FPPg

Pearson Edexcel
Level 1/Level 2 GCSE (9 - 1)

Mathematics

Paper 1 (Non-Calculator)

Higher Tier

Mock Set 2 – Spring 2017
Time: 1 hour 30 minutes

Paper Reference
1MA1/1H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser. Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

S 5 3 6 0 3 A 0 1 2 0
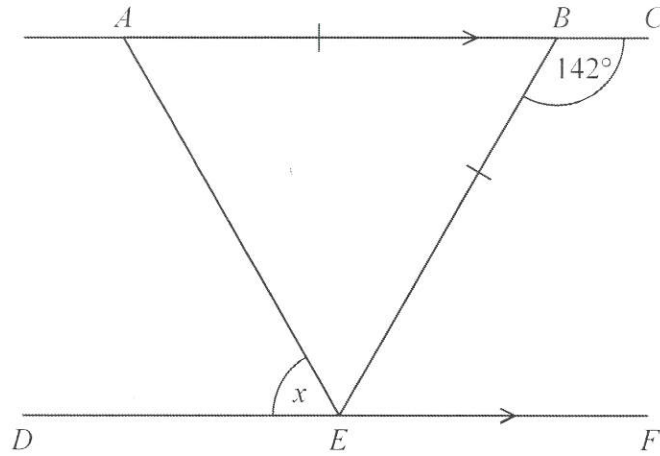
Pearson

ABC and *DEF* are parallel straight lines.
ABE is an isosceles triangle with $AB = BE$.
Angle $CBE = 142°$

Work out the size of angle x.
Give a reason for each stage in your working.

(Total for Question 2 is 5 marks)
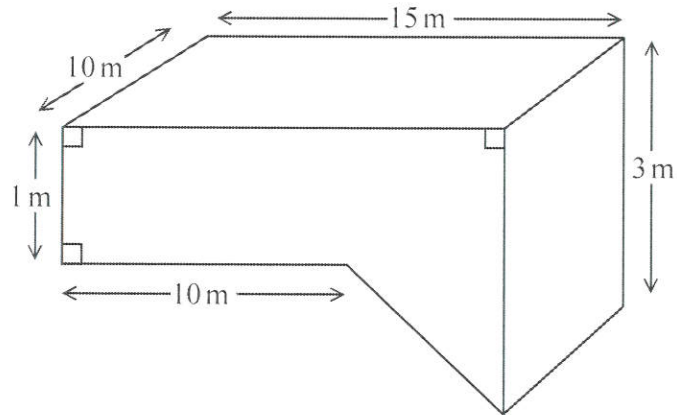
4

The diagram shows a swimming pool.
The swimming pool is in the shape of a prism.
The swimming pool is filled with water at a rate of 5 litres per second.

Jeremy has 10 hours to fill the swimming pool.
$1 \text{ m}^3 = 1000$ litres.

Will he completely fill the swimming pool in 10 hours?
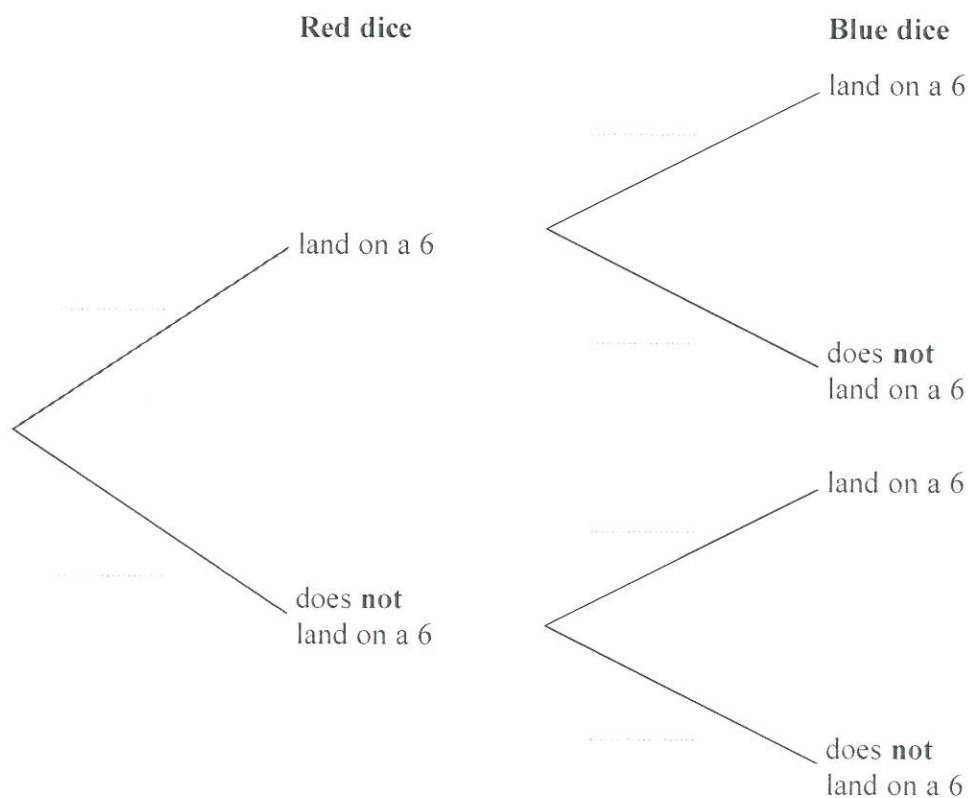You must show all your working.

(Total for Question 4 is 5 marks)

6 Graham has a fair red 6-sided dice and a fair blue 8-sided dice.
   The red dice can land on 1, 2, 3, 4, 5 or 6
   The blue dice can land on 1, 2, 3, 4, 5, 6, 7 or 8

   Graham is going to roll both dice.

   (a) Complete the probability tree diagram.

   Red dice   **Blue dice**

                                                   land on a 6

                        land on a 6

                                                   does **not**
                                                   land on a 6

                                                   land on a 6

                        does **not**
                        land on a 6

                                                   does **not**
                                                   land on a 6

                                                                         (2)

   (b) Work out the probability that neither dice will land on a 6

                                                                         (2)

                              (Total for Question 6 is 4 marks)

S 5 3 6 0 3 A 0 7 2 0

Turn over ▶

9 1 litre of a liquid **P** has a mass of p grams.
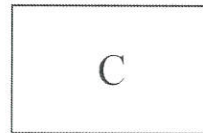1 litre of a liquid **Q** has a mass of q grams.

A liquid **R** is made by mixing a volume of liquid **P** with a volume of liquid **Q** in the ratio 3 : 7

Find an expression, in terms of p and q, for the mass of 50 litres of liquid **R**.

.... grams

(Total for Question 9 is 3 marks)

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10 Here are three rectangles.

The area of rectangle **B** is 10% greater than the area of rectangle **A**.
The area of rectangle **C** is 10% greater than the area of rectangle **B**.

By what percentage is the area of rectangle **C** greater than the area of rectangle **A**?
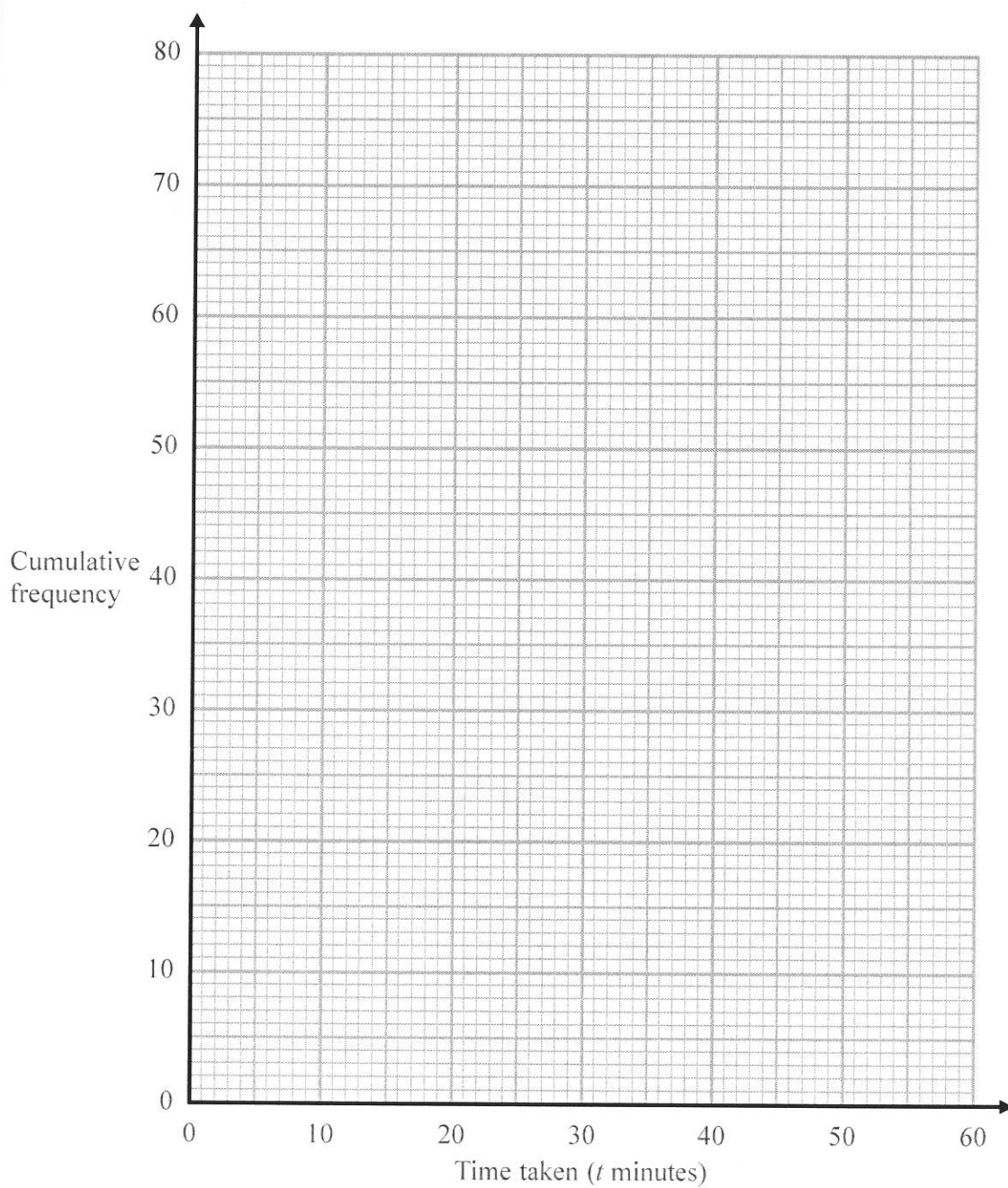
.... %

(Total for Question 10 is 3 marks)
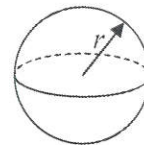
Turn over ▶

(Total for Question 11 is 5 marks)

14 Jan has some metal that she is going to make into solid metal spheres.

Each sphere will have a radius of 2.15 cm.

Jan has 1490 cm³ of metal.

Volume of sphere = $\frac{4}{3}\pi r^3$

(a) Work out an estimate for the number of spheres that Jan can make.

(3)

(b) If you calculate the number of spheres accurately, how do you think your answer to part (a) will change?
Give a reason for your answer.

(1)

(Total for Question 14 is 4 marks)

S 5 3 6 0 3 A 0 1 3 2 0
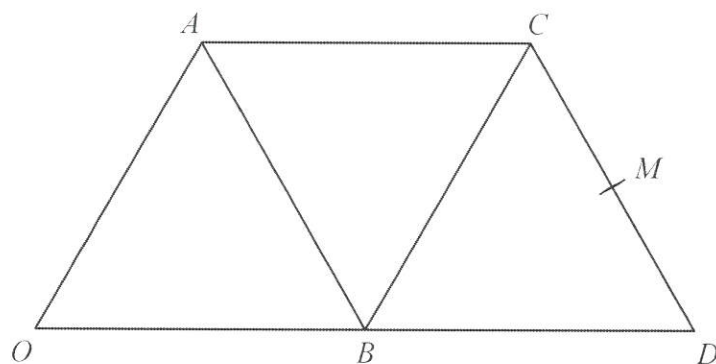
17 (a) Factorise $3(x - y)^2 - 2(x - y)$

(b) Show that $\dfrac{1}{2x^2 + x - 15} \div \dfrac{1}{3x^2 + 9x}$ simplifies to $\dfrac{ax}{bx + c}$ where a, b and c are integers.

(3)

(Total for Question 17 is 5 marks)

Turn over ▶

S 5 3 6 0 3 A 0 1 5 2 0

20

A C

M

O B D

OACD is a trapezium and *OACB* is a parallelogram.
B is the midpoint of *OD*.
M is the midpoint of *CD*.

$\overrightarrow{OA} = \mathbf{a}$ and $\overrightarrow{OB} = \mathbf{b}$

Given that $\overrightarrow{BM} = k \times \overrightarrow{OC}$ where *k* is a scalar,
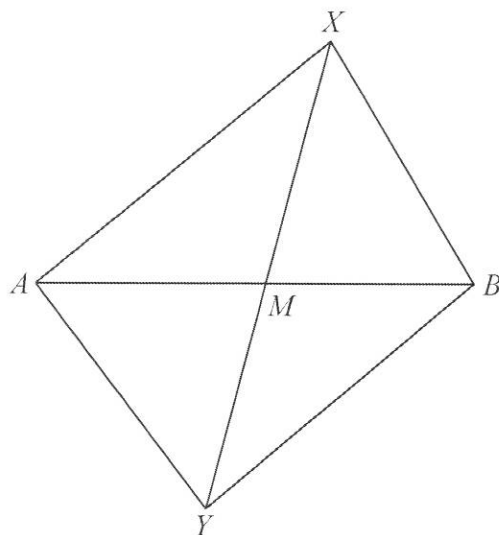
use a vector method to find the value of *k*.

(Total for Question 20 is 3 marks)

22 The diagram shows a quadrilateral *XBYA*.

The diagonals *AB* and *XY* intersect at the point *M*.

Given that the area of triangle *AXB* is equal to the area of triangle *AYB*, prove that *XY* is bisected by *AB*.

(Total for Question 22 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS