Rewarding Learning

Centre Number

Candidate Number

General Certificate of Secondary Education
January 2020

Mathematics

StemUp Model Solution

Unit M6 Paper 2
(With calculator)
Foundation Tier



[GMC62]

GMC62

WEDNESDAY 15 JANUARY, 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 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.

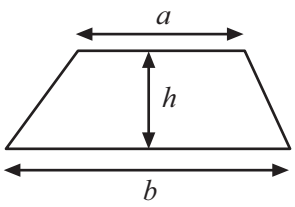
INFORMATION FOR CANDIDATES

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.

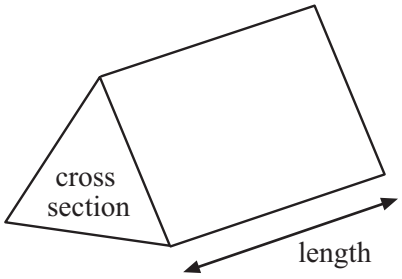
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Formula Sheet

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



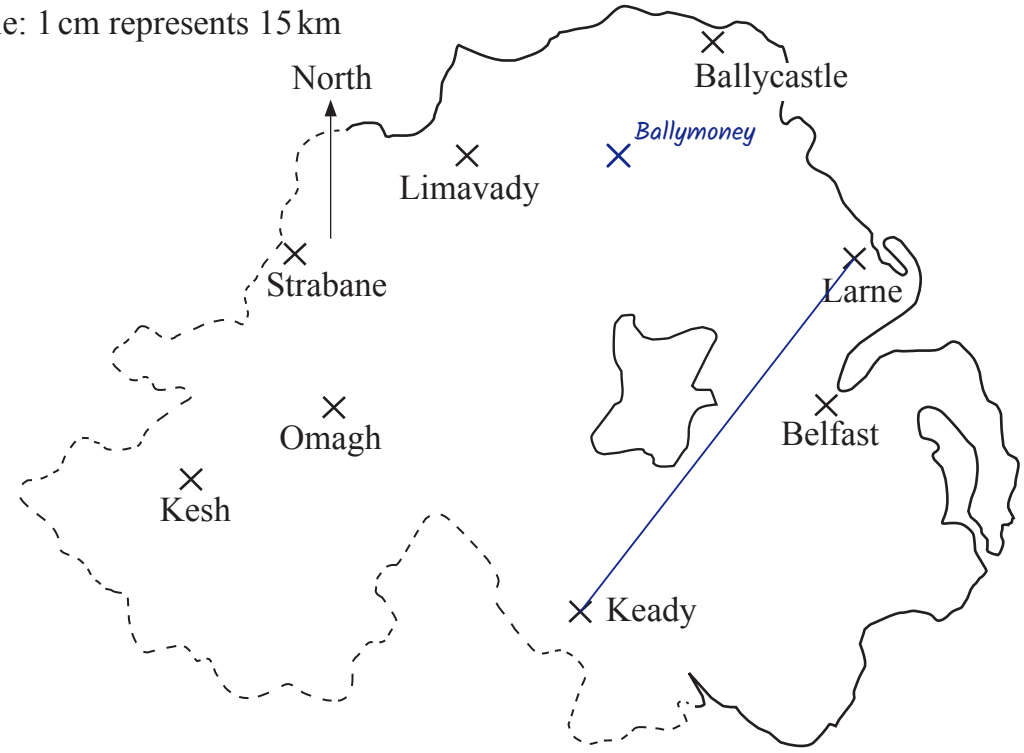
Volume of prism = area of cross section × length



12512

1 Some places in Northern Ireland are shown on the map.

Scale: 1 cm represents 15 km



(a) A bird flies directly from Keady to Larne.

What is the actual distance the bird flies?

5.9 cm × 15 = 88.5

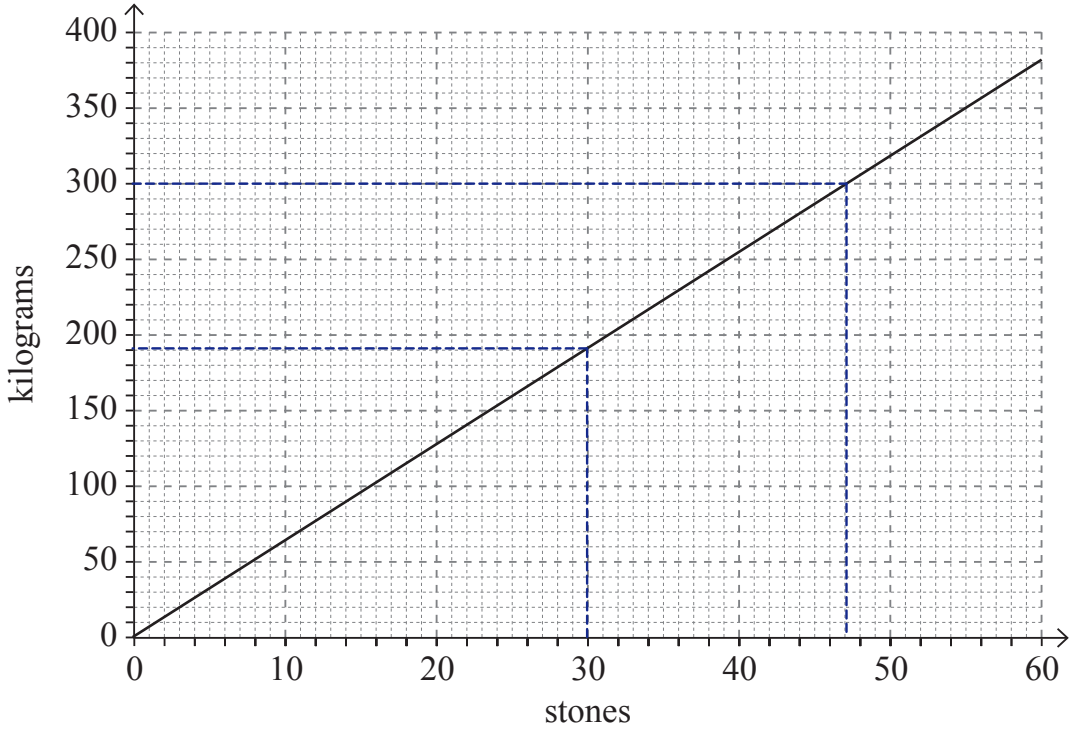
Answer 88.5 km [2]

(b) Ballymoney is 30 km due east of Limavady.
Mark Ballymoney on the map with an ×. [2]

30 ÷ 15 = 2 cm
2 cm due east of Limavady

[Turn over

2 You can use this graph to change between stones and kilograms.



(a) Use the graph to change 30 stones into kilograms.

Answer 191 kilograms [1]

(b) Nick orders 900 kilograms of topsoil.

Use the graph to change 900 kilograms into stones.

Show clearly how you used the graph.

900 kg is off the graph, so use 300 kg
300 kg = 47 stones (from graph)
900 = 3 × 300
3 × 47 = 141 stones

Answer 141 stones [2]

3 Change 40 miles into kilometres.

5 miles = 8 km
40 × 8/5 = 40 ÷ 5 × 8 = 8 × 8 = 64

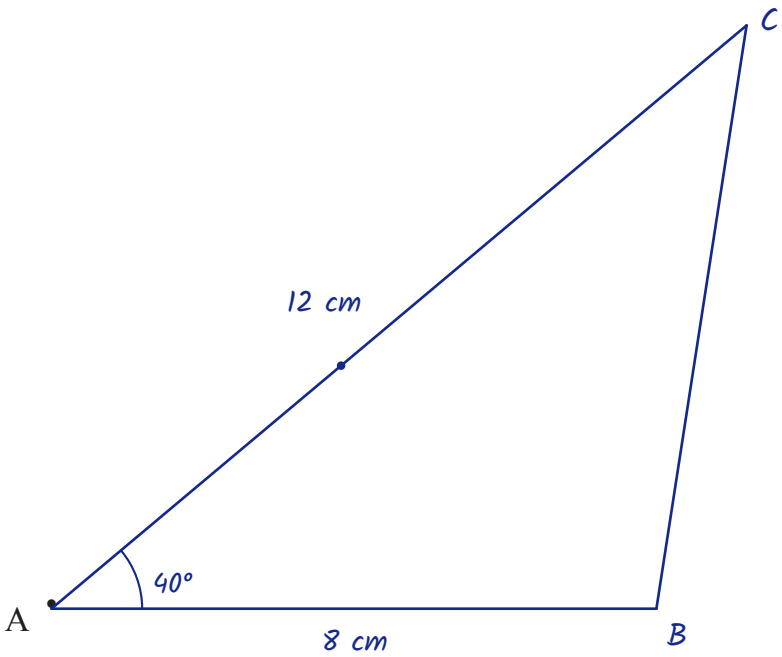
Answer 64 km [2]

[Turn over

4 **(a)** Sarah read the following instructions to draw a triangle:

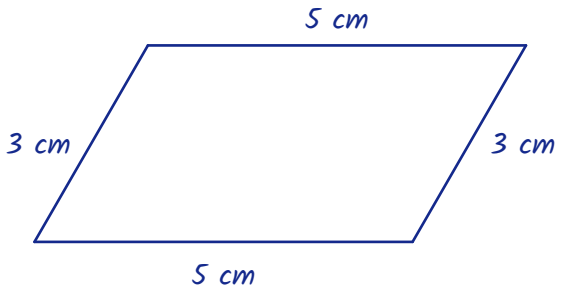
- Using a ruler, draw an 8 cm horizontal line from A.
- Label the other end B.
- Place a protractor at point A on the baseline AB and measure an angle of 40° Mark it with a dot.
- Draw a 12 cm line from A through your dot.
- Label the end of the line C.
- Join C to B.

Follow the instructions and draw Sarah's triangle below.



[3]

(b) Draw a parallelogram with sides of length 5 cm and 3 cm.

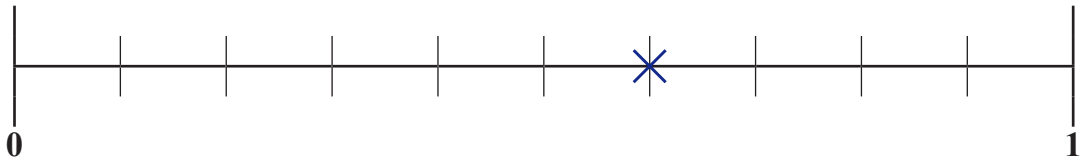


[2]

[Turn over

5 **(a)** The probability that it will rain tomorrow is 0.4

Mark with an X on the scale the probability that it will **not rain** tomorrow.



[1]

(b) A fair dice has the numbers 1, 2, 2, 4, 5 and 8 marked on its faces.

Explain clearly why the probability of getting a prime number is less than the probability of getting an even number.

Primes are 2, 2, 5 so P(prime) = 3/6

Evens are 2, 2, 4, 8 so P(even) = 4/6

3/6 is less than 4/6 [3]

6 Alan wants to take his family on a 13-night trip to Florida.

He must pay for four adults and three children.

His children will be charged at half the adult price.

He had planned to go at Christmas but now will go in April.

How much extra will he have to pay?

Show all working.



© Getty Images

FLORIDA HOLIDAY PRICES

Departs	7th Sept to 15th Nov	16th Nov to 17th Jan	18th Jan to 13th Mar	14th Mar to 5th June	6th June to 30th June
13 nights	1699	1899	2049	2149	1899

Prices shown are for adults in £s per person.

Christmas: adult £1899, child 1899 ÷ 2 = £949.50

April: adult £2149, child 2149 ÷ 2 = £1074.50

Christmas price = 4 × 1899 + 3 × 949.50

= 7596 + 2848.50 = £10 444.50

April price = 4 × 2149 + 3 × 1074.50

= 8596 + 3223.50 = £11 819.50

Extra = 11 819.50 − 10 444.50 = £1375

Answer £ 1375 [5]

[Turn over

7 Here are the first three terms of a number sequence.

90 84 78

(a) Write down the 8th term in this number sequence.

90, 84, 78, 72, 66, 60, 54, 48
(subtract 6 each time)

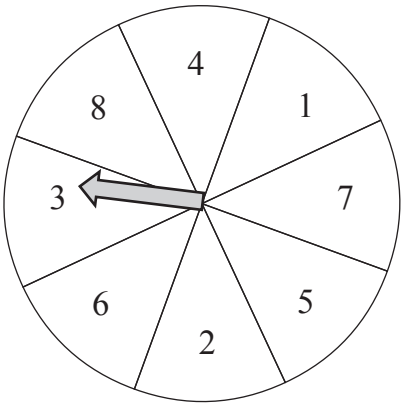
Answer 48 [1]

(b) Daniel says that 5 cannot be a term in this number sequence.

Is Daniel correct or not? Explain why.

Answer Correct, all terms are even (multiples of 6) and 5 is odd [1]

8



A spinner consists of a circular wheel which is divided into eight sectors numbered 1 to 8 as in the diagram.

When spun, the arrow will point to one of the sectors.

(a) What is meant if the spinner is described as a **fair** spinner?

Answer *Each number has an equal chance of being landed on*

(each sector is the same size) [1]

(b) The spinner is **not** fair.

The probability of the arrow pointing to the sector numbered 7 is 0.15

Work out the probability of the arrow not pointing to the sector numbered 7

1 − 0.15 = 0.85

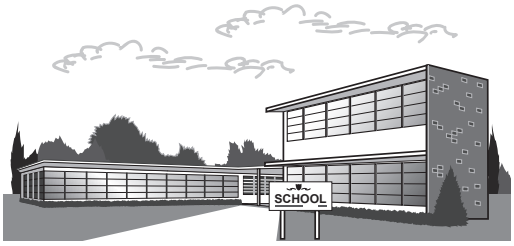
Answer *0.85* [2]

[Turn over

9 There are 648 pupils in a school.

The ratio of boys to girls is 4 : 5

How many girls are in the school?



4 + 5 = 9 parts
648 ÷ 9 = 72
girls = 72 × 5 = 360

Answer 360 [2]

10

Instructions for Fizzy Juice

Mix 3 parts Fruit Juice

with

7 parts Lemonade



Molly has 600 ml of fruit juice.

She also has 1800 ml of lemonade.

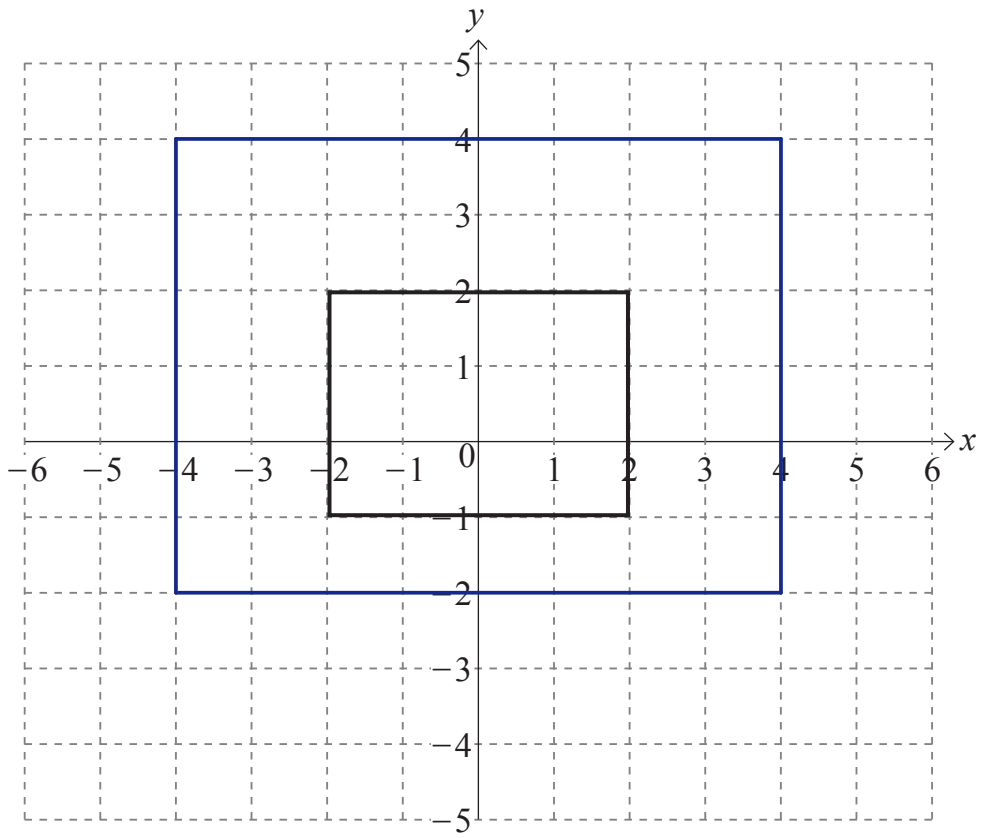
What is the maximum number of litres of fizzy juice she can make?

600 ÷ 3 = 200 ml per part
lemonade needed = 7 × 200 = 1400 ml (she has 1800 ml, enough)
600 + 1400 = 2000 ml of fizzy juice
= 2 litres

Answer *2* litres [3]

[Turn over

11



Enlarge the rectangle shown using a scale factor of 2 and centre of enlargement (0,0)

[3]

12 In America, Dave bought a book for 28 dollars.

The exchange rate was 1 dollar = 81p.

In France, Evie bought a book for 25 euro.

The exchange rate was £1 = 1.09 euro.

Who paid more and how much more?

Dave: 28 × 0.81 = £22.68

Evie: 25 ÷ 1.09 = 22.93577... = £22.94

22.94 − 22.68 = 0.26

Evie paid 26p more

Answer _____Evie_____ paid _____26p_____ more [4]

[Turn over

13 The equation $x^3 + 3x = 25$ has a solution between 2 and 3

Use a trial and improvement method to find this solution.

Give your answer correct to one decimal place.

You must show **all** your working.

x	$x^3 + 3x$	
2.5	23.125	too low
2.6	25.376	too high
2.55	24.231375	too low

2.55 gives 24.23... which is too low,
so the solution is between 2.55 and 2.6
x = 2.6 (to 1 d.p.)

Answer 2.6 [3]

14 The first four terms of a sequence are

2 7 12 17

Write down an expression for the n^{th} term of the sequence.

difference = +5 each time, so 5n
5n: 5, 10, 15, 20
terms are 3 less, so 5n − 3

Answer *5n − 3* [2]

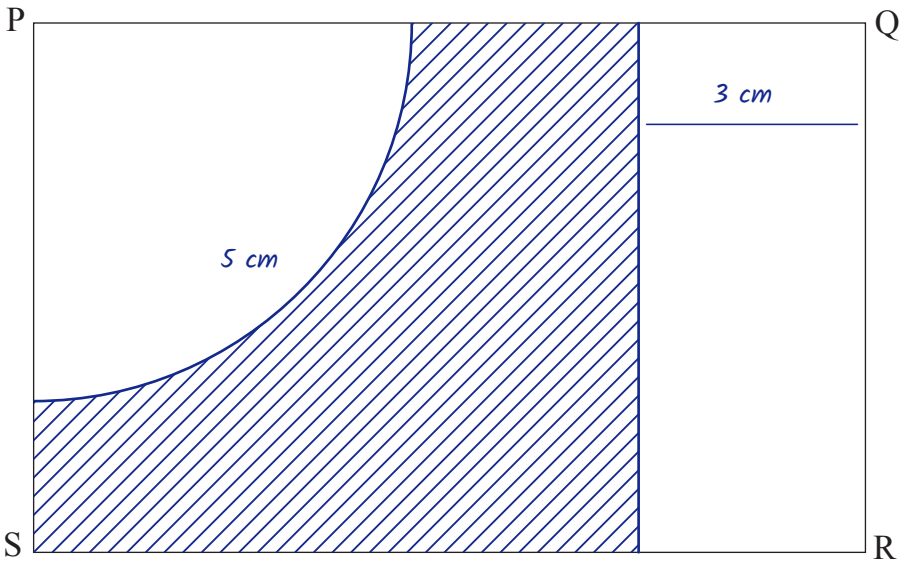
[Turn over

15 PQRS is a rectangle.

Shade the region inside the rectangle which is

more than 5 cm from P

and more than 3 cm from the line QR.



[3]

16 A survey is carried out to find out the number of electric cars on the road.

One hundred cars are surveyed each day for four days.

The results are recorded in the following table along with the relative frequencies so far.

Day	Number of cars surveyed	Number of electric cars	Relative frequency
1	100	11	0.11
2	100	12	0.115
3	100	16	0.13
4	100	9	0.12

(a) Work out the missing relative frequency and record it in the table. [1]

(11 + 12 + 16 + 9) ÷ 400 = 48 ÷ 400 = 0.12

(b) What would be the best estimate for the probability that a car chosen at random is electric?

Use all 400 cars: 48 ÷ 400 = 0.12

Answer 0.12 [1]

THIS IS THE END OF THE QUESTION PAPER

DO NOT WRITE ON THIS PAGE

For Examiner's use only	
Question Number	**Marks**
1	
2	
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Total Marks	

Examiner Number

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