Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME

CENTRE NUMBER | | | | | |

CANDIDATE NUMBER | | | | |

2343051529

MATHEMATICS **0580/22**

Paper 2 (Extended) **May/June 2017**

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.

1 Write 0.071 64 correct to 2 significant figures.

..... [1]

2 The probability that Stephanie wins her next tennis match is 0.85 .

Find the probability that Stephanie does not win her next tennis match.

..... [1]

3 Change 6200 cm^2 into m^2.

..... m^2 [1]

4 Calculate $\sqrt{120} + 3.8^2 - 25$.

..... [1]

5 Work out 85 cents as a percentage of \$2.03 .

..... % [1]

6 Factorise.

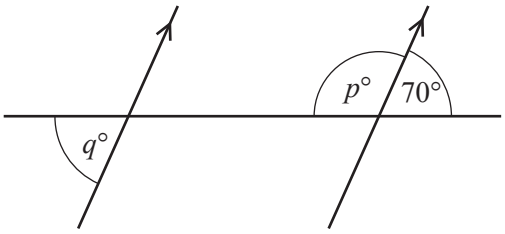
$14x - 21y$

..... [1]

7 Find the value of $5a - 3b$ when $a = 7$ and $b = -2$.

..... [2]

8



NOT TO SCALE

The diagram shows a straight line intersecting two parallel lines.

Find the value of p and the value of q.

$p =$ .....

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

9 **Without using a calculator**, work out $\frac{5}{6} - \frac{1}{2}$.

Show all the steps of your working and give your answer as a fraction in its simplest form.

..... [2]

10 Solve.

$$2-x=5x+1$$

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

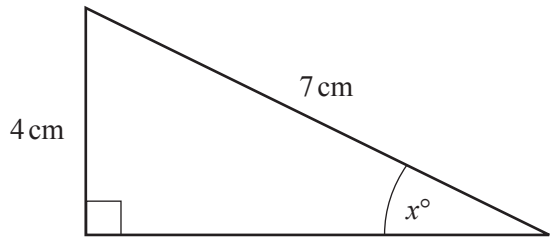
11 **(a)** Write 0.0605 in standard form.

..... [1]

(b) Calculate $0.1\times5.1\times10^4$, giving your answer in standard form.

..... [1]

12



NOT TO SCALE

Calculate the value of x.

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

13 Solve the inequality.

$$3n - 11 > 5n - 18$$

..... [2]

14 Work out.

(a) $125^{\frac{2}{3}}$

..... [1]

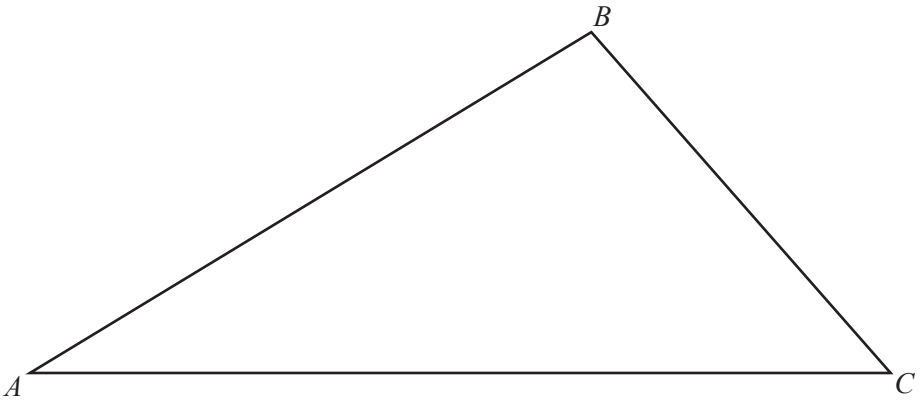
(b) $\left(\frac{1}{3}\right)^{-2}$

..... [1]

15 Make q the subject of the formula $p = 2q^2$.

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

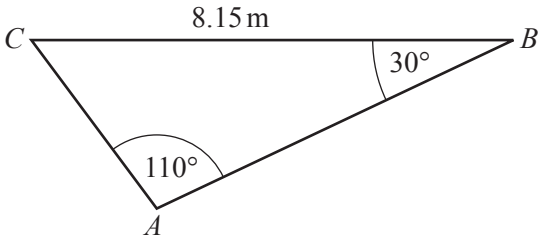
16



(a) **Using a straight edge and compasses only**, construct the bisector of angle *BAC*. [2]

(b) Shade the region inside the triangle that is nearer to *AC* than to *AB*. [1]

17



NOT TO SCALE

Calculate *AC*.

AC = ... m [3]

18 A rectangle has length 62 mm and width 47 mm, both correct to the nearest millimetre.
The area of this rectangle is A mm^2.

Complete the statement about the value of A.

..... $\leqslant A <$ ..... [3]

19 In a triangle PQR, $PQ = 8$ cm and $QR = 7$ cm.
The area of this triangle is 17 cm^2.

Calculate the two possible values of angle PQR.

Angle PQR = ... or ..... [3]

20 Write as a single fraction in its simplest form.

$$\frac{2x-1}{3} - \frac{2}{x+1}$$

..... [3]

21 y is inversely proportional to $\sqrt{1+x}$.
When $x = 8$, $y = 2$.

Find y when $x = 15$.

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

22 Factorise completely.

(a) $9t^2 - u^2$

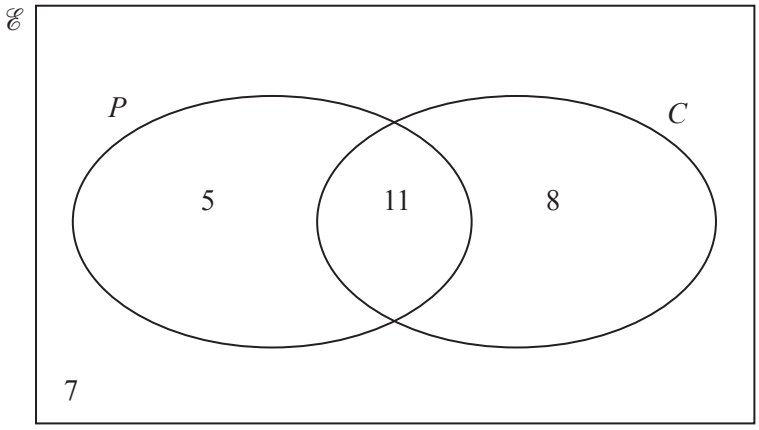
..... [2]

(b) $2c - 4d - pc + 2pd$

..... [2]

23 **(a)** $\mathscr{E}$ = {students in a class}
P = {students who study physics}
C = {students who study chemistry}

The Venn diagram shows numbers of students.



(i) Find the number of students who study physics or chemistry.

..... [1]

(ii) Find $\mathrm{n}(P \cap C')$.

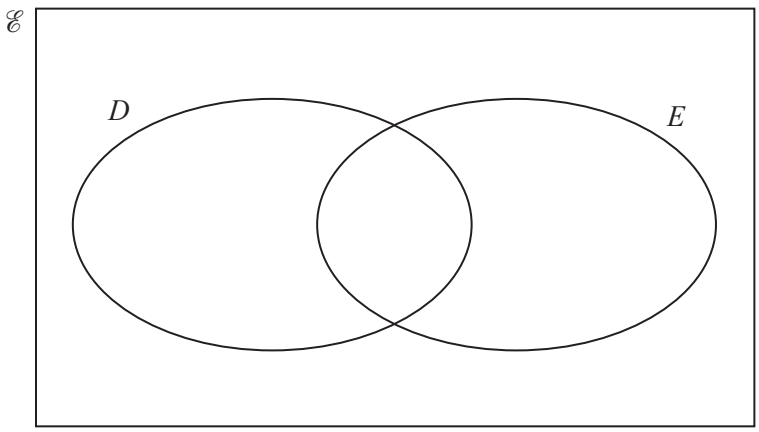
..... [1]

(iii) A student who does not study chemistry is chosen at random.

Find the probability that this student does not study physics.

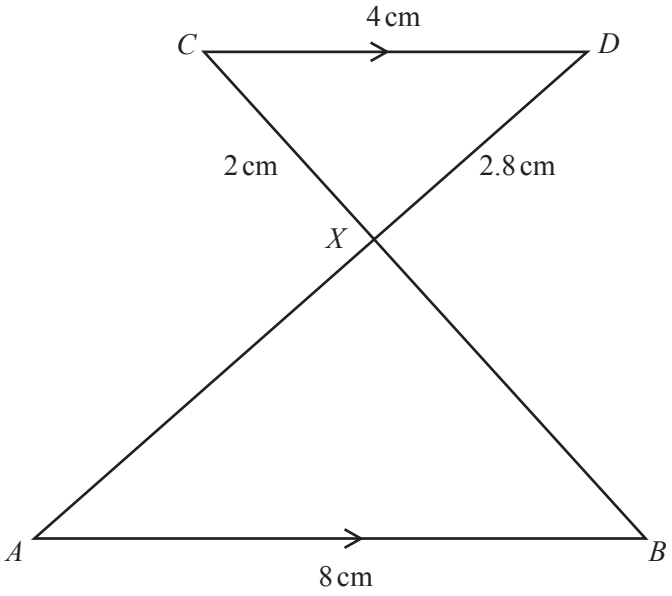
..... [1]

(b) On the Venn diagram below, shade the region $D \cup E'$.



[1]

24



NOT TO SCALE

In the diagram, AB and CD are parallel.
AD and BC intersect at X.
$AB = 8$ cm, $CD = 4$ cm, $CX = 2$ cm and $DX = 2.8$ cm.

(a) Complete this mathematical statement.

Triangle ABX is ..... to triangle DCX. [1]

(b) Calculate AX.

$AX =$ ..... cm [2]

(c) The area of triangle ABX is y cm^2.

Find the area of triangle DCX in terms of y.

..... cm^2 [1]

25 **(a)** Simplify. $(16x^{16})^{\frac{3}{4}}$

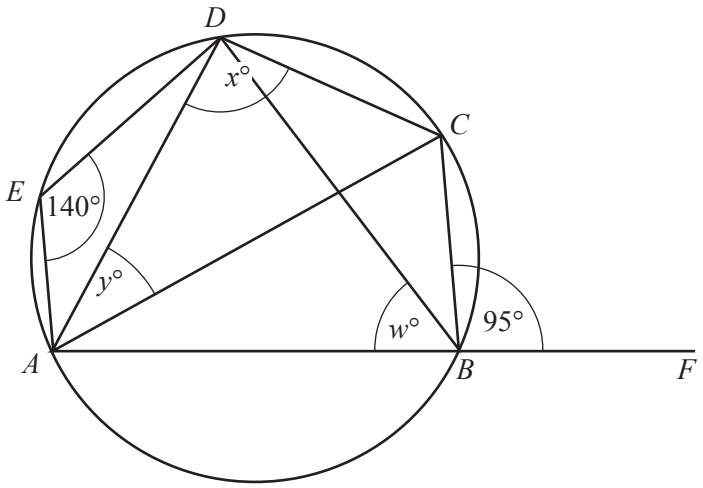
..... [2]

(b) $2p^{\frac{3}{2}} = 54$

Find the value of p.

$p =$ ..... [2]

26



NOT TO SCALE

A, B, C, D and E lie on the circle.
AB is extended to F.
Angle $AED = 140°$ and angle $CBF = 95°$.

Find the values of w, x and y.

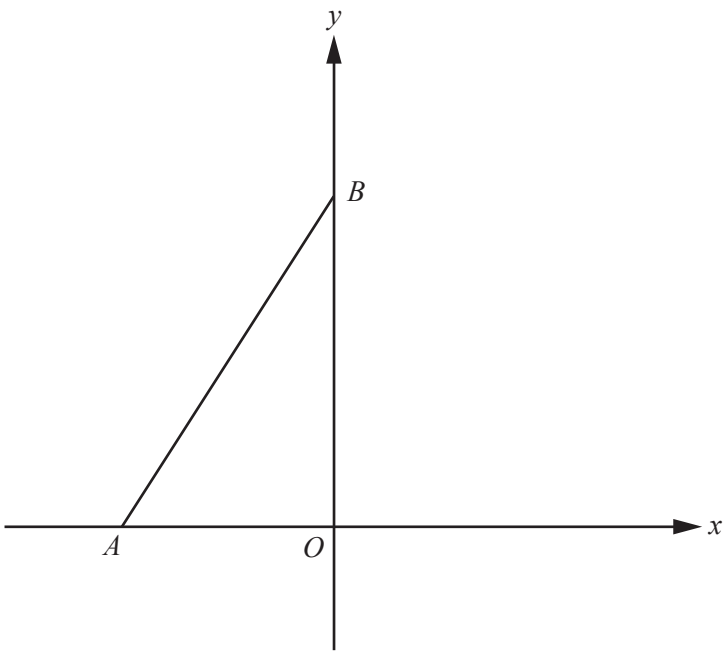
$w =$ .....

$x =$ .....

$y =$ ..... [5]

Question 27 is printed on the next page.

27



NOT TO SCALE

A is the point $(-2, 0)$ and B is the point $(0, 4)$.

(a) Find the equation of the straight line joining A and B.

..... [3]

(b) Find the equation of the perpendicular bisector of AB.

..... [4]