Cambridge Secondary 1 Checkpoint

Cambridge International Examinations
Cambridge Secondary 1 Checkpoint

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER			

8985052876

MATHEMATICS **1112/01**

Paper 1 **October 2017**

1 hour

Candidates answer on the Question Paper.

Additional Materials: Geometrical instruments
Tracing paper (optional)

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, graphs or rough working.
Do not use staples, paper clips, glue or correction fluid.

DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
NO CALCULATOR ALLOWED.

You should show all your working in the booklet.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 50.

This document consists of **15** printed pages and **1** blank page.

1 Write these decimals in order of size, starting with the smallest.

0.75 0.7 1.2 2.1 1.1

....
smallest largest

[1]

2 Solve the equation.

$3r + 7 = 34$

$r =$ ..... [2]

3 Tick (✓) the expression that is the same as $6 + 2 \times e$

$8e$	☐
$2 + 6 \times e$	☐
$2e + 6$	☐
$6 + e^2$	☐

[1]

4 Work out.

$28 \times 36 \div 18$

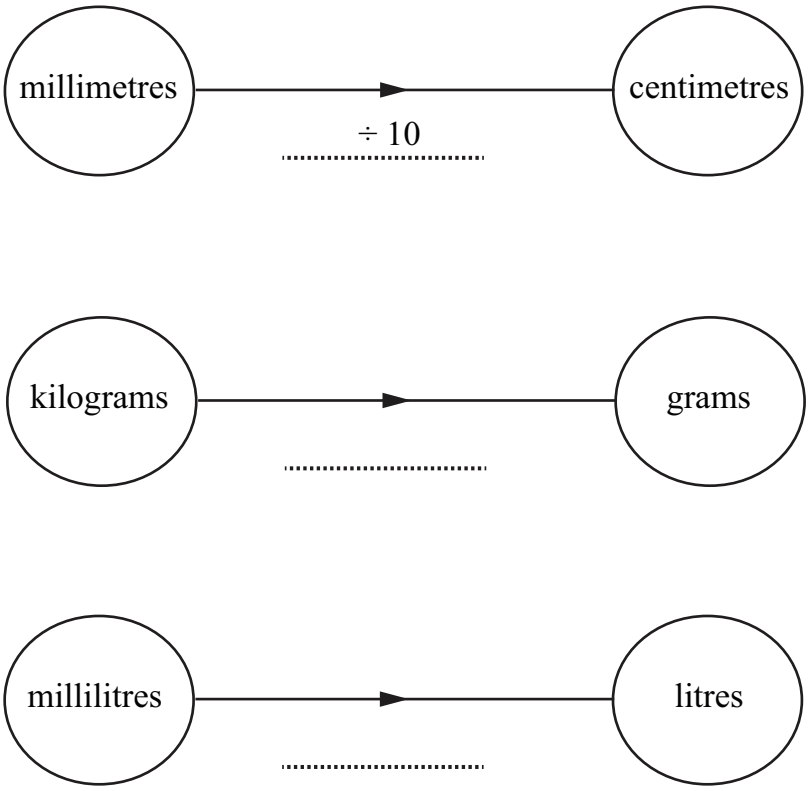
..... [1]

5 A pen costs p cents.

Write down a formula for the cost, C cents, for n pens.

$C =$ ..... [1]

6 **(a)** Complete the gaps to show the relationship between the units.
The first one has been done for you.



[1]

(b) Convert 856 metres to kilometres.

..... km [1]

7 Mike is investigating this hypothesis.

Students spend more time doing homework as they get older.

Tick (✓) the **two** variables Mike **must** collect information about to investigate this hypothesis.

Name of student	☐
Age of student	☐
Favourite subject	☐
Time spent doing homework	☐

[1]

8 Here are the descriptions of two numbers.

The smallest multiple of 5 greater than 1000

The largest multiple of 9 with three digits

Work out the **difference** between these two numbers.

..... [1]

9 Work out.

(a) $\frac{7}{10} + \frac{1}{5}$

..... [2]

(b) $5\frac{1}{4} - 2\frac{1}{3}$

..... [2]

10 Here is a number fact.

$137 \times 14 = 1918$

Use the number fact to work these out.

(a) 137×0.14

..... [1]

(b) $1918 \div 13.7$

..... [1]

11 A right-angled triangle has sides of length 5 cm, 12 cm and 13 cm.

Draw a ring around the length of the hypotenuse for this triangle.

5 cm 12 cm 13 cm 30 cm

[1]

12 Some fractions are equivalent to **recurring** decimals.

Example: $\frac{1}{3} = 0.333\ldots$

Some fractions are equivalent to **terminating** decimals.

Example: $\frac{3}{4} = 0.75$

Write each of the following fractions in the correct position in the table.

$\frac{2}{9}$ $\frac{2}{5}$ $\frac{7}{20}$ $\frac{5}{6}$ $\frac{1}{30}$

Recurring decimals	Terminating decimals
$\frac{1}{3}$	$\frac{3}{4}$

[2]

13 Add together 5 and –1 .....

Add together –2 and –3 .....

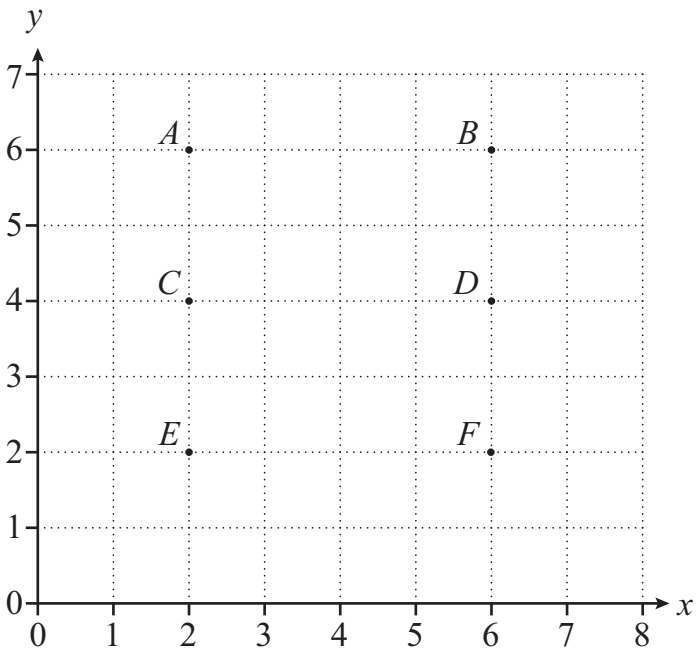
Subtract –3 from 5 ..... [2]

14 Draw rings around **all** the cube numbers.

6 8 9 36 64

[1]

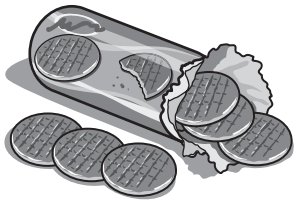
15 Six points are shown on the coordinate grid.



Write down the coordinates of the point where the **perpendicular bisector** of AC meets the **bisector of angle** BFE.

(....., ...) [2]

16 Lily and Jamila count the number of broken biscuits they find in packets of biscuits.
Lily opens 50 packets of biscuits.
Jamila opens 100 packets of biscuits.
The number of broken biscuits they each find is shown in the table.



Number of broken biscuits in a packet	**Lily's frequencies**	**Jamila's frequencies**
0	31	73
1	15	22
2 or more	4	5
Total	**50**	**100**

Lily and Jamila each use their own results to estimate the probability that the number of broken biscuits in a packet is 0

(a) Complete the table to show their estimates.

Lily's estimate	Jamila's estimate

[2]

(b) Tick (✓) the name of the person whose estimate is likely to be more accurate.

Lily ☐ Jamila ☐

Give a reason for your answer.

.....

..... [1]

17 Work out.

$$360 \div (5 \times 2^2 - 10)$$

..... [2]

18 16 can be written as a power of 2

$$16 = 2^4$$

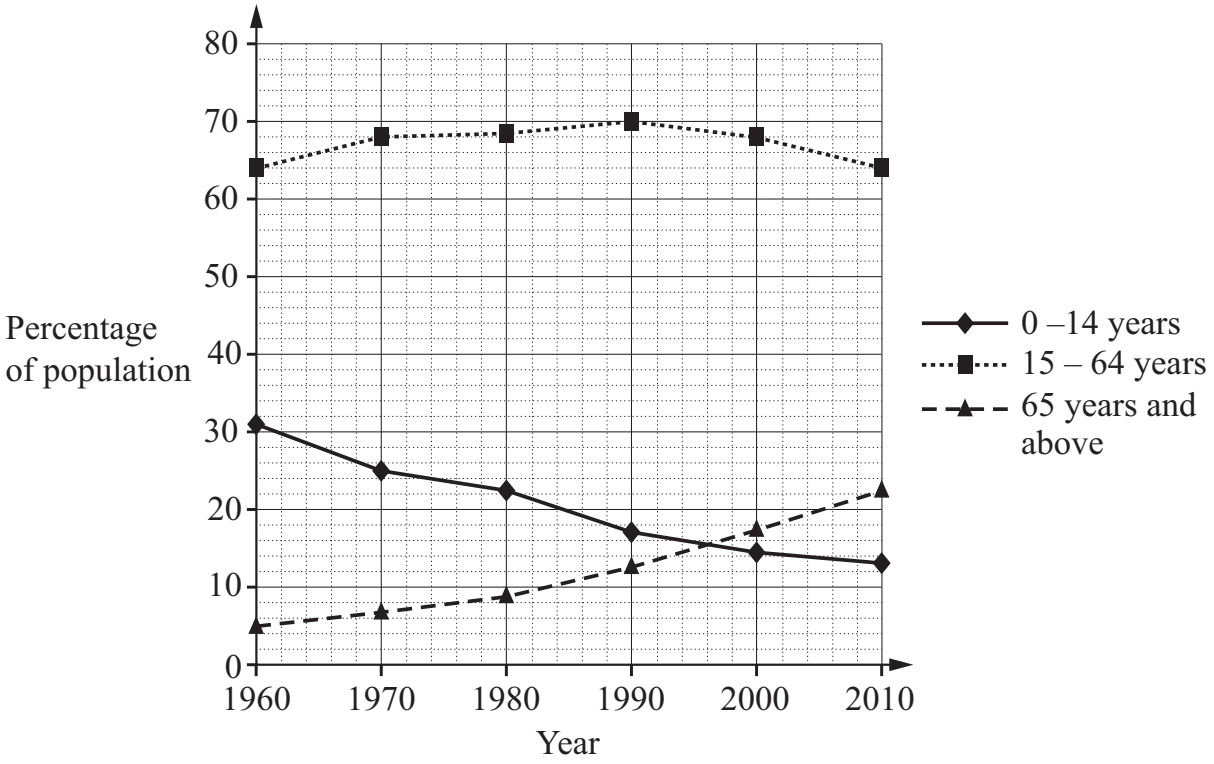
(a) Write 1 as a power of 2

..... [1]

(b) Write $\frac{1}{8}$ as a power of 2

..... [1]

19 The diagram shows information about the ages of people living in a country between the years of 1960 and 2010



(a) People in this country are living longer than they used to.

Write down how the graph shows evidence for this.

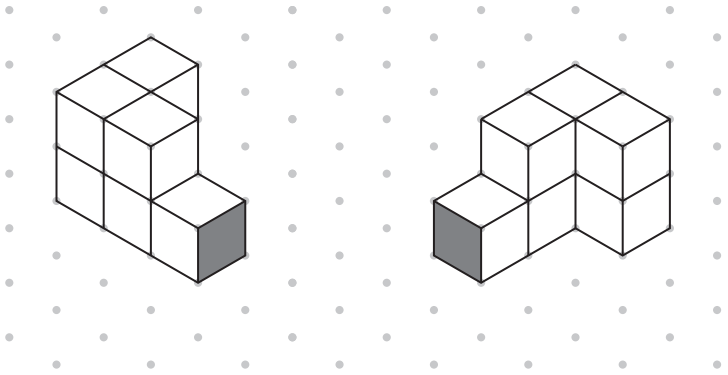
.....

..... [1]

(b) Estimate the year when the percentage of people aged 65 years and above was first greater than the percentage of people aged 0 – 14 years.

..... [1]

20 Here are two drawings of the **same** shape on isometric paper.



One face of the shape is shaded.
The shape is made from centimetre cubes.

Find the number of centimetre cubes used to make the shape.

..... [1]

21 Write a number in the box to make this calculation correct.

$$23 + 4 \times \square = 51$$

[1]

22 Write down the value of

$$2.3^2 - (-2.3)^2$$

..... [1]

23 The nth term of a sequence is $\frac{n(n+1)}{2}$

Show that the sum of the fifth term and the sixth term is a square number.

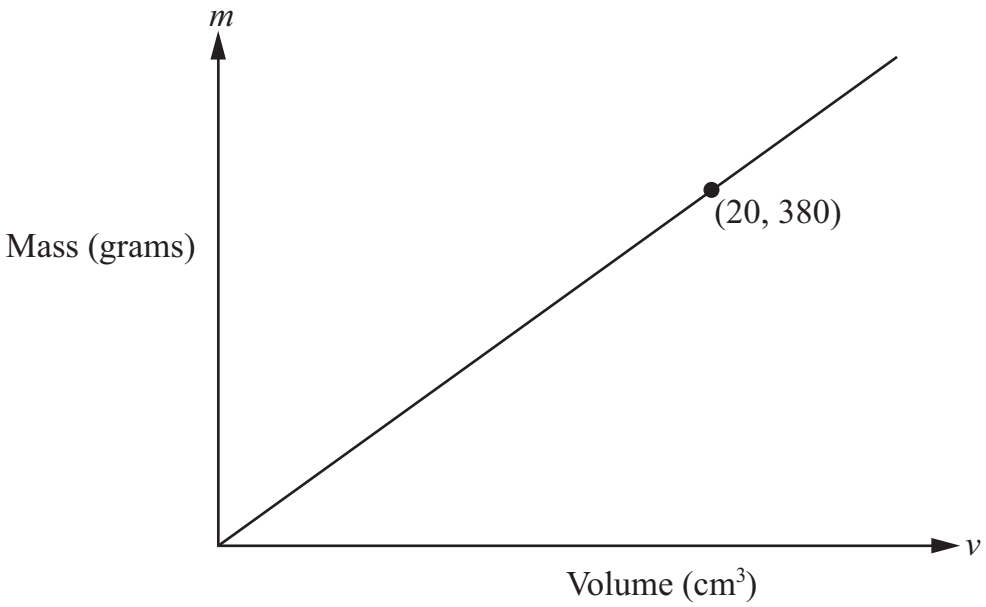
[2]

24 In an exam $\frac{2}{5}$ of the students get grade A.
35% of the students get grade B.
The rest of the students get grade C.
10 students get grade C.

Work out the number of students who get **grade A**.

..... [3]

25 The diagram shows the relationship between the mass (m grams) of a block of gold and its volume (v cm^3).



A block with a volume of 20 cm^3 has a mass of 380 g.

(a) Complete the equation connecting m and v.

$m =$ ☐ v

[1]

(b) Work out the mass of a block of gold with a volume of 12 cm^3.

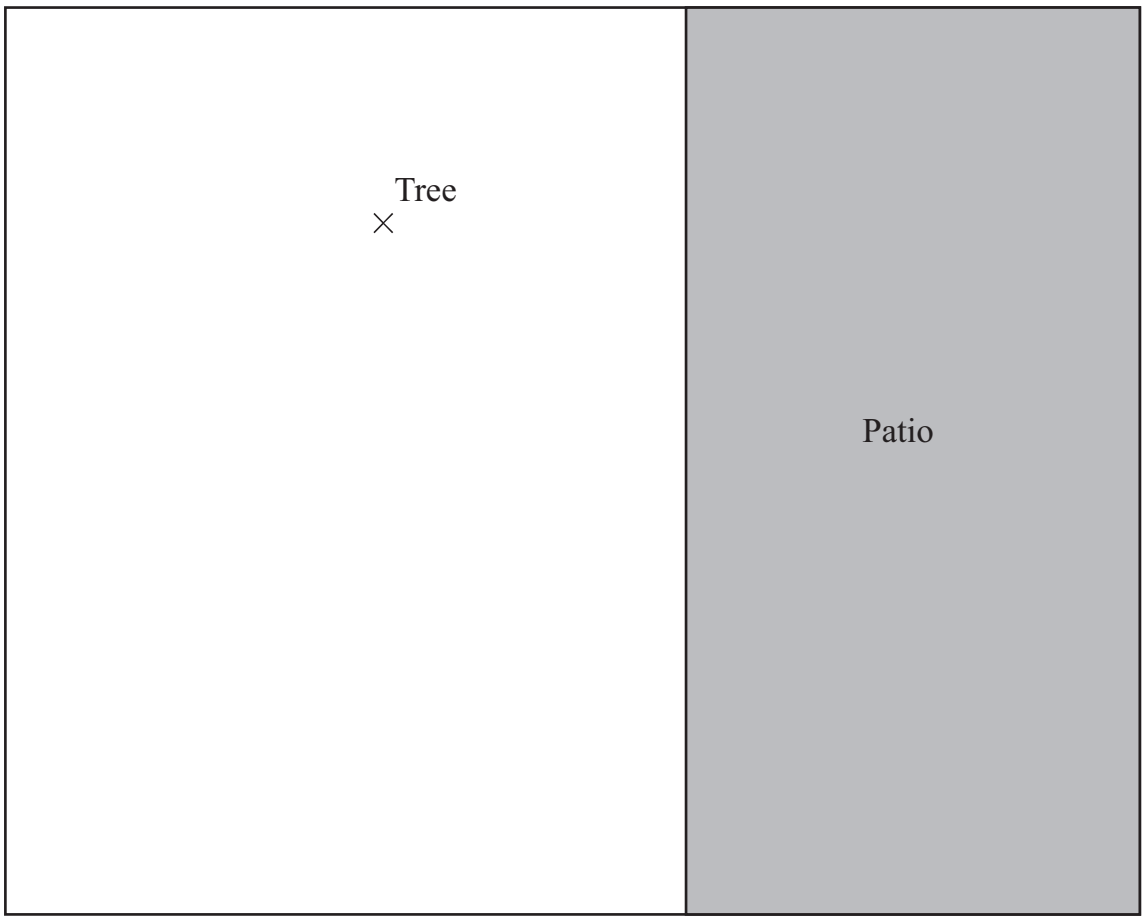
..... g [1]

26 Write as a single fraction.

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

..... [1]

27 The diagram shows a scale drawing of Rajiv's garden.



Scale: 1 cm = 2 metres

Rajiv wants to put a seat in his garden.

He wants the seat to be:

- more than 4 metres from the patio,
- more than 8 metres from the tree (marked ×).

Show clearly on the diagram the region where Rajiv can put his seat.
Label the region R.

[3]

28 Solve these simultaneous equations.

$m + 3n = 1$
$2m - n = 16$

Use an algebraic method to work out your answer.

$m =$ .....

$n =$ ..... [3]

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