UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

MATHEMATICS **0581/11**

Paper 1 (Core) **May/June 2013**

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 a pencil for any diagrams or graphs.
Do not use staples, paper clips, highlighters, 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.

This document consists of **8** printed pages.

1 Write 45% as a fraction in its simplest form.

Answer ..... [1]

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2 One January day in Munich, the temperature at noon was 3°C.
At midnight the temperature was –8°C.

Write down the difference between these two temperatures.

Answer ..... °C [1]

---

3 **(a)** Calculate $\sqrt{5.7} - 1.03^2$.

Write down all the numbers displayed on your calculator.

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

(b) Write your answer to **part (a)** correct to 3 decimal places.

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

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4 Pedro and Eva do their homework.
Pedro takes 84 minutes to do his homework.

The ratio Pedro's time : Eva's time = 7 : 6.

Work out the number of minutes Eva takes to do her homework.

Answer ..... min [2]

---

5 Write each of the following as a single vector.

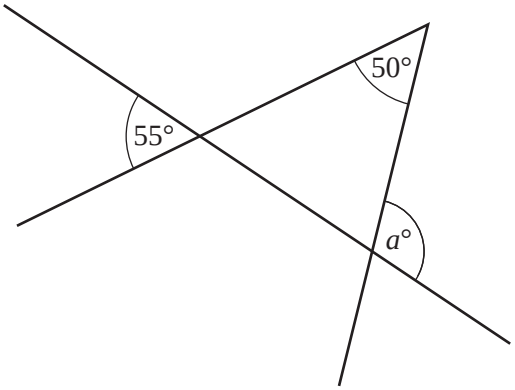
(a) $\begin{pmatrix} 6 \\ 1 \end{pmatrix} + \begin{pmatrix} -4 \\ 2 \end{pmatrix}$

Answer(a) $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

(b) $4\begin{pmatrix} 2 \\ -3 \end{pmatrix}$

Answer(b) $\begin{pmatrix} \quad \\ \quad \end{pmatrix}$ [1]

6



NOT TO SCALE

Use the information in the diagram to find the value of a.

Answer $a =$ ..... [2]

---

7 Show that $1\frac{1}{2} \div \frac{3}{16} = 8$.

Do not use a calculator and show all the steps of your working.

Answer

[2]

---

8 Sebastian ran a race in 11.4 seconds, correct to 1 decimal place.

Complete the statement about the time, t seconds, that Sebastian took to run the race.

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

[Turn over

9 Rearrange this equation to make b the subject.

$$a = \frac{b}{5} - 9$$

Answer $b =$ ..... [2]

---

10 Here are the first four terms of a sequence.

4 11 18 25

Write down an expression for the nth term.

Answer ..... [2]

---

11 x and y are integers.

(a) Find the value of x when $-7 < x < -5$.

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

(b) Find the value of y when $\frac{3}{4} < \frac{y}{16} < \frac{7}{8}$.

Answer(b) $y =$ ..... [2]

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12 The probability of Sachin's team winning any match is 0.45.

(a) Write down the probability of Sachin's team **not** winning any match.

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

(b) In a season there are 40 matches.

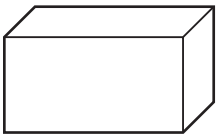
How many matches should Sachin's team expect to win in a season?

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

For Examiner's Use

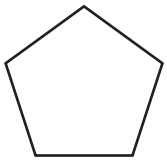
13 Complete each statement with the correct mathematical term.

(a)



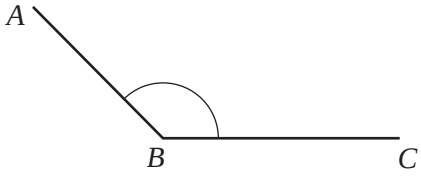
This solid is a ..... [1]

(b)



This polygon is a regular ..... [1]

(c)



Angle *ABC* is an ..... angle [1]

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14 **(a)** The perimeter of a square is 28 mm.

Work out the length of one side of the square.

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

(b) Calculate the volume of a cylinder with radius 5.2 cm and height 15 cm.

Answer(b) ..... cm^3 [2]

---

15 Bruce invested \$420 at a rate of 4% per year compound interest.

Calculate the **total** amount Bruce has after 2 years.
Give your answer correct to 2 decimal places.

Answer \$ ..... [3]

For Examiner's Use

16 Martina changed 200 Swiss francs (CHF) into euros (€).
The exchange rate was €1 = 1.14 CHF.

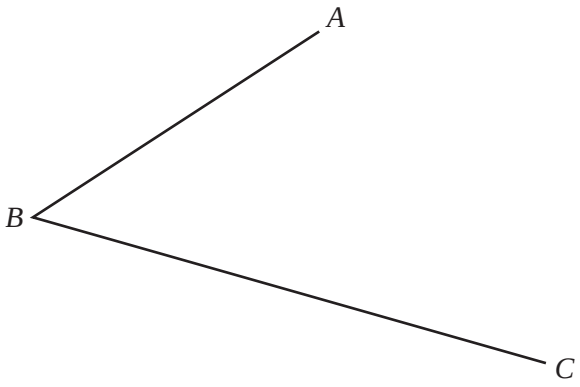
Calculate how much Martina received.
Give your answer correct to the nearest euro.

Answer € ..... [3]

---

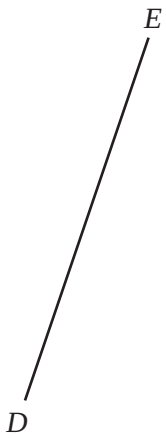
17 In this question use a straight edge and compasses only.
Leave in all your construction arcs.

(a) Construct the bisector of angle *ABC*.



[2]

(b) Construct the perpendicular bisector of the line *DE*.



[2]

For Examiner's Use

18 **(a)** Which **two** of these have the same value?

5^{-2} $\quad \frac{2}{5}$ $\quad \left(\frac{1}{2}\right)^2$ $\quad \left(\frac{2}{5}\right)^2$ $\quad 0.2^2$

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

(b) Simplify.

(i) $a^6 \times a^3$

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

(ii) $24b^{16} \div 6b^4$

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

---

19 **(a)** Multiply out the brackets.

$5\,(x + 3)$

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

(b) Factorise completely.

$12xy - 3x^2$

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

(c) Solve.

$5x - 24 = 51$

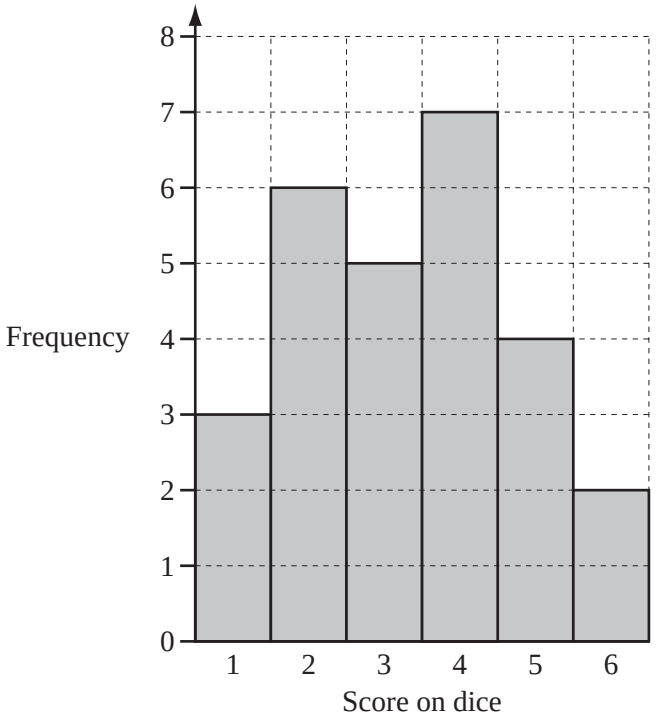
Answer(c) $x =$ ..... [2]

Question 20 is printed on the next page.

[Turn over

For Examiner's Use

20 Marco throws a six-sided dice 27 times.
The bar chart shows his results.



(a) Write down the mode.

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

(b) Work out the probability that Marco throws a number less than 5.

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

(c) Calculate the mean.

Answer(c) ..... [3]