



General Certificate of Secondary Education
November 2022

Centre Number

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Candidate Number

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Mathematics

Unit M5 Paper 2
(With calculator)
Foundation Tier



[GMC52]

GMC52

THURSDAY 1 DECEMBER, 10.45am–11.45am

TIME

1 hour.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page. **You are provided with Foundation Tier Additional Support Materials for use with this paper.**

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page, on blank pages or tracing paper.

Complete in black ink only. **Do not write with a gel pen.**

Answer **all sixteen** questions.

All working should be clearly shown in the spaces provided. Marks may be awarded for partially correct solutions.

You **may** use a calculator for this paper.

INFORMATION FOR CANDIDATES

The total mark for this paper is 50.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 2.

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Formula Sheet

$$\text{Area of trapezium} = \frac{1}{2}(a + b)h$$



$$\text{Volume of prism} = \text{area of cross section} \times \text{length}$$



- 1 (a) Andy needs 17 packs of tiles.

Each pack costs £18.95

Andy estimates the cost of these tiles as

$$20 \times 20 = 400$$

Explain how this estimation shows the actual cost will be less than £400

Answer _____

_____ [1]

- (b) Mary uses 420 units of electricity.

Each unit costs 12p

She estimates the cost to be

$$400 \times 12 = \text{£}4800$$

What mistake does Mary make?

Answer _____

_____ [1]

- (c) Jordan orders 75 identical chairs for his restaurant.

The total cost is £4575

Jordan estimates the cost of each chair as

$$4800 \div 80 = 60$$

Why do you think that Jordan rounds 4575 to 4800?

Answer _____

_____ [1]

[Turn over



2 The first four square numbers are

1 4 9 16

The first four triangular numbers are

1 3 6 10

(a) Write down the next triangular number.

Answer _____ [1]

(b) 1 is both a square number and a triangular number.

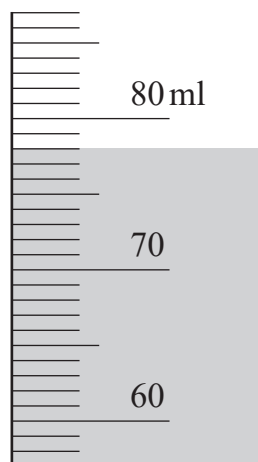
What is the next number that is both square and triangular?

Answer _____ [1]



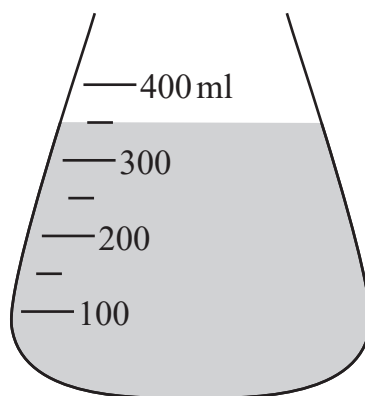
4 Write down the level of liquid in each of the following.

(a)



Answer _____ ml [1]

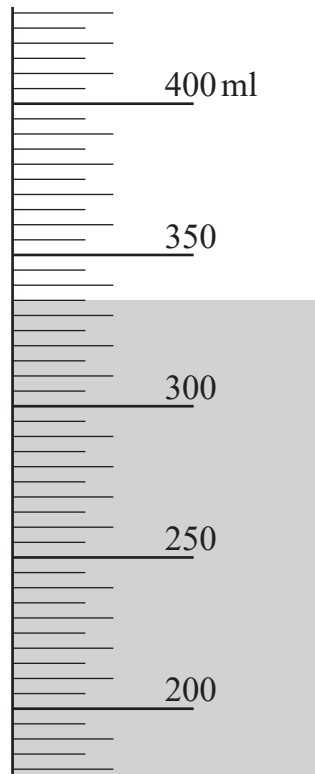
(b)



Answer _____ ml [1]



(c)



Answer _____ ml [1]

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[Turn over



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5

SET A

2

4

6

SET B

1

3

5

A card is taken at random from Set A.

A card is then taken at random from Set B.

The cards are used to make a two-digit number in the order AB.

(a) Write down the 9 possible two-digit numbers.

_____, _____, _____, _____, _____, _____, _____, _____, _____

[2]

(b) What is the probability that the two-digit number

(i) is even,

Answer _____ [1]

(ii) is a multiple of 3?

Answer _____ [1]



6 (a) Complete

1 kg is approximately equal to _____ lbs

[1]

(b) An airline has a strict carry-on case weight limit of 23 lbs.

Sonya's case weighs 12 kg.



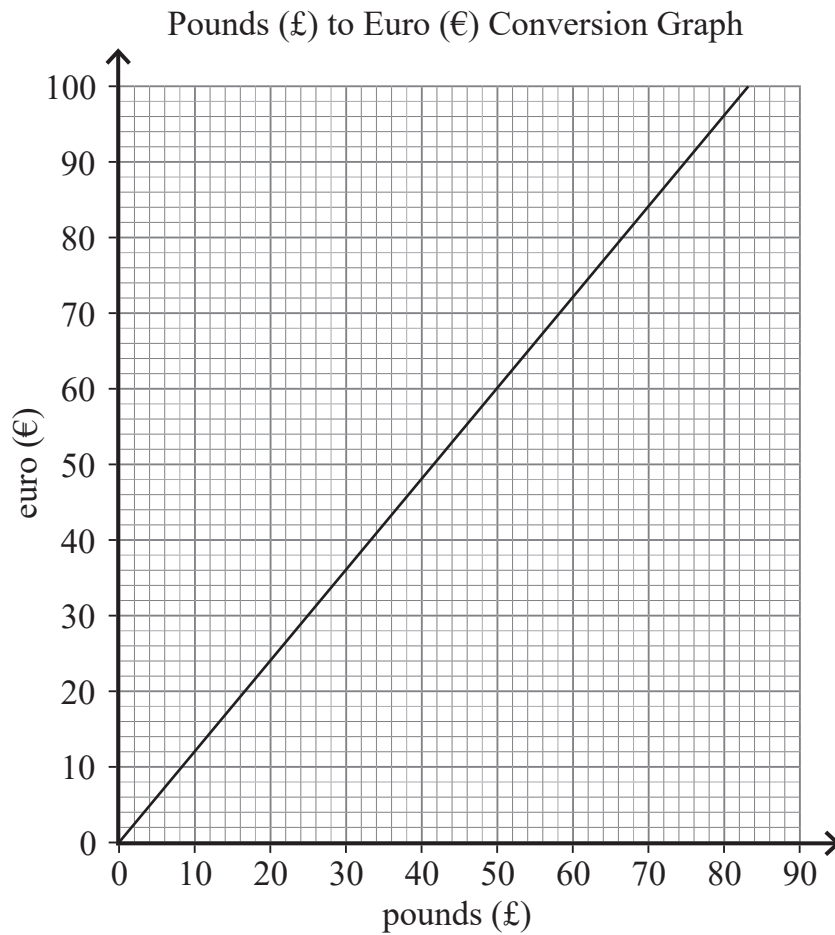
Will she be allowed to carry it on board? Give a reason.

Show your working clearly.

Answer _____ because _____ [2]



7 You can use the graph below to change between pounds (£) and euro (€).



(a) Change £70 into euro (€).

Answer € _____ [1]



(b) Bev buys a laptop for €420

How much is this in pounds (£)?

Show your method clearly.

Answer £ _____ [2]



8 Sue works in a hotel.

She needs to buy 100 napkins for a party.

Which of these companies, Table Dressing or Party Party, is cheaper and by how much for 100 napkins?

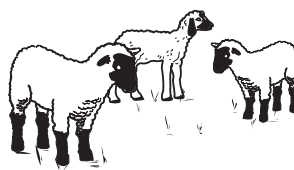
Table Dressing

Pack of 20 Napkins
£2.65



Party Party

Pack of 25 Napkins
£3.40



Answer _____ is cheaper by _____ [3]



- 9 In a group, the number of boys and girls with a certain eye colour is recorded as shown below.

	Boys	Girls
Brown eyes	10	8
Blue eyes	4	7
Green eyes	6	5

A child is chosen at random from this group of boys and girls.

What is the probability that the child is a girl with blue eyes?

Answer _____ [2]



10 Ticket prices for adults and children are shown for two rugby clubs.

Ulster	Clermont
Adults: £29 each	Adults: €32.50 each
Children: £14.95 each	Children: €17 each

The exchange rate is €1 = £0.83

At which rugby club is it more expensive to buy tickets for 2 adults and 1 child and how much more expensive is it?

State units with your answer.

Answer _____ is more expensive by _____ [4]



11 (a) The school is West of the church.

Complete the sentence by filling in the correct direction.

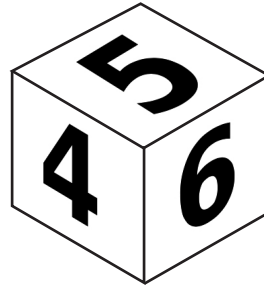
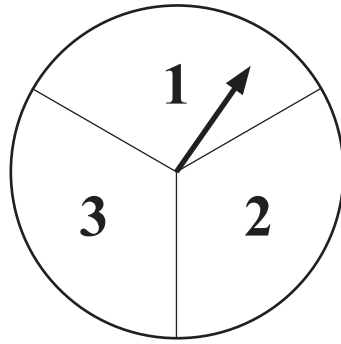
The church is _____ of the school. [1]

(b) The shop is North East of the station.

Complete the sentence by filling in the correct direction.

The station is _____ of the shop. [1]





The fair spinner shown is spun and a fair dice is thrown.

The number the spinner lands on is added to the number on the dice to give a total score.

(a) Complete the table of total scores.

		Dice					
		1	2	3	4	5	6
Spinner	1	2	3	4	5		
	2	3	4	5			
	3	4	5				

[2]

(b) What is the probability of a total score of 4?

Answer _____ [1]

(c) What is the probability of a total score **greater than or equal to 5**?

Answer _____ [1]





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13 Avril's recipe makes 16 tray bakes with the following ingredients.

Chocolate tray bakes	(to make 16 tray bakes)
crushed biscuits	240 g
butter	200 g
brown sugar	150 g
chocolate	240 g
condensed milk	400 g

Avril has 250 g of butter to make chocolate tray bakes.

She has enough of the other ingredients.

(a) How many tray bakes can she make?

Answer _____ [1]



(b) Complete the amounts needed for the other ingredients.

crushed biscuits _____ g

butter 250 g

brown sugar _____ g

chocolate _____ g

condensed milk _____ g

[3]





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When Susan goes to the cinema, she always buys only one item.

She buys a drink or popcorn or crisps or ice cream.

Some of the probabilities are shown.

Item	Probability
A drink	0.4
Popcorn	0.15
Crisps	
Ice cream	0.2

(a) Work out the probability that Susan buys crisps.

Answer _____ [2]

(b) Susan goes to the cinema 20 times.

Calculate how many times you would expect her to buy a drink.

Answer _____ [2]



15 Orange juice is mixed with water in the ratio 1:11 (orange juice:water).

How much orange juice and how much water make up 3 litres in total?

Give your answers in ml.

Answer Orange juice _____ ml

Water _____ ml

[3]



16 Adam, Bob and Carol play a coin game.

Two fair coins are tossed.

Adam wins if there are no heads shown.

Bob wins if there is one head shown.

Carol wins if there are two heads shown.

Is the game fair to all players? Calculate who is most likely to win.



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[2]

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Question Number	Marks
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Total Marks	
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Examiner Number

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Rewarding Learning

**General Certificate of Secondary Education
November 2022**

GCSE Mathematics

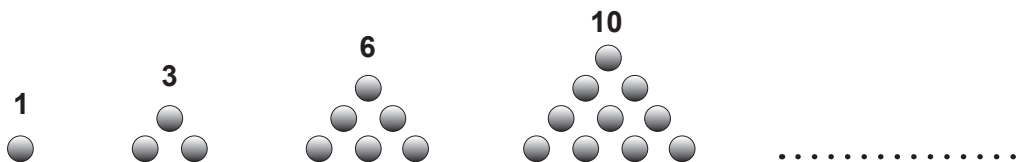
FOUNDATION TIER ADDITIONAL SUPPORT MATERIALS (For use in November 2022)

FOUNDATION TIER ADDITIONAL SUPPORT MATERIALS (November 2022)

Numbers

Highest Common Factor (HCF): The highest common factor is the largest number that divides evenly into two or more numbers, e.g. 4 is the HCF of 8 and 20

Triangular numbers – are a pattern of numbers which form triangles. Each number in the sequence adds a new row of dots to the triangle.



Trial and Improvement

This is a method of trying different values in an equation until you get a suitable solution (e.g. to 1 decimal place).

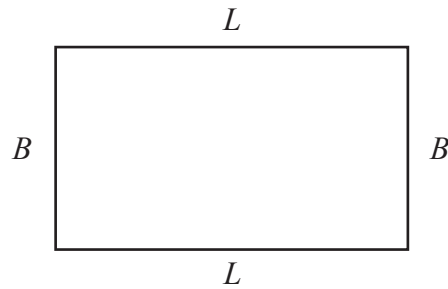
Range

The range of a set of data is the difference between the largest value and the smallest value in the data set.

Mean

The mean of a set of data is the sum of all the data values divided by the number of data values.

Area and Volume



The area of a rectangle is found by multiplying the length of the rectangle by the breadth.

$A = L \times B$ where A is area, L is length and B is breadth.

The area of a triangle is found by multiplying half the length of the base by the perpendicular height of the triangle.

$A = \frac{1}{2}bh$ where b is the base and h is the perpendicular height of the triangle.

The area of a circle is $A = \pi r^2$ where r is the radius of the circle.

The volume of a cuboid is found by multiplying the length by the breadth by the height of the cuboid.

$V = L \times B \times H$ where V is volume, L is length, B is breadth and H is height.

Angles

There are 180° on a straight line.

There are 180° inside a triangle.

An isosceles triangle is a triangle with 2 equal sides and 2 equal angles.

The sum of all the angles inside a polygon is given by $180(n - 2)$ where n is the number of sides in the polygon.

Pie Chart

In a pie chart, the total angle that corresponds to the entire data set is 360°

Probability

The sum of the probabilities of all outcomes equals 1

Compound Measures

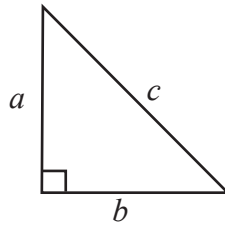
Average Speed = $\frac{\text{Distance}}{\text{Time}}$

Density = $\frac{\text{Mass}}{\text{Volume}}$

Pythagoras' Theorem

If a , b and c are the sides of a right angled triangle shown below, then

$$a^2 + b^2 = c^2$$



Midpoint of a line

If (x_1, y_1) and (x_2, y_2) are the end points of a line, then the coordinates of the midpoint M of the line are

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$