



Rewarding Learning

General Certificate of Secondary Education  
January 2020

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

## Mathematics

Unit M6 Paper 1  
(Non-calculator)

Foundation Tier



**MV18**

[GMC61]

WEDNESDAY 15 JANUARY, 9.15am–10.15am

### 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 fifteen** questions.

All working should be clearly shown in the spaces provided.

Marks may be awarded for partially correct solutions.

You **must not** use a calculator for this paper.

### Information for Candidates

The total mark for this paper is 50.

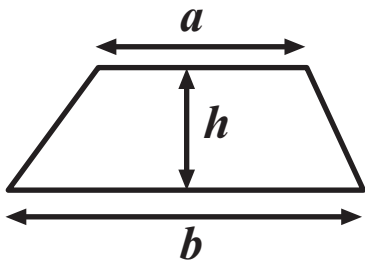
Figures in brackets printed at the end of each question indicate the marks awarded to each question or part question.

You should have a ruler, compasses and a protractor.

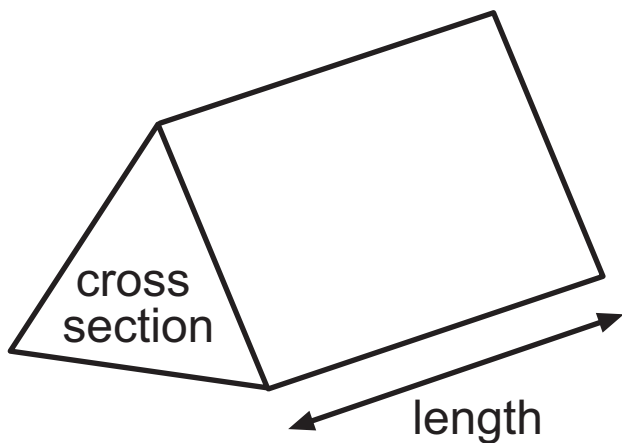
The Formula Sheet is on page 2.

# 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 **Each term**, a letter is sent home if students are absent for **more than 20%** of days.

Here is Peter's attendance record for Year 12

How many letters were sent home for Peter? [3 marks]

You **must show** all your working.

Autumn Term	70 Days	15 Days Absent
Spring Term	54 Days	4 Days Absent
Summer Term	26 Days	6 Days Absent

Answer \_\_\_\_\_ letters

**2** A sequence is formed using the rule:

**“Find the next term by adding the previous two terms”**

Use this rule to complete the sequences below.

[1 mark for each]

**(a)** 1, 7, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

**(b)** 3, -5, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

**(c)**  $x$ , 4, \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

3 240 people are at the cinema.

There are 150 children.

$\frac{3}{5}$  of the children are girls.

$\frac{2}{3}$  of the adults are male.

Cara says that altogether there are more females at the cinema.

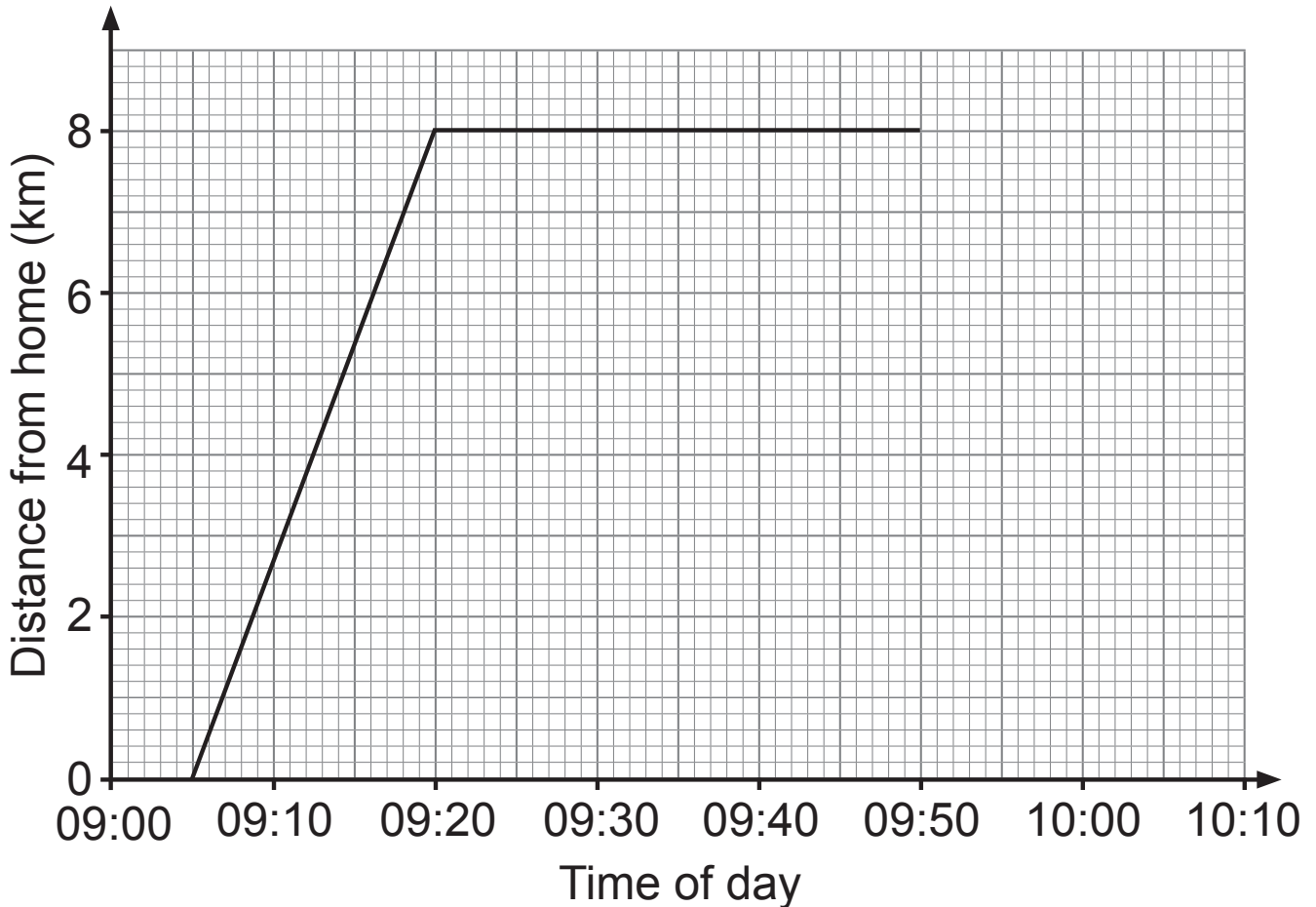
Is she correct? [4 marks]

Show all your working clearly.

Answer \_\_\_\_\_ because \_\_\_\_\_

- 4 Seb cycles from his home to his piano teacher's house on Saturday morning.

He stays there for 30 minutes and then returns directly home.



- (a) At what time did Seb leave his home? [1 mark]

Answer \_\_\_\_\_

- (b) How long did Seb take to get to his teacher's house? [1 mark]

Answer \_\_\_\_\_ minutes

Seb arrived home at 10:03

(c) Complete the distance–time graph. [1 mark]

(d) What distance did Seb travel in total? [1 mark]

Answer \_\_\_\_\_ km

(e) Did Seb travel home at a faster or slower speed?  
[1 mark]

Explain your answer clearly.

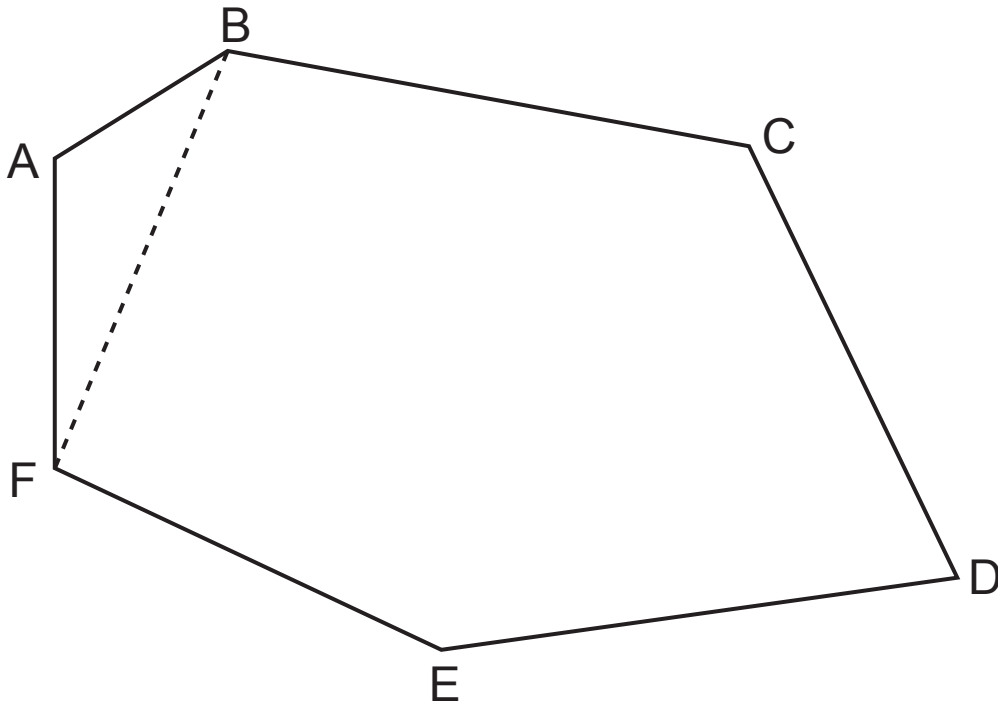
Answer \_\_\_\_\_ because \_\_\_\_\_

---

**Blank Page**



- 5 Polygon ABCDEF may be divided into triangles. One triangle is shown.

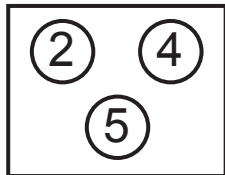


Use triangles to work out the sum of the interior angles of the polygon ABCDEF. [2 marks]

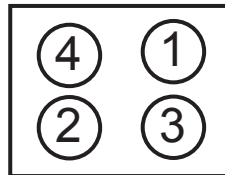
You **must show** your working.

Answer \_\_\_\_\_ °

6 Box 1



Box 2



There are two boxes of counters.

Each counter has a number on it as shown.

Mike takes one counter at random from Box 1 and then one counter at random from Box 2

(a) Complete the table to show all possible outcomes of counters taken. [2 marks]

		Box 2			
		1	2	3	4
Box 1	2	(2, 1)	(2, 2)		
	4	(4, 1)			
	5				

(b) What is the probability that Mike takes a counter with the same number on it from each box? [1 mark]

Answer \_\_\_\_\_

(c) The numbers on the counters taken are **multiplied**.

What is the probability of this multiplication giving an **even** number? [1 mark]

Answer \_\_\_\_\_

(d) On another day, Laura takes one counter from each box and **multiplies** the numbers together.

She replaces the counters and does the same thing again for a total of 30 times.

How many times would you expect her to get an **odd** number answer? [3 marks]

Answer \_\_\_\_\_

7 Estimate the value of  $\frac{593}{4.1 \times 9.7}$  [2 marks]

Show all your working.

Answer \_\_\_\_\_

---

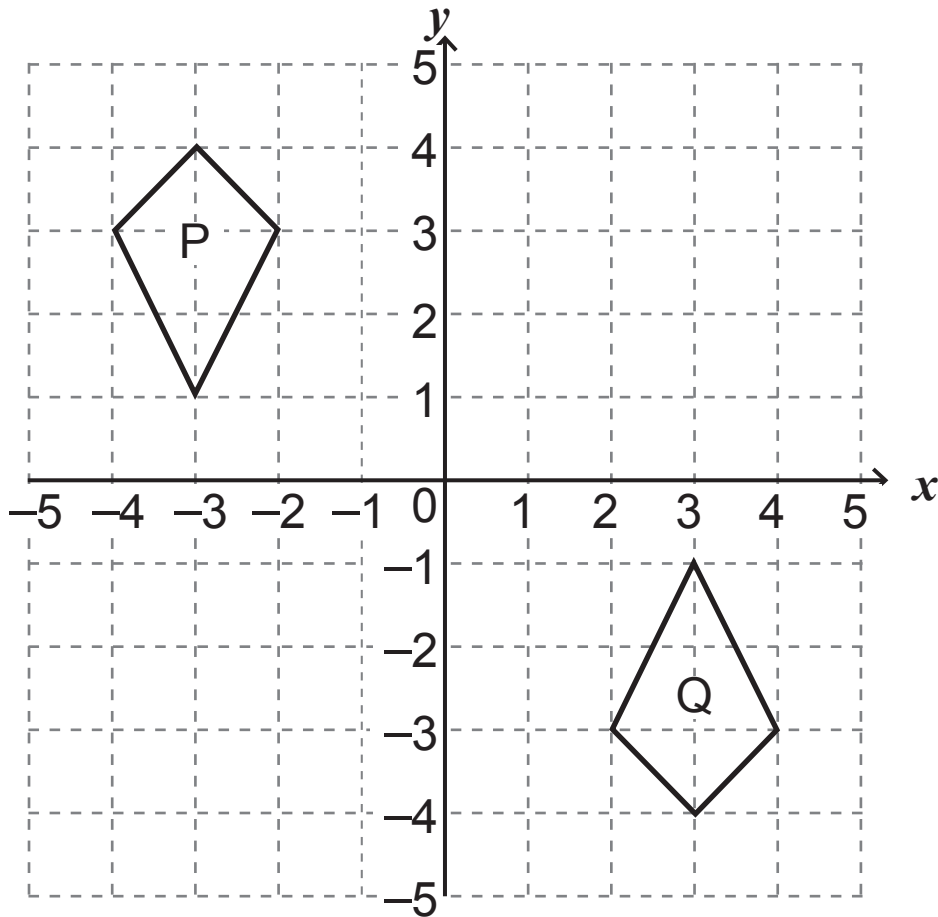
8 The prize money in a golf tournament is divided between the three golfers who finish first, second and third in the ratio 7 : 4 : 3

What **fraction** of the prize money does each of the first three golfers receive?

Write each fraction in its simplest form. [3 marks]

Answer 1st \_\_\_\_\_ 2nd \_\_\_\_\_ 3rd \_\_\_\_\_

9



(a) Describe fully the single transformation which would move shape P to shape Q. [3 marks]

Answer \_\_\_\_\_

(b) Translate shape P by 2 units to the right and 5 units down.

Label the image T. [1 mark]

(c) Describe fully the single transformation which would move shape T back to shape P. [2 marks]

Answer \_\_\_\_\_

10 Simplify the following. [1 mark for each]

(a)  $4y^3 \times 3y^4$

Answer \_\_\_\_\_

(b)  $(m^4)^5$

Answer \_\_\_\_\_

---

11 (a) Solve the inequality  $6y + 5 \geq 2$  [2 marks]

Answer \_\_\_\_\_

(b) Write down the smallest **integer** value of  $y$  which satisfies the inequality

$6y + 5 \geq 2$  [1 mark]

Answer  $y =$  \_\_\_\_\_

**12 (a)** Write 25 as a binary number. [1 mark]

Answer \_\_\_\_\_

**(b)** Write the binary number 1101001 in decimal form.  
[1 mark]

Answer \_\_\_\_\_

---

**13** Make  $m$  the subject of the formula  $H = mr + s$   
[2 marks]

Answer  $m =$  \_\_\_\_\_

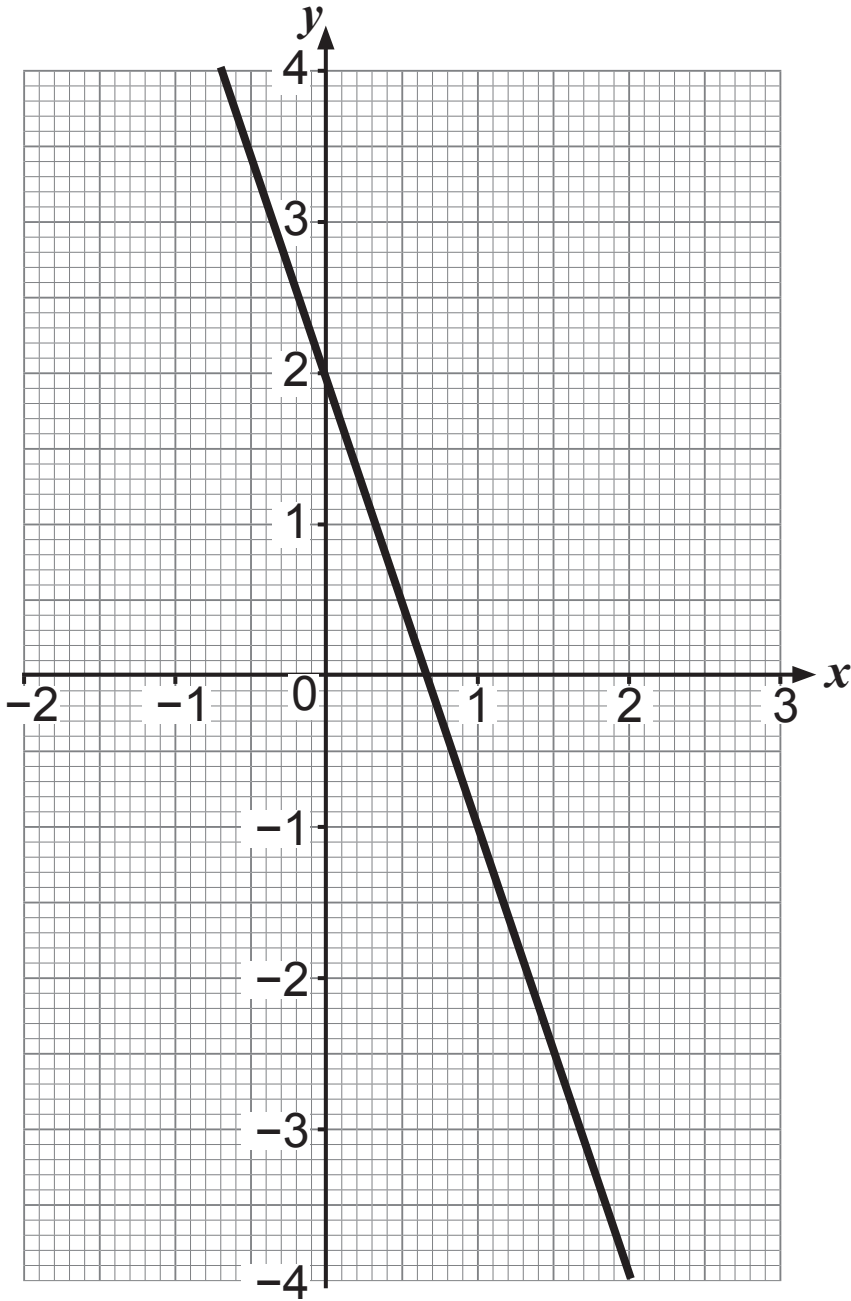
---

**14** Two fair dice are rolled.

Make a list of all the ways it is possible to get a total score of 7 on the two dice. [2 marks]

Answer \_\_\_\_\_

15





By drawing a suitable line on the grid opposite solve the simultaneous equations [4 marks]

$$y = 2x - 2$$

$$y = -3x + 2$$

Answer  $x =$  \_\_\_\_\_  $y =$  \_\_\_\_\_

---

**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	
<b>Total Marks</b>	

Examiner Number

Permission to reproduce all copyright material has been applied for. In some cases, efforts to contact copyright holders may have been unsuccessful and CCEA will be happy to rectify any omissions of acknowledgement in future if notified.