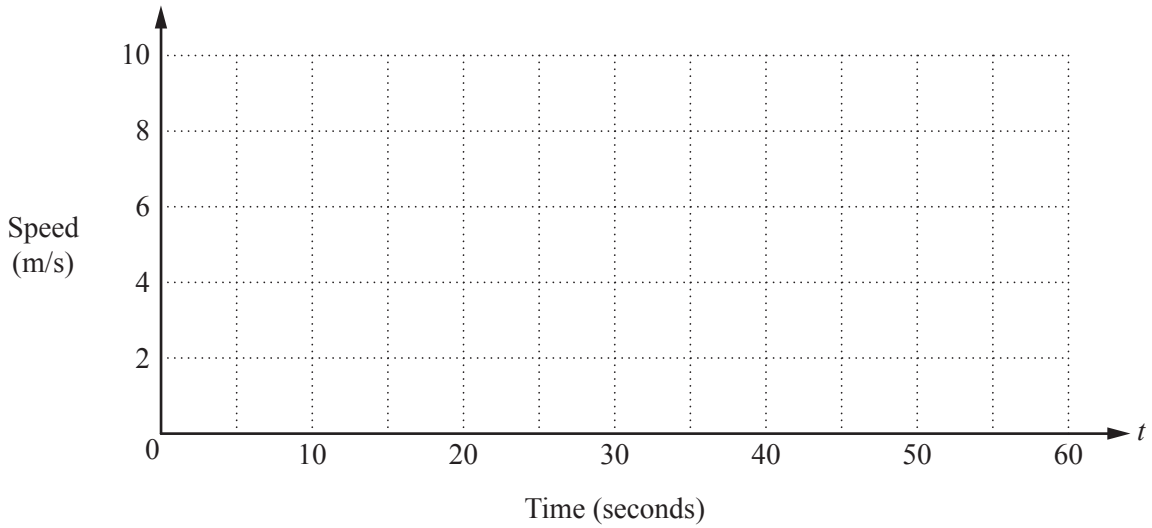
**19** Solve the equation $5x^2 - 6x - 3 = 0$.
Show all your working and give your answers correct to 2 decimal places.

*Answer* $x$ = ..... or $x$ = ..... [4]

---

**20** A car passes through a checkpoint at time $t = 0$ seconds, travelling at 8 m/s.
It travels at this speed for 10 seconds.
The car then decelerates at a constant rate until it stops when $t = 55$ seconds.

**(a)** On the grid, draw the speed-time graph.




[2]

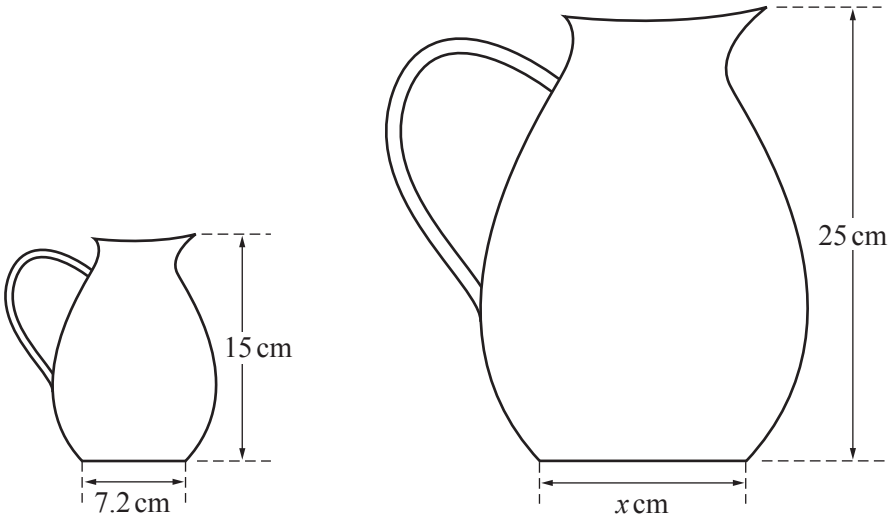
**(b)** Calculate the total distance travelled by the car after passing through the checkpoint.

*Answer(b)* ..... m [3]

---

© UCLES 2015

**21 (a)**



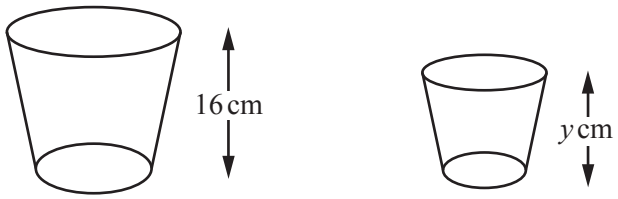

NOT TO SCALE

The diagram shows two jugs that are mathematically similar.

Find the value of $x$.

*Answer(a)* $x$ = ..... [2]

**(b)**




NOT TO SCALE

The diagram shows two glasses that are mathematically similar.
The height of the larger glass is 16 cm and its volume is 375 $cm^3$.
The height of the smaller glass is $y$ cm and its volume is 192 $cm^3$.

Find the value of $y$.

*Answer(b)* $y$ = ..... [3]

**22** The table shows information about the numbers of pets owned by 24 students.

| Number of pets | 0 | 1 | 2 | 3 | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|
| Frequency | 1 | 2 | 3 | 5 | 7 | 3 | 3 |

**(a)** Calculate the mean number of pets.

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

**(b)** Jennifer joins the group of 24 students.
When the information for Jennifer is added to the table, the new mean is 3.44 .

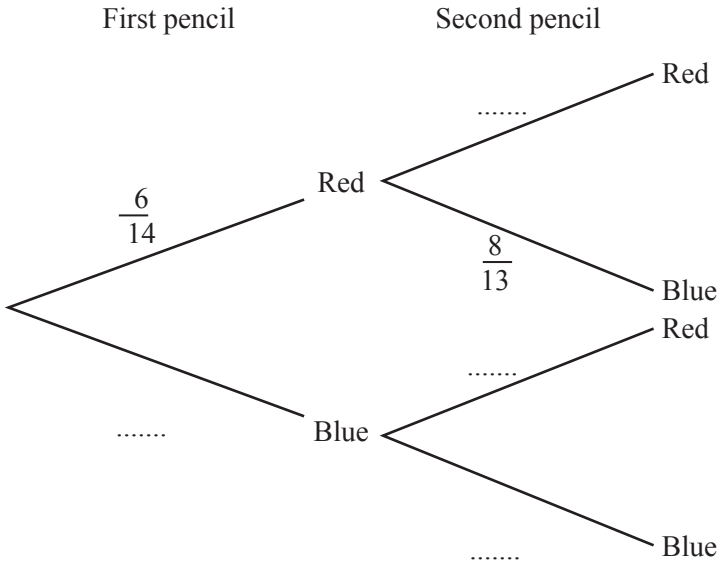
Calculate the number of pets that Jennifer has.

*Answer(b)* ..... [3]

© UCLES 2015

**23** A box contains 6 red pencils and 8 blue pencils.
A pencil is chosen at random and not replaced.
A second pencil is then chosen at random.

**(a)** Complete the tree diagram.




[2]

**(b)** Calculate the probability that

**(i)** both pencils are red,

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

**(ii)** at least one of the pencils is red.

*Answer*(*b*)(ii) ..... [3]

**BLANK PAGE**

Permission to reproduce items where third-party owned material protected by copyright is included has been sought and cleared where possible. Every reasonable effort has been made by the publisher (UCLES) to trace copyright holders, but if any items requiring clearance have unwittingly been included, the publisher will be pleased to make amends at the earliest possible opportunity.

To avoid the issue of disclosure of answer-related information to candidates, all copyright acknowledgements are reproduced online in the Cambridge International Examinations Copyright Acknowledgements Booklet. This is produced for each series of examinations and is freely available to download at www.cie.org.uk after the live examination series.

Cambridge International Examinations is part of the Cambridge Assessment Group. Cambridge Assessment is the brand name of University of Cambridge Local Examinations Syndicate (UCLES), which is itself a department of the University of Cambridge.