



Rewarding Learning

General Certificate of Secondary Education
January 2020

Centre Number

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Candidate Number

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Mathematics

Unit M6 Paper 2
(With calculator)
Foundation Tier



MV18

[GMC62]

WEDNESDAY 15 JANUARY, 10.45am–11.45am

Time

1 hour, plus your additional time allowance.

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 on blank pages or tracing paper.

Complete in black ink only.

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

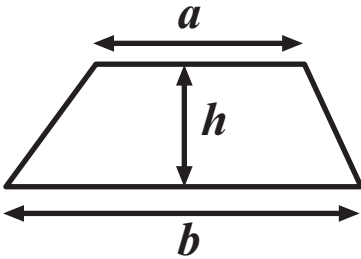
The total mark for this paper is 50.

Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

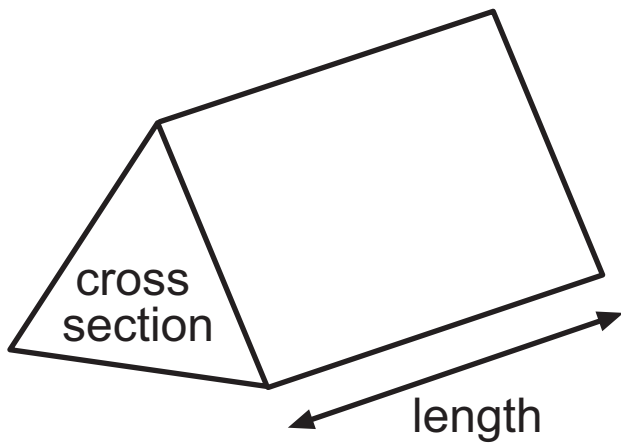
You should have a calculator, ruler, compasses and a protractor.
The Formula Sheet is on page 2.

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 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.

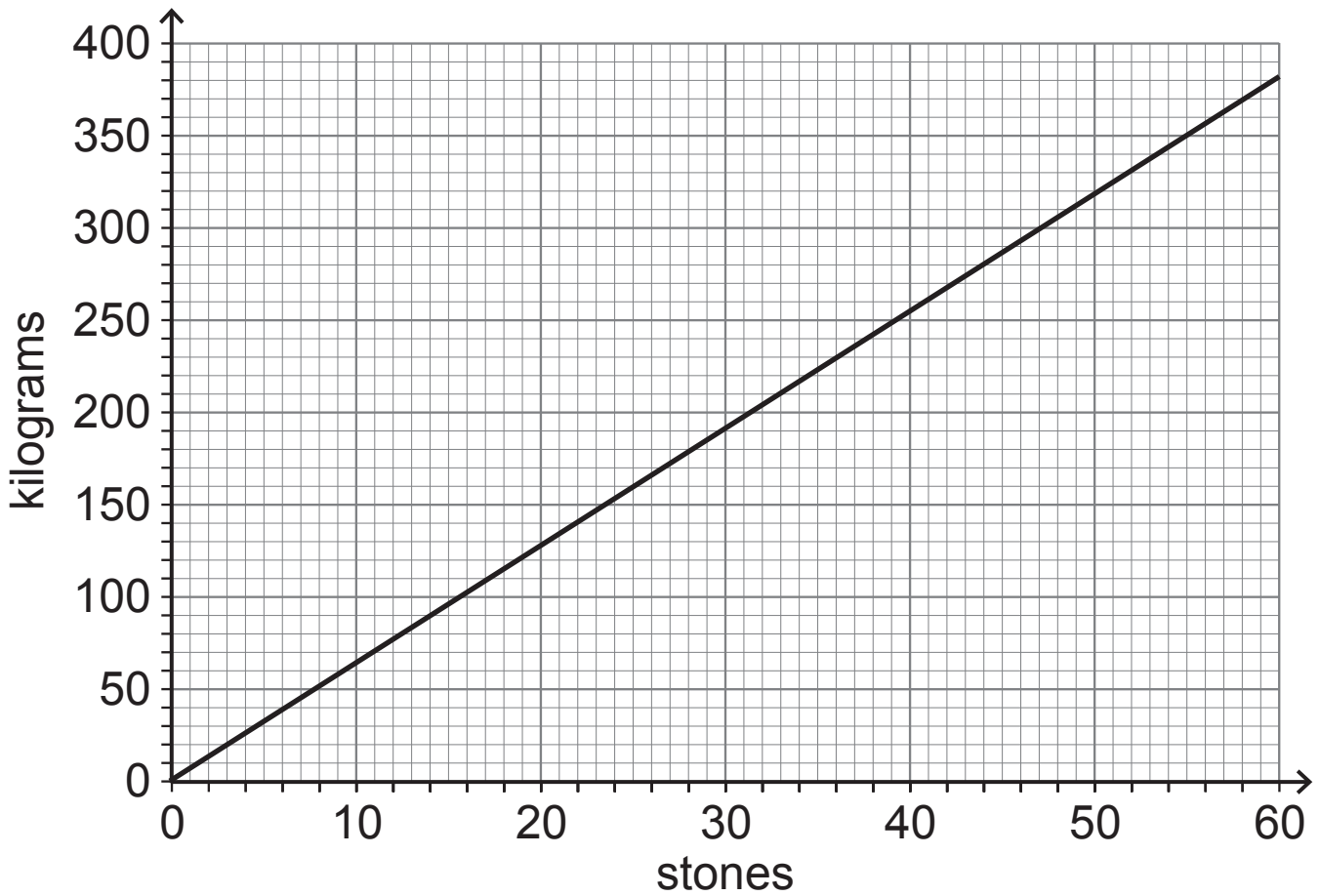
What is the actual distance the bird flies? [2 marks]

Answer _____ km

(b) Ballymoney is 30 km due east of Limavady.

Mark Ballymoney on the map with an x. [2 marks]

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



(a) Use the graph to change 30 stones into kilograms.
[1 mark]

Answer _____ kilograms

(b) Nick orders 900 kilograms of topsoil.

Use the graph to change 900 kilograms into stones.

Show clearly how you used the graph. [2 marks]

Answer _____ stones

3 Change 40 miles into kilometres. [2 marks]

Answer _____

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.

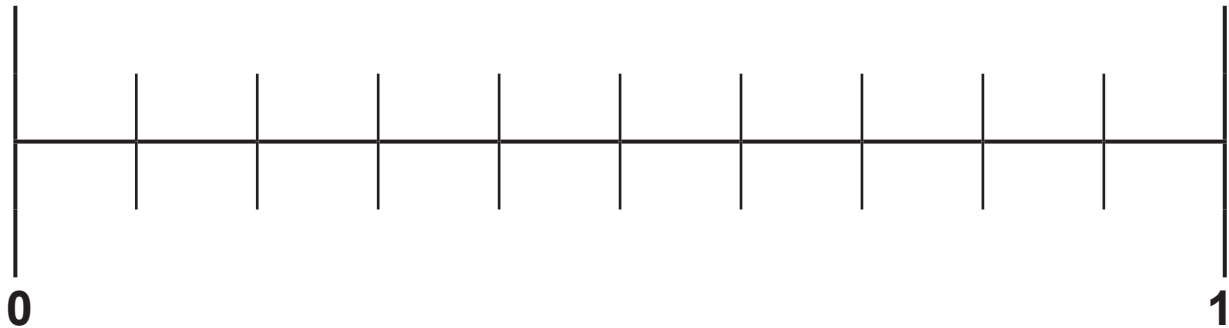
Follow the instructions and draw Sarah's triangle below.
[3 marks]

A •

(b) Draw a parallelogram with sides of length 5 cm and 3 cm. [2 marks]

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 mark]



(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. [3 marks]

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? [5 marks]

Show all working.

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.

Answer £ _____

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

90 84 78

(a) Write down the 8th term in this number sequence.
[1 mark]

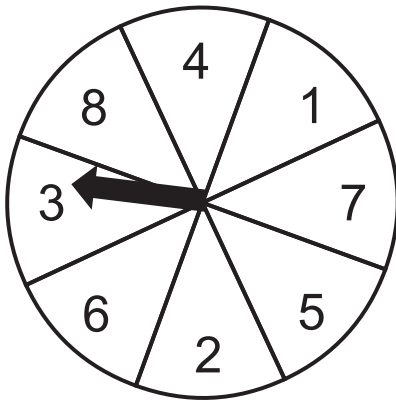
Answer _____

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

Is Daniel correct or not? Explain why. [1 mark]

Answer _____

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? [1 mark]

Answer _____

(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 [2 marks]

Answer _____

9 There are 648 pupils in a school.

The ratio of boys to girls is 4 : 5

How many girls are in the school? [2 marks]

Answer _____

10 Instructions for Fizzy Juice

Mix 3 parts Fruit Juice
with
7 parts Lemonade

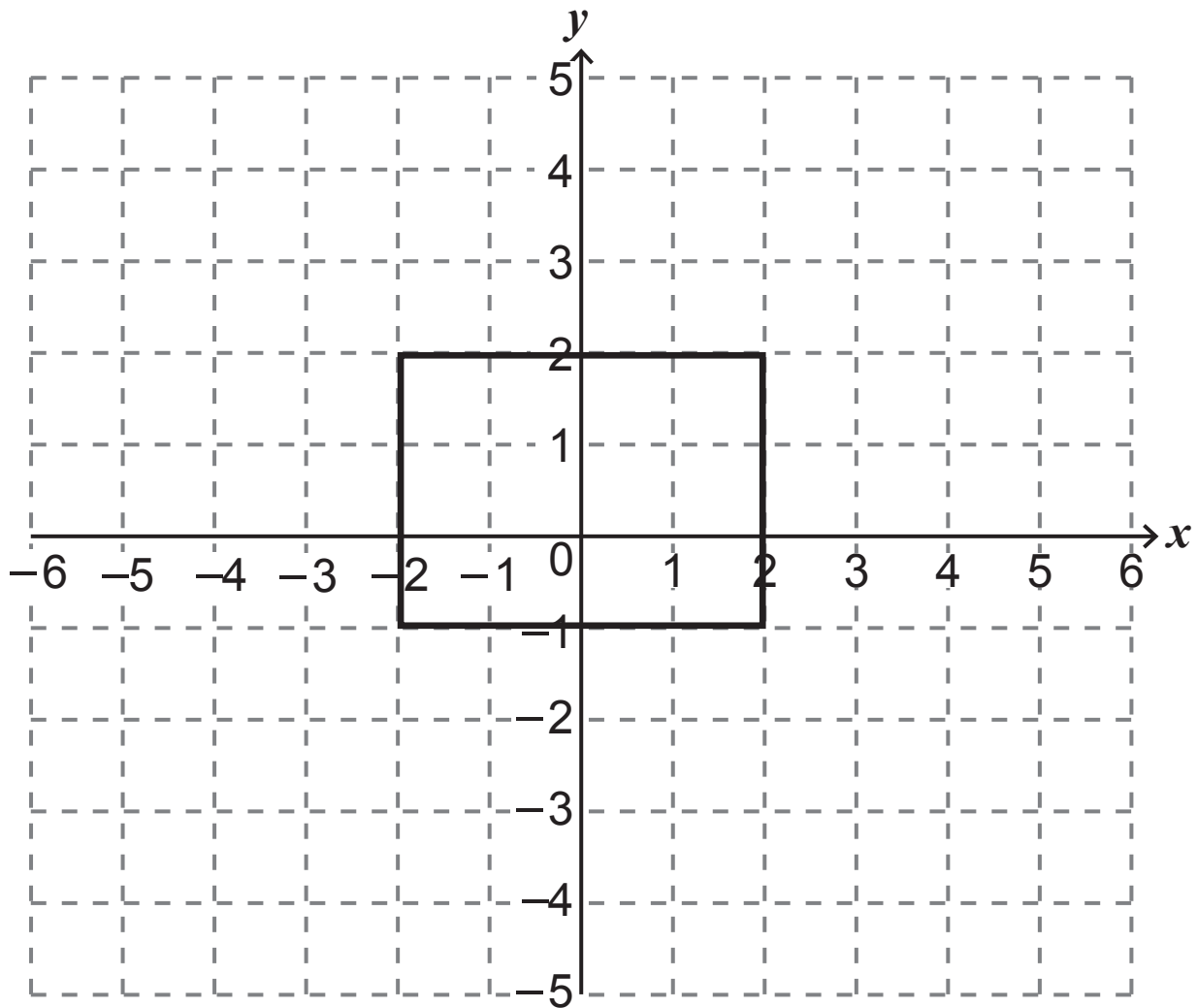
Molly has 600 ml of fruit juice.

She also has 1800 ml of lemonade.

What is the maximum number of litres of fizzy juice she can make? [3 marks]

Answer _____ litres

- 11 Enlarge the rectangle shown using a scale factor of 2 and centre of enlargement (0,0) [3 marks]



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? [4 marks]

Answer _____ paid _____ more

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

Use a trial and improvement method to find this solution.
[3 marks]

Give your answer correct to one decimal place.

You must show **all** your working.

x	$x^3 + 3x$

Answer _____

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.
[2 marks]

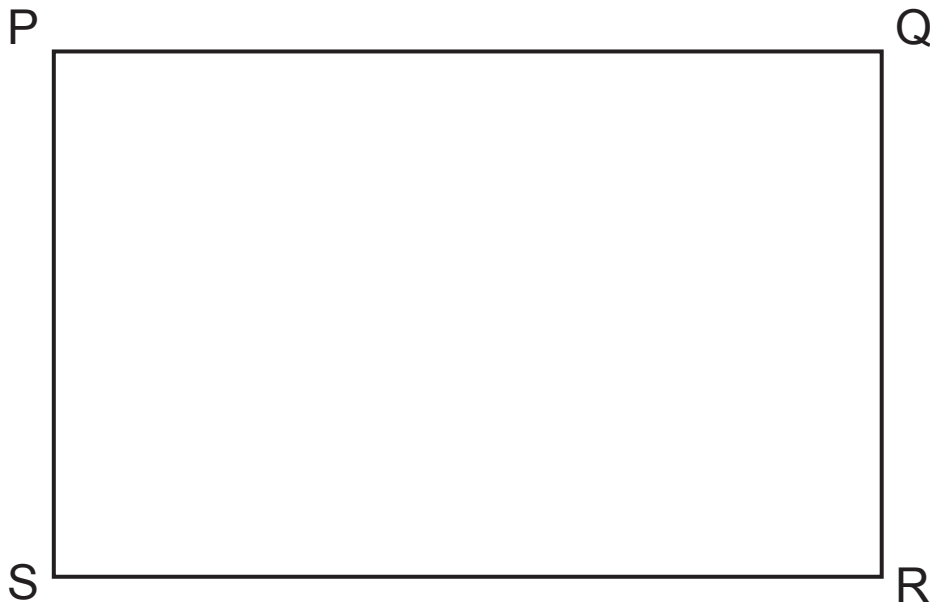
Answer _____

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 marks]



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	

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

(b) What would be the best estimate for the probability that a car chosen at random is electric? [1 mark]

Answer _____

This is the end of the question paper

For Examiner's use only	
Question Number	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
Total Marks	

Examiner Number

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