Name ..... Class .....

Calculator Crossover Paper 8

GCSE Mathematics · Foundation and Higher

40 marks · 45 minutes · Calculator

1 Ffion has a bottle that contains 1.75 litres of orange juice.

She wants to pour 9 glasses of juice.

Each glass holds 220 ml of juice.

Ffion does not have enough juice.

How much more juice does she need?

Give your answer in millilitres.

..... ml **(3)**

[Question 1: 3 marks]

2 A sheet of paper is 9.4×10^{-3} cm thick.

(a) Write 9.4×10^{-3} as an ordinary number.

..... **(1)**

(b) A printer stacks 3.65×10^{5} of these sheets in a pile.

Work out the height of the pile.

Give your answer in metres, in standard form.

..... m **(2)**

[Question 2: 3 marks]

3 *ABC* is an isosceles triangle with *AB* = *AC*.

BCD is a straight line.

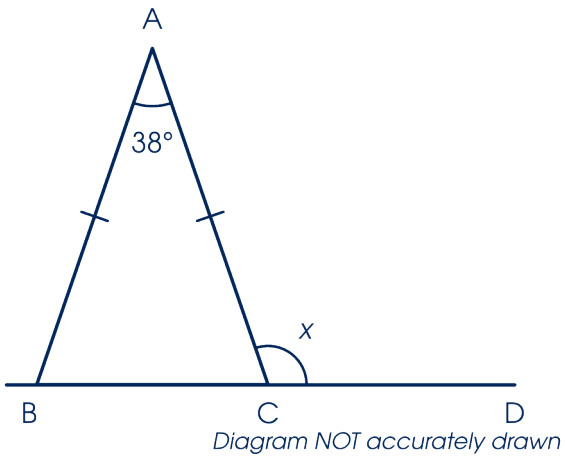


Diagram NOT accurately drawn

Work out the size of the angle marked *x*.

Give a reason for each stage of your working.

..... ° **(3)**

[Question 3: 3 marks]

4 (a) Solve $4.5x - 7 > 2x + 3.25$

..... **(2)**

(b) Write down the smallest integer that satisfies $4.5x - 7 > 2x + 3.25$

..... **(1)**

[Question 4: 3 marks]

5 Here are the first four terms of an arithmetic sequence.

4.6 7.4 10.2 13.0

(a) Find an expression, in terms of n, for the nth term of this sequence.

..... **(2)**

(b) Find the first term of the sequence that is greater than 100.

..... **(2)**

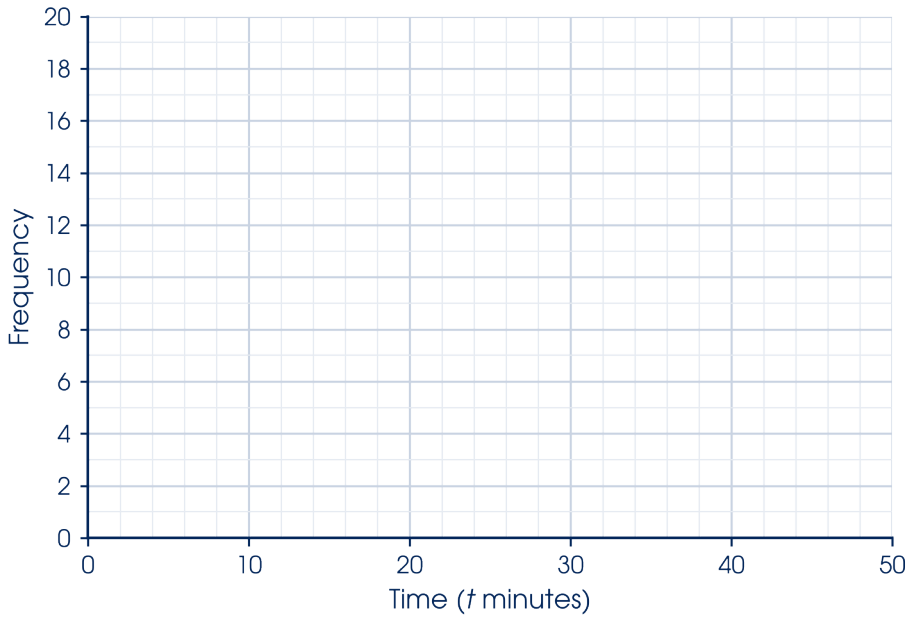
[Question 5: 4 marks]

6 50 people each completed a puzzle.

The table gives information about the time, t minutes, each person took.

Time (t minutes)	Frequency
$0 < t \leq 10$	4
$10 < t \leq 20$	11
$20 < t \leq 30$	17
$30 < t \leq 40$	12
$40 < t \leq 50$	6

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



(2)

(b) Write down the modal class.

.....

(1)

[Question 6: 3 marks]

7 Daniel invests £4200 in a savings account for 6 years.
The account pays 3.4% compound interest per year.
Work out the total amount of interest Daniel earns in the 6 years.
Give your answer correct to the nearest penny.

£ ..... **(3)**

[Question 7: 3 marks]

8 Ravi makes concrete by mixing cement, sand and gravel.
He mixes them in the ratio cement : sand : gravel = 1 : 2 : 4 by mass.
Ravi has 30 kg of cement, 50 kg of sand and 110 kg of gravel.
Work out the greatest mass of concrete Ravi can make.
You must show your working.

..... kg **(3)**

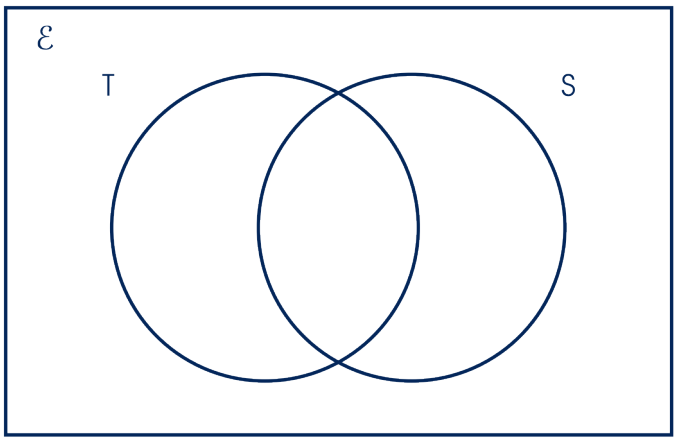
[Question 8: 3 marks]

9 There are 72 members in a sports club.

41 members play tennis.

30 members play squash.

13 members play neither tennis nor squash.



T = members who play tennis S = members who play squash

(a) Complete the Venn diagram.

(3)

(b) One of the members is chosen at random.

Find the probability that this member plays exactly one of the two sports.

..... **(1)**

[Question 9: 4 marks]

10 A tent pole of height 2.35 m stands vertically on horizontal ground.

A straight rope goes from the top of the pole to a peg in the ground.

The peg is 4.1 m from the foot of the pole.

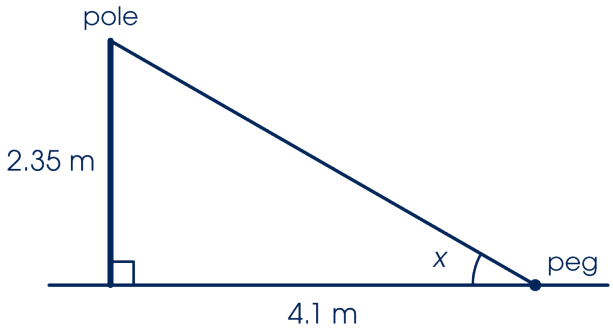


Diagram NOT accurately drawn

The rope is safe if the angle the rope makes with the ground, x, is between 25° and 35°.

Is the rope safe?

You must show your working.

.....

..... **(3)**

[Question 10: 3 marks]

11 $v^2 = u^2 + 2as$

(a) Make u the subject of the formula. (u is positive.)

..... **(2)**

(b) Work out the value of u when $v = 14.2$, $a = 3.5$ and $s = 12.6$

Give your answer correct to 3 significant figures.

$u =$ ..... **(2)**

[Question 11: 4 marks]

12 A chocolate maker makes solid chocolate cones.

Each cone has radius 3.2 cm and perpendicular height 11 cm.

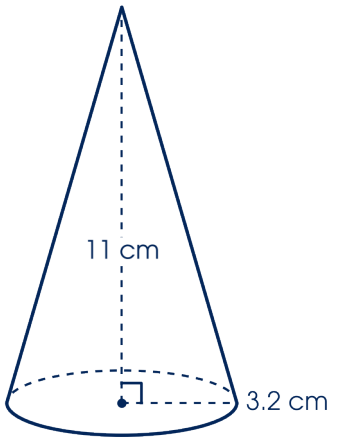


Diagram NOT accurately drawn

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

The chocolate maker has 2 litres of melted chocolate.

1 litre = 1000 cm^3

Work out the greatest number of chocolate cones that can be made.

..... **(4)**

[Question 12: 4 marks]

TOTAL FOR PAPER IS 40 MARKS