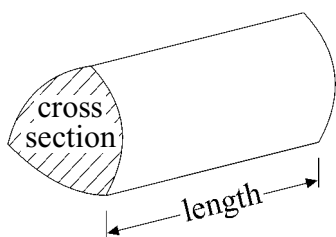**GCSE Mathematics (Linear) 1380**

Formulae: Higher Tier
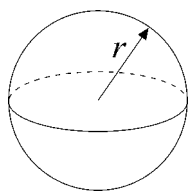
You must not write on this formulae page.
Anything you write on this formulae page will gain NO credit.

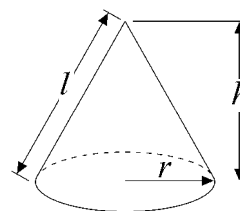**Volume of a prism** = area of cross section × length

Volume of sphere $= \frac{4}{3}\pi r^3$

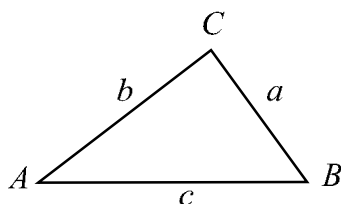**Surface area of sphere** $= 4\pi r^2$

Volume of cone $= \frac{1}{3}\pi r^2 h$

Curved surface area of cone $= \pi r l$

In any triangle ABC

The Quadratic Equation
The solutions of $ax^2 + bx + c = 0$
where $a \neq 0$, are given by

$$x = \frac{-b \pm \sqrt{(b^2 - 4ac)}}{2a}$$

Sine Rule $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

Cosine Rule $a^2 = b^2 + c^2 - 2bc \cos A$

Area of triangle $= \frac{1}{2}ab \sin C$

N37834A0228

Write your answers in the spaces provided.

You must write down all stages in your working.

1.

Diagram **NOT** accurately drawn

5 cm

8 cm
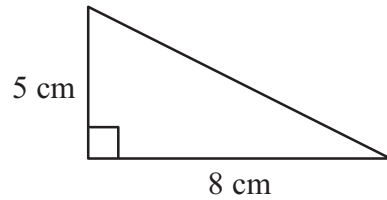
Work out the area of this right-angled triangle.

.... cm^2

(Total 2 marks)

2. A spinner can land on red or blue or pink.
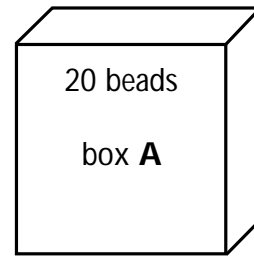The table shows the probabilities that the spinner will land on red or on blue.

Colour	red	blue	pink
Probability	0.58	0.30	

Work out the probability that the spinner will land on pink.

....

(Total 2 marks)

3. There are 20 beads in box **A**.

20 beads

box **A**

In box **B** there are twice as many beads as in box **A**.
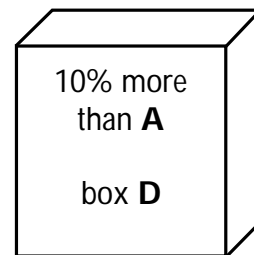
twice as
many as **A**

box **B**
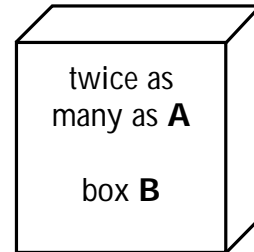
In box **C** there are $\frac{3}{4}$ of the number of beads as in box **A**.

$\frac{3}{4}$ of **A**

box **C**
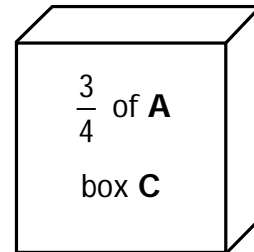
In box **D** there are 10% **more** beads than in box **A**.

10% more
than **A**

box **D**

Work out the **total** number of beads in the four boxes.

.... beads

(Total 4 marks)

N37834A0428

4. Here is a list of ingredients to make melon sorbet for **6** people.

Melon Sorbet
for 6 people

800 g melon
4 egg whites
$\frac{1}{2}$ lime
100 g caster sugar

Terry makes melon sorbet for 18 people.

(a) Work out how much caster sugar he uses.

.... g
(2)

Hedley makes melon sorbet.
He uses 2 limes.

(b) Work out how many people he makes melon sorbet for.

....
(2)

(Total 4 marks)

Q4

5.
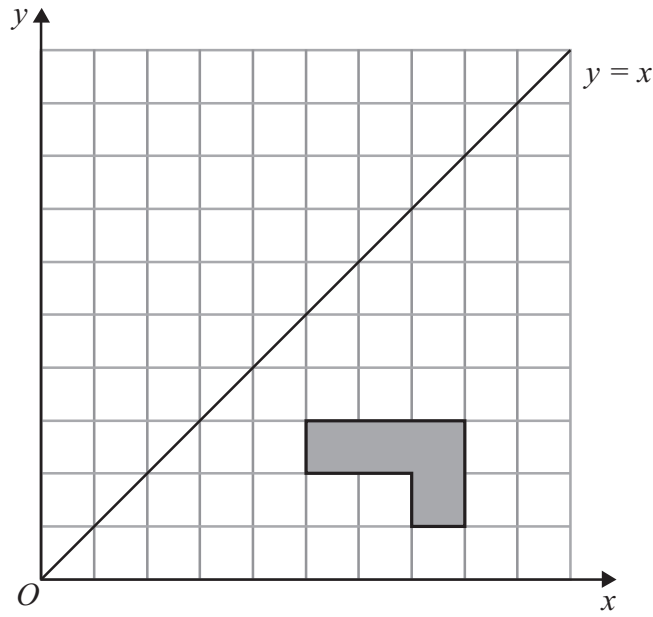
(a) Reflect the shaded shape in the line $y = x$.

(2)
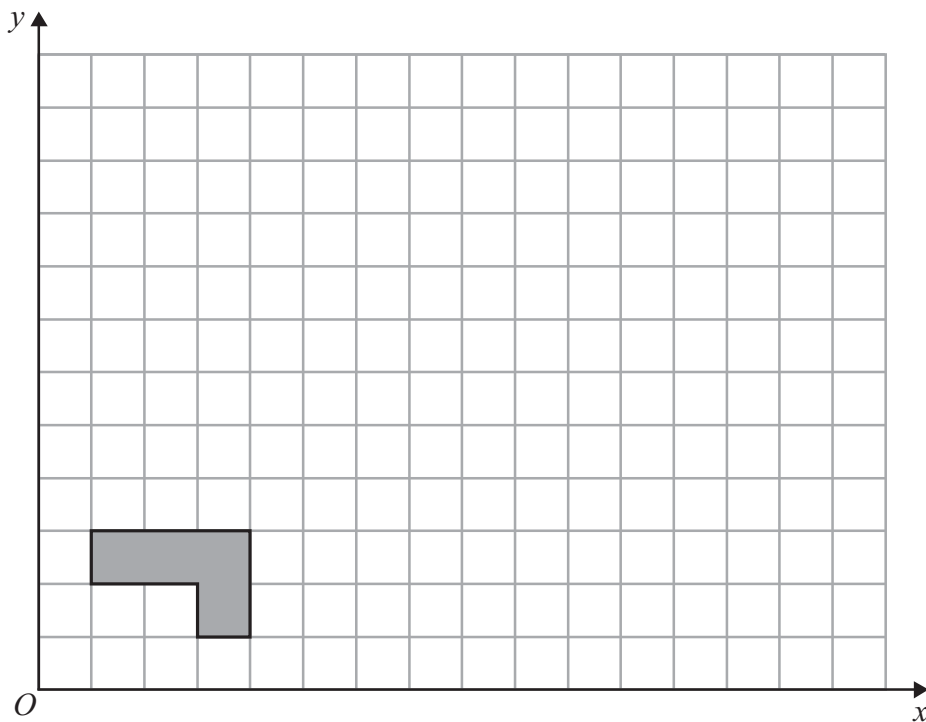
(b) On the grid, enlarge the shaded shape by a scale factor of 3, centre O.

(3)

(Total 5 marks)

N37834A0628

6. (a) Simplify $7x + 2y - x + 3y$

....
(2)

(b) Solve $2x + 3 = 10$

$x = $ ....
(2)

(c) Simplify

(i) $c^5 \times c^6$

....

(ii) $e^{12} \div e^4$

....
(2)

(Total 6 marks)

7. Noah got 8 out of 20 in a test.

Write 8 out of 20 as a percentage.

.... %

(Total 2 marks)

8. The table shows some information about the ages, in years, of 60 people.

Age (in years)	Frequency
0 to 9	6
10 to 19	13
20 to 29	12
30 to 39	9
40 to 49	7
50 to 59	3
60 to 69	10

(a) Write down the modal class.

....

(1)

Luke says

'The median lies in the class 30 to 39'

Luke is wrong.

(b) Explain why.

....

....

(1)

Age (years)
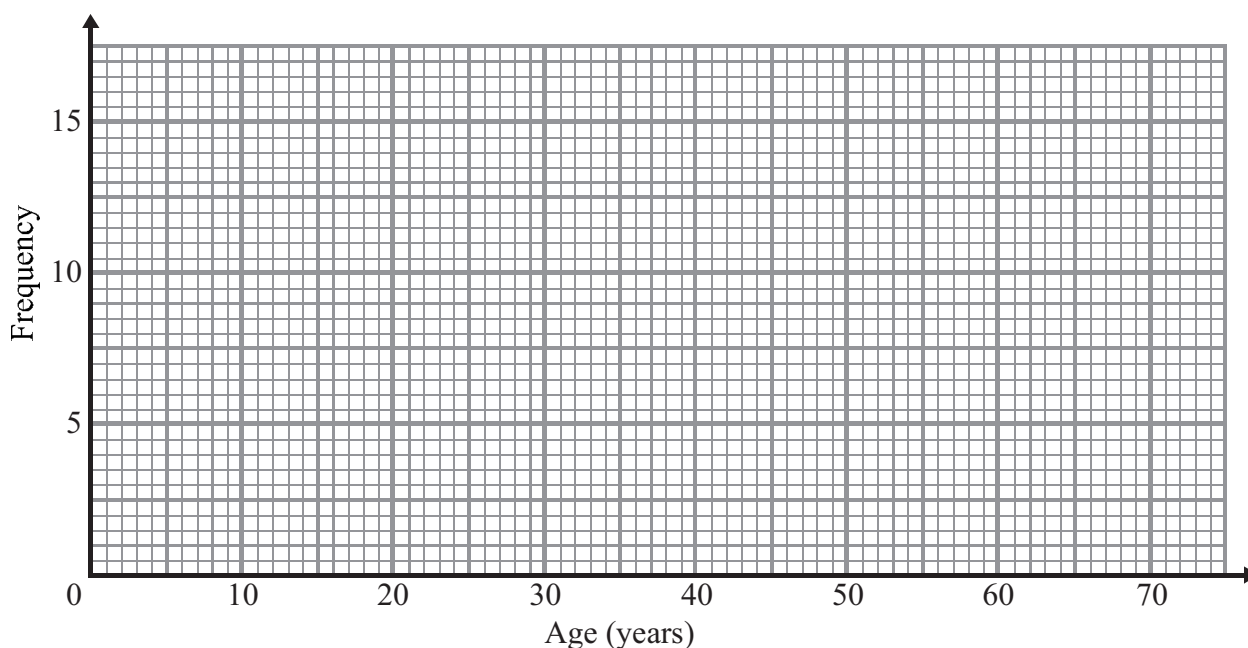
(c) On the grid, draw a frequency polygon for the information in the table.

(2)

(Total 4 marks)

N37834A0828

9. There are 100 teachers at Maria's school.
Maria found out the age of each teacher.

The table gives information about her results.

Age (*A* years)	Frequency
$20 < A \leqslant 30$	26
$30 < A \leqslant 40$	35
$40 < A \leqslant 50$	21
$50 < A \leqslant 60$	12
$60 < A \leqslant 70$	6

(a) Complete the cumulative frequency table.

Age (*A* years)	Cumulative Frequency
$20 < A \leqslant 30$	26
$20 < A \leqslant 40$	
$20 < A \leqslant 50$	
$20 < A \leqslant 60$	
$20 < A \leqslant 70$	

(1)

(b) On the grid opposite, draw a cumulative frequency graph for your table.

(2)

(c) Use your graph to find an estimate for the median age.

.... years

(1)

(d) Use your graph to find an estimate for the number of these teachers
who are **older** than 56 years old.

....

(2)

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Cumulative
frequency

Age (*A* years)
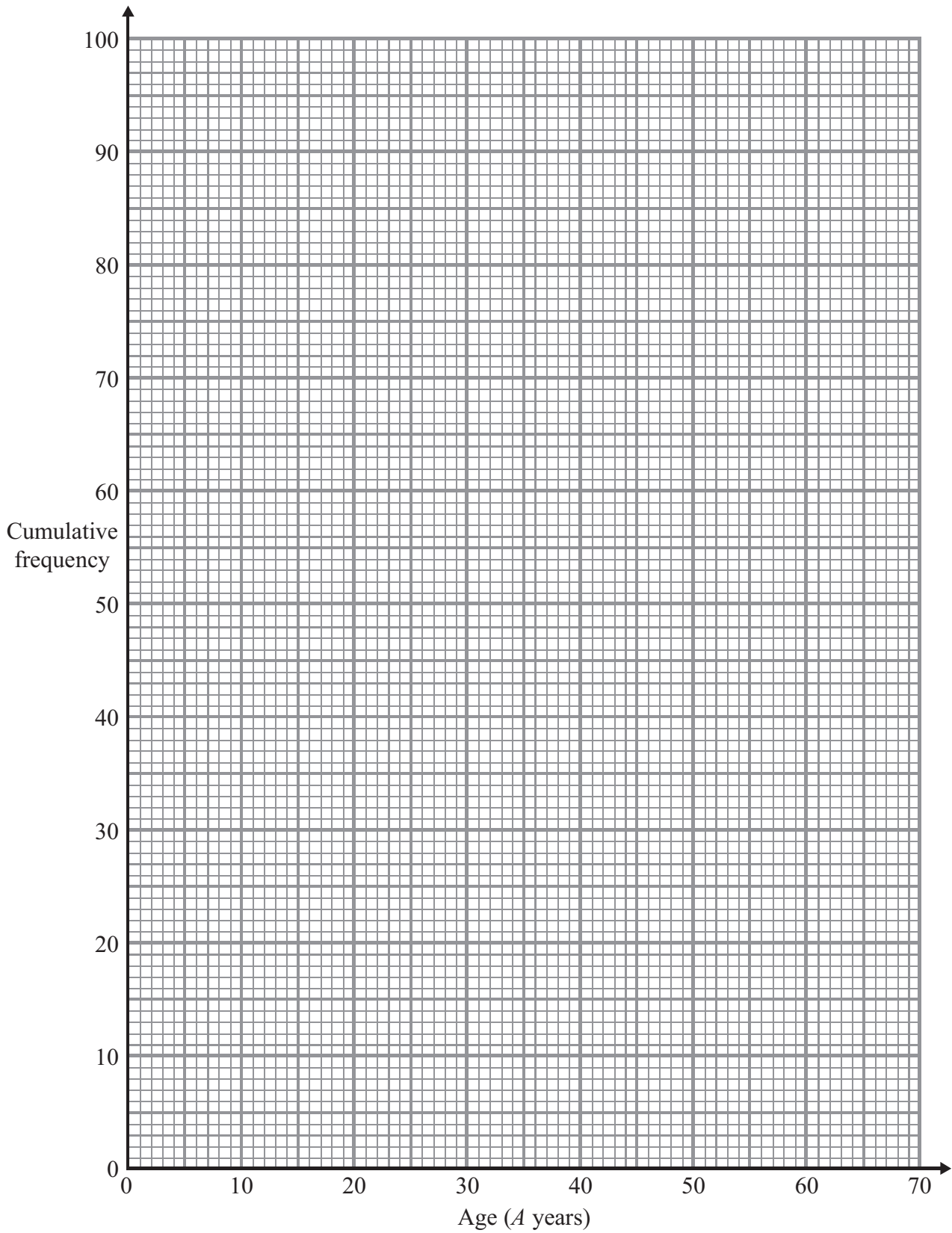
(Total 6 marks)

10.

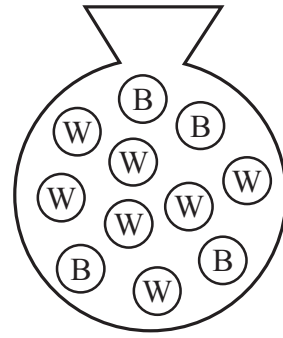There are 11 buttons in a bag.

       7 buttons are white.
       4 buttons are black.

Harley takes a button at random from the bag, and keeps it.

She now takes another button at random from the bag.

Work out the probability that Harley takes a button of each colour.

....
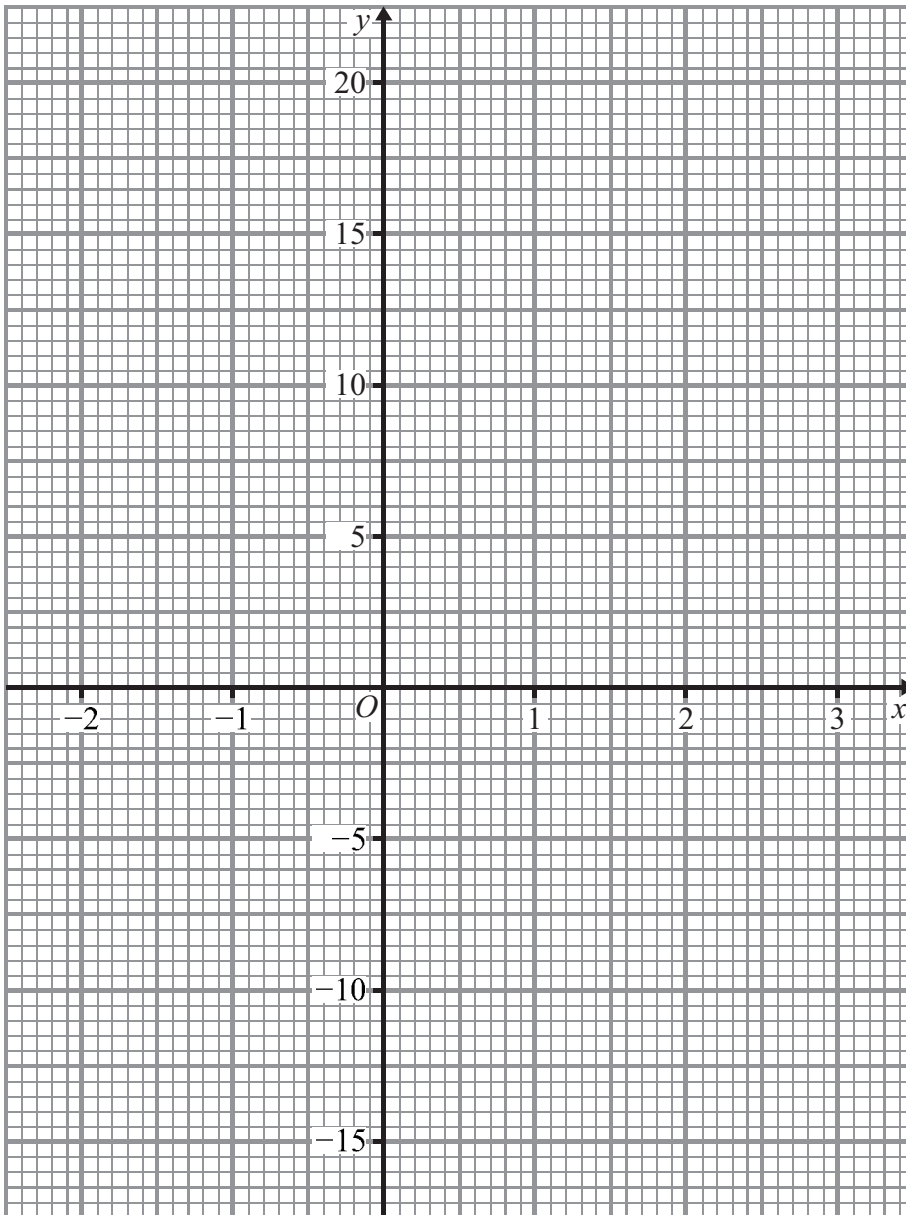**(Total 3 marks)**

11.

(a) Complete the table of values for $y = x^3 - 7$

x	-2	-1	0	1	2	3
y		-8				20

(2)

(b) On the grid, draw the graph of $y = x^3 - 7$ for values of x from -2 to 3
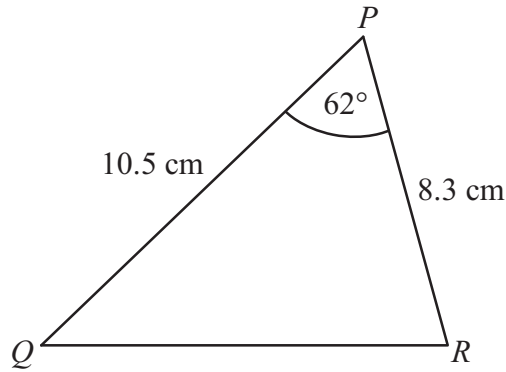

(2)

(Total 4 marks)

N37834A01928

12.

Diagram **NOT** accurately drawn

In triangle *PQR*,

PQ = 10.5 cm,
PR = 8.3 cm.
angle *QPR* = 62°.

(a) Calculate the area of triangle *PQR*.
Give your answer correct to 3 significant figures.

.............................cm²

(2)

(b) Calculate the length of *QR*.
Give your answer correct to 3 significant figures.

...............................cm

(3)

Q28

(Total 5 marks)

TOTAL FOR PAPER: 100 MARKS

END