Please check the examination details below before entering your candidate information

Candidate surname	Other names

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

Centre Number | | | | | |

Candidate Number | | | | |

Thursday 6 June 2019

Morning (Time: 1 hour 30 minutes) | Paper Reference **1MA1/2F**

Mathematics

Paper 2 (Calculator)
Foundation Tier

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. 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 be used.**
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

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 ▶

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Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

.CG Maths.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write 0.75 as a fraction.

Dividing 75 by 100 gives 0.75

.....

(Total for Question 1 is 1 mark)

2 Write the following numbers in order of size.
Start with the smallest number.

–3 4 0 –1 2

Negative numbers are smaller than positive numbers. The more negative it is, the smaller it is

.....

(Total for Question 2 is 1 mark)

3 Write down two factors of 15

Whole numbers which 15 can be divided by to get another whole number

.....

(Total for Question 3 is 1 mark)

4 Change 1756 grams to kilograms.

There are 1000 grams in a kilogram

..... kg

(Total for Question 4 is 1 mark)

5 Write the number two million in figures.

1 million has six zeros after the 1

.....

(Total for Question 5 is 1 mark)

6 Dave goes into a cafe and buys 2 cups of coffee and a piece of cake.

Each cup of coffee costs £2.75
The cake costs £2.90

Dave pays with a £10 note.

He thinks he will get more than £1.50 in change.

Is Dave correct?
You must show how you get your answer.

Subtracting the amount spent from the £10 works out the change

(Total for Question 6 is 3 marks)

7 There are y boats on a lake.
There are 7 people in each boat.

Write an expression, in terms of y, for the total number of people in the boats.

There are y lots of 7 people in total in the boats so we multiply y by 7

.....

(Total for Question 7 is 1 mark)

---

8 (a) Simplify $a \times b \times 7$

They can be multiplied in any order. Writing them next to each other means to multiply. The number should be written before the letters

.....

(1)

(b) Simplify $y \times y \times y$

It can be written as a power

.....

(1)

(c) Simplify fully $\dfrac{e \times e \times e \times f}{e \times e \times f \times f}$

Fractions can be simplified by dividing both the numerator and denominator by a common factor. In this case, this cancels out any letter which appears on both the numerator and denominator

.....

(2)

(Total for Question 8 is 4 marks)

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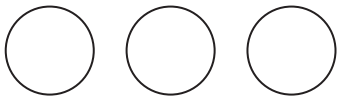
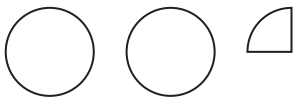
9 The pictogram shows information about the number of vinyl records sold in a shop on Monday and on Tuesday.

Monday	
Tuesday	
Wednesday	
Thursday	

Key:

represents 8 vinyl records

(a) Write down the number of vinyl records sold

(i) on Monday,

There are 3 full circles and each one represents 8 vinyl records

.....

(1)

(ii) on Tuesday.

There are $2\frac{1}{4}$ circles and each one represents 8 vinyl records. 1/4 of 8 is 2

.....

(1)

On Wednesday and Thursday a total of 36 vinyl records were sold.
The number of records sold on Thursday was 8 times the number of records sold on Wednesday.

(b) Use this information to complete the pictogram.

$x + 8x = 36$ ← Let x be the number of vinyl records sold on Wednesday. Thursday would be 8x as there were 8 times the amount sold. Adding together Wednesday and Thursday gives a total of 36

Solve the equation to work out how many records were sold on Wednesday then multiply by 8 to get the number sold on Thursday. Dividing the amount sold on each day by 8 works out how many circles should be drawn

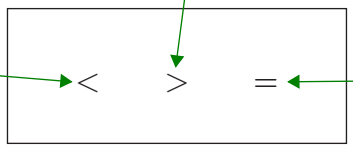
(3)

(Total for Question 9 is 5 marks)

10 Here are three symbols.

The value on the left is more than the value on the right

The value on the left is less than the value on the right



The value on the left is equal to the value on the right

Write one of these symbols in each box to make four true statements.

Work out the value of each of the expressions to compare them and choose the right symbol

14	☐	21
4 + 7	☐	103 − 92
2^2	☐	2 × 2
−3	☐	−5

The more negative a number, the smaller it is

(Total for Question 10 is 2 marks)

11 $P = 7r + 3q$

Work out the value of P when $r = 5$ and $q = -4$

Substitute r for 5 and q for -4

(Total for Question 11 is 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

12 Here is part of a train timetable.

Brighton	07 22	07 29	07 32
London	09 00	08 32	08 48

Graham gets to the station in Brighton at 07 15

(a) Work out how many minutes he has to wait until 07 22

As the hours are the same in both times, we can subtract the minutes to work out the difference in time

..... minutes

(1)

(b) Work out how long it will take the 07 22 train to get to London.

FACT B

9°00° - 7°22°

Press the button on the left to get the ° symbol

Subtracting the times works out the difference in time

.....

(2)

(Total for Question 12 is 3 marks)

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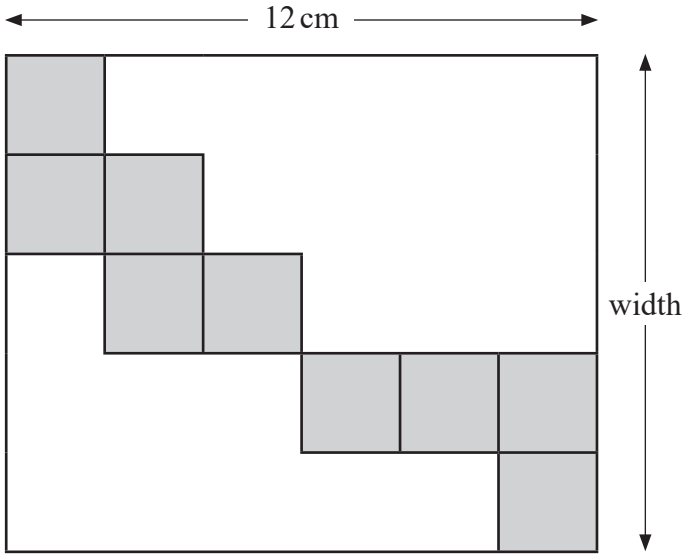
DO NOT WRITE IN THIS AREA

13 The diagram shows nine identical squares inside a rectangle.



The length of the rectangle is 12 cm.

Work out the width of the rectangle.

The rectangle is 6 squares long and 5 squares wide. The lengths of each square are all the same

.....cm

(Total for Question 13 is 3 marks)

14 Write the ratio 4.5 : 2.25 in the form $n : 1$

To convert a ratio into an equivalent ratio, divide or multiply both sides by the same amount. 2.25 is divided by 2.25 to get 1

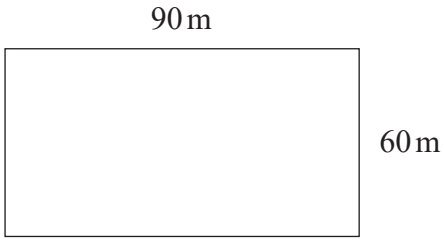
.....

(Total for Question 14 is 1 mark)

15 A garden is in the shape of a rectangle 90 m by 60 m.

Flowers are grown in 40% of the garden.
The rest of the garden is grass.

Work out the area of the garden that is grass.



Work out the percentage of the garden which is grass then find this percentage of the area of the rectangle.
Area of rectangle = length x width

..... m^2

(Total for Question 15 is 4 marks)

16 Four biased coins, A, B, C and D are thrown.

The probability that each coin will land on Heads is shown in the table.

Coin	Probability
A	0.33
B	0.033
C	$\frac{1}{3}$
D	30%

Convert all the probabilities into decimals so that they can be compared

(a) (i) Which coin is least likely to land on Heads?

The least likely is the coin with the smallest probability

.....

(1)

(ii) Which coin is most likely to land on Heads?

The most likely is the coin with the greatest probability

.....

(1)

Julie says,

"The probability that coin C will land on Heads is the same as the probability that coin C will land on Tails."

(b) Is she correct?
Give a reason for your answer.

.....

It is certain that the coin will either be heads or tails so both probabilities will add up to 1. Therefore subtracting the probability of getting heads from 1 leaves the probability of getting tails

.....

.....

(1)

Coin B is going to be thrown 4000 times.

(c) Work out an estimate for the number of times coin B will land on Heads.

The probability is an estimate of the relative frequency and multiplying this by the number of times it is thrown gives the estimate of the times it will land on heads

.....

(2)

(Total for Question 16 is 5 marks)

17 There are 84 calories in 100 g of banana.
There are 87 calories in 100 g of yogurt.

Priti has 60 g of banana and 150 g of yogurt for breakfast.

Work out the total number of calories in this breakfast.

To work out the amount of calories in 60g of banana, express the 60g as a fraction of the 100g then multiply this fraction by the 84 calories

.....

(Total for Question 17 is 4 marks)

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DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

18 Machine A and machine B both make car parts.

Machine A makes 6 parts every 10 minutes.
Machine B makes 13 parts every 15 minutes.

On Monday
machine A makes parts for 12 hours
machine B makes parts for 10 hours

Work out the total number of parts made by the two machines on Monday.

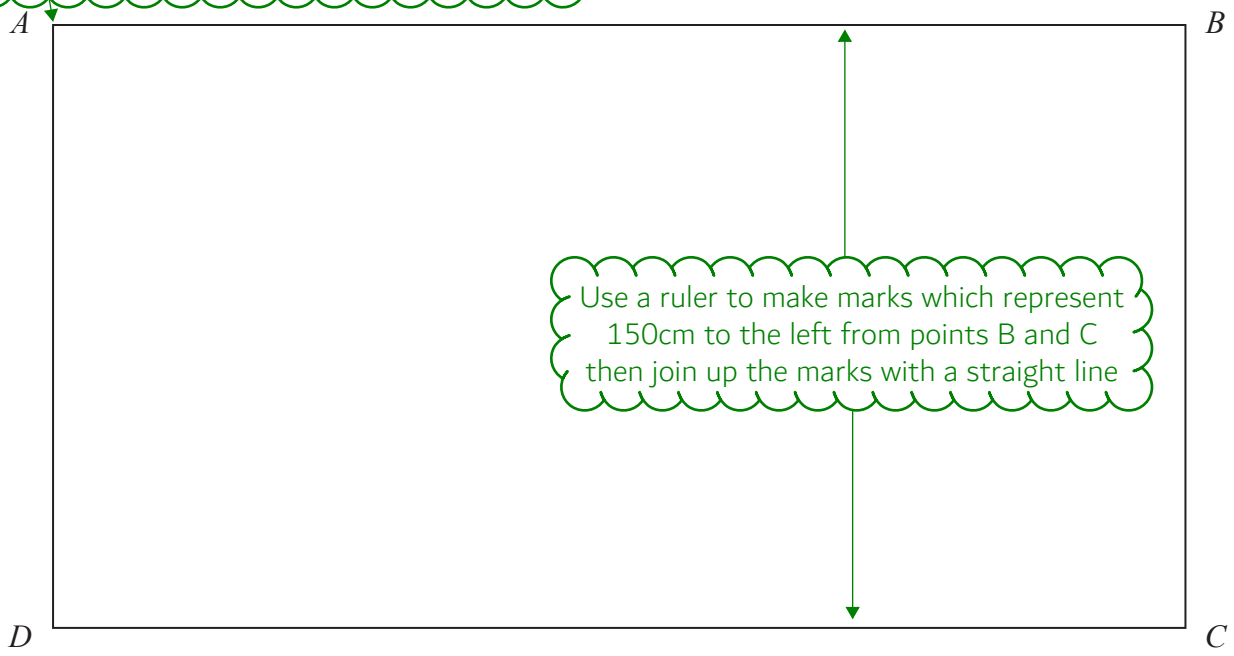
To work out how many parts machine A makes, convert the number of hours it works for into minutes then work out how many lots of 10 minutes this is. Each lot of 10 minutes is 6 parts

.....

(Total for Question 18 is 4 marks)

19 Here is a plan of a kitchen drawn to a scale of 1 : 30

Use a compass to scribe an arc which represents all points which are exactly 180cm away from A



Use a ruler to make marks which represent 150cm to the left from points B and C then join up the marks with a straight line

Scale 1:30

Sam is going to put a small table in the kitchen.

The table has to be
more than 180 cm from A
more than 150 cm from BC

The scale means that every 30 units of length in the real world is 1 unit in the diagram. So dividing by 30 works out how many lots of 30 each is and therefore converts the lengths into what is needed on the diagram

Show, by shading on the diagram, the region where Sam can put the table.

(Total for Question 19 is 4 marks)

20 (a) Solve $14n > 11n + 6$

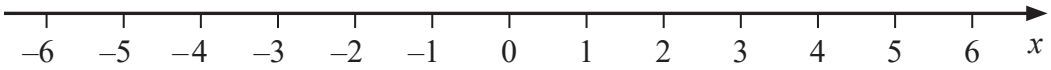
Subtract $11n$ from both sides to get all the n terms on the same side of the equation. Then divide both sides by ? to get n on its own.

(2)

(b) On the number line below, show the set of values of x for which $-2 < x + 3 \leqslant 4$

Closed circle means that the value is included in the set. Open circle means the value isn't included. A line is drawn over the values included between the circles.

Subtract 3 from all sides of the inequality to get x on its own.



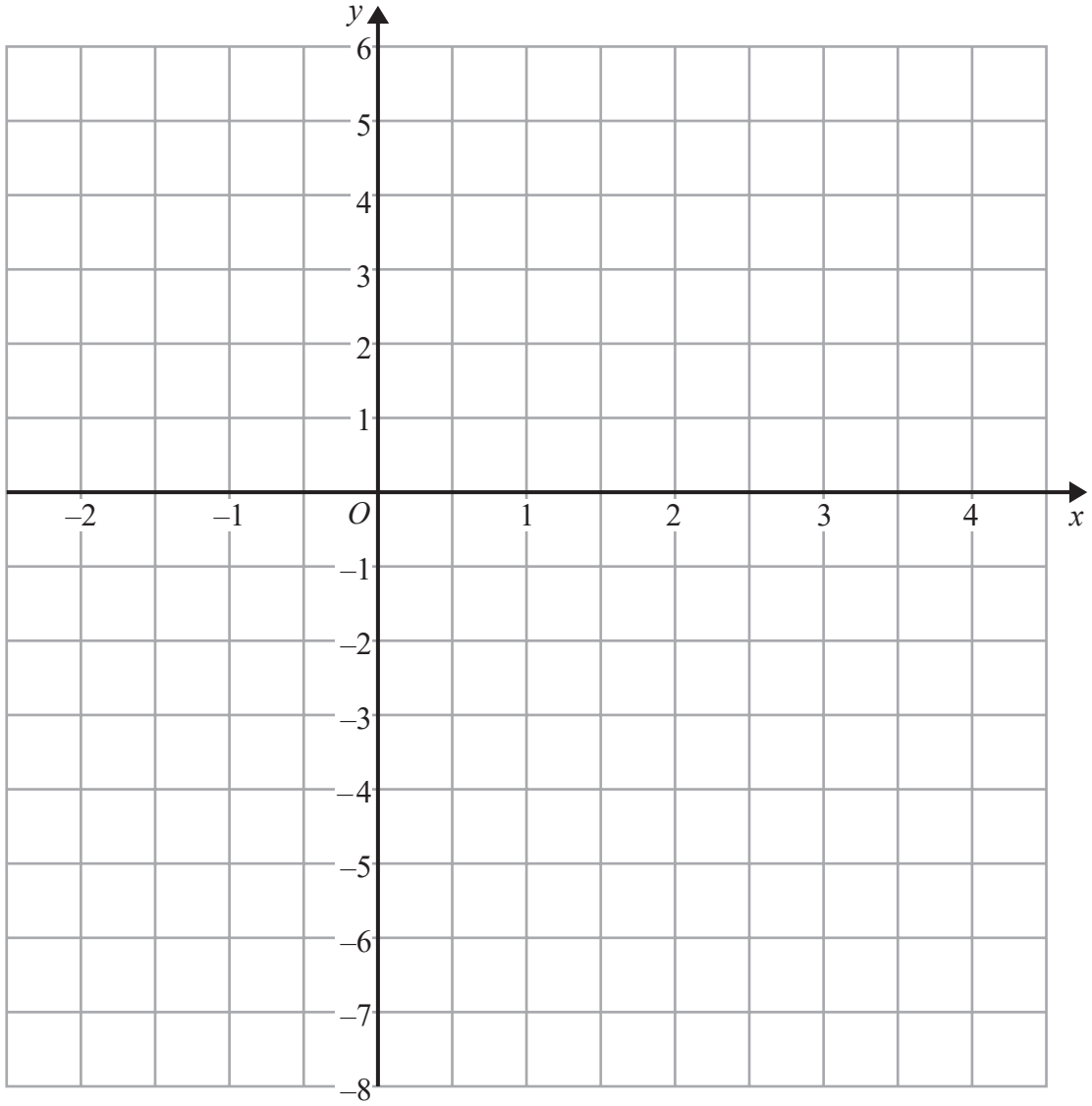
(3)

(Total for Question 20 is 5 marks)

21 On the grid below, draw the graph of $y = 2x - 3$ for values of x from -2 to 4

It is a linear equation (no powers of x or y) so the line will be straight. Therefore only two points are required to draw the line.

Substituting in the highest and lowest values of x (any two values will do but this technique can possibly get a more accurate line).



(Total for Question 21 is 3 marks)

22 Hannah is planning a day trip for 195 students.

She asks a sample of 30 students where they want to go.
Each student chooses one place.

The table shows information about her results.

Place	Number of students
Theme Park	10
Theatre	5
Sports Centre	8
Seaside	7

(i) Work out how many of the 195 students you think will want to go to the Theme Park.

Calculate the fraction of the sample who chose the Theme Park then calculate this fraction of 195.

.....

(2)

(ii) State any assumption you made **and** explain how this may affect your answer.

.....

Does sampling 30 people make it certain that the amount calculated in part (i) will be correct?

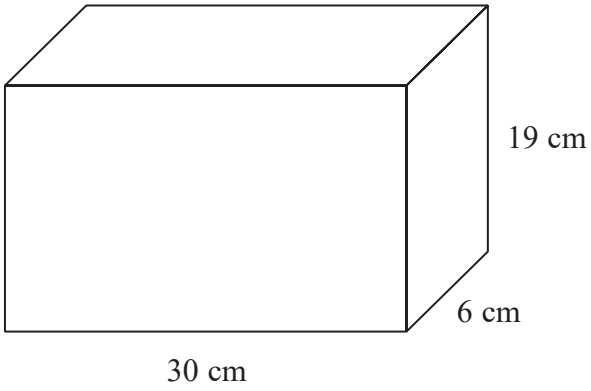
.....

.....

(1)

(Total for Question 22 is 3 marks)

23 A container is in the shape of a cuboid.



The container is $\frac{2}{3}$ full of water.

A cup holds 275 m*l* of water.

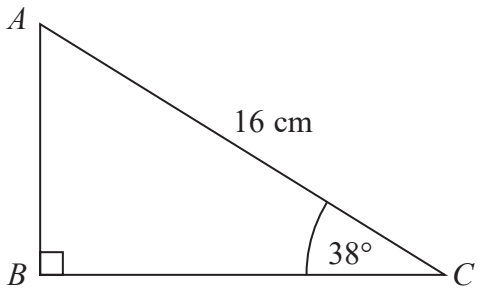
What is the greatest number of cups that can be completely filled with water from the container?

Work out the volume of the container.
Volume of cuboid = base x height x width.
Then calculate 2/3 of this. Calculate how many lots of 275 go into this. 1ml is 1cm^3.

.....

(Total for Question 23 is 4 marks)

24 ABC is a right-angled triangle.



Calculate the length of AB.
Give your answer correct to 2 decimal places.

There is a right angled triangle with a problem involving sides and angles so SOH CAH TOA can be used.

.....cm

(Total for Question 24 is 2 marks)

25 Sally used her calculator to work out the value of a number y.

The answer on her calculator display began

8.3

Complete the error interval for y.

The lowest possible number (lower bound).

The number must be less than this amount.

..... $\leqslant y <$ .....

(Total for Question 25 is 2 marks)

26 £360 is shared between Abby, Ben, Chloe and Denesh.

The ratio of the amount Abby gets to the amount Ben gets is 2 : 7

Chloe and Denesh each get 1.5 times the amount Abby gets.

Work out the amount of money that Ben gets.

If Abby gets 2 parts, Chloe and Denesh both get 1.5 times this so they both get ? parts. Extend the ratio to include Chloe and Denesh. Calculate what 1 part is worth and then work out what Ben's parts are worth.

£.....

(Total for Question 26 is 4 marks)

27 (a) Write 0.00562 in standard form.

A decimal between 1 and 10 multiplied by a power of ten.

.....

(1)

(b) Write 1.452×10^3 as an ordinary number.

Multiply 1.452 by 10 3 times.

.....

(1)

(Total for Question 27 is 2 marks)

28 Here are the first five terms of a Fibonacci sequence.

3 3 6 9 15

(a) Write down the next two terms of the sequence.

To get the next term, add together the previous two terms

..... , ...

(1)

The first three terms of a different Fibonacci sequence are

a a $2a$

(b) Find the 6th term of this sequence.

To get the next term, add together the previous two terms

.....

(2)

(Total for Question 28 is 3 marks)

29 $\mathbf{a} = \begin{pmatrix} 4 \\ 5 \end{pmatrix}$ $\mathbf{b} = \begin{pmatrix} 3 \\ 2 \end{pmatrix}$ 3 → x-component, 2 → y-component

Work out $\mathbf{a} - 2\mathbf{b}$ as a column vector.

First multiply b by 2. To do this multiply the x-component and y-component by 2 separately. Then subtract the result from a by subtracting the x-components and y-components separately

$\begin{pmatrix} \cdots \\ \cdots \end{pmatrix}$

(Total for Question 29 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

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To get the next term, add together the previous two terms