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 | | | | |

Tuesday 19 May 2020

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

Mathematics

Paper 1 (Non-Calculator)
Foundation Tier

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 ▶

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

Units Hundredths

0.32 0.4 0.35 0.309

Tenths Thousandths

Compare the units, then the tenths then the hundredths. They all have 0 units. The number with the most tenths is the biggest

.....

(Total for Question 1 is 1 mark)

2 Here is a list of numbers.

5 11 18 22 29

From the list, write down a multiple of 3

Multiples of 3 are in the 3 times-table. They are the result of multiplying 3 by a whole number

.....

(Total for Question 2 is 1 mark)

3 Write 4.666 correct to the nearest whole number.

1, 2, 3, 4, 5: these are whole numbers as they are not decimal numbers. Which whole number is 4.666 closest to?

.....

(Total for Question 3 is 1 mark)

4 Write $\frac{3}{4}$ as a decimal.

0.
4 | 3.30

3/4 is quite a common fraction so is one which we might know as a decimal. But if we don't, dividing 3 by 4 converts 3/4 into a decimal

.....

(Total for Question 4 is 1 mark)

5 Write down the value of the 7 in the number 8765

The 7 is in the hundreds place

.....

(Total for Question 5 is 1 mark)

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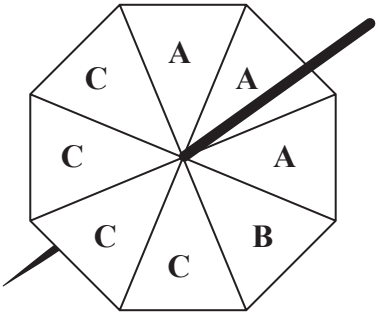
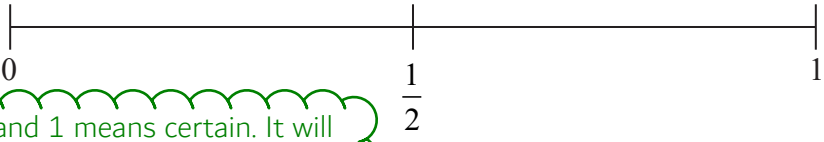
DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

6 Gita spins a fair 8-sided spinner.



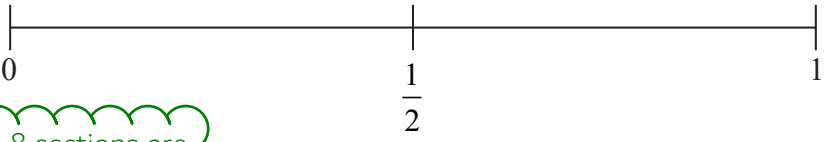
(a) On the probability scale, mark with a cross (×) the probability that the spinner will land on **C**.



0 means impossible and 1 means certain. It will be between 0 and 1. 4 out of the 8 sections are C

(1)

(b) On the probability scale, mark with a cross (×) the probability that the spinner will land on **D**.

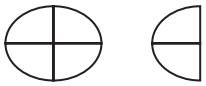


0 out of the 8 sections are D. It is impossible to get D

(1)

(Total for Question 6 is 2 marks)

7 The incomplete pictogram shows information about the number of eggs sold from a farm shop on Monday.

Monday	
Tuesday	
Wednesday	

Key:

On Monday the shop sold 18 eggs.
On Tuesday the shop sold 24 eggs.
On Wednesday the shop sold 27 eggs.

Use this information to complete the pictogram and the key.

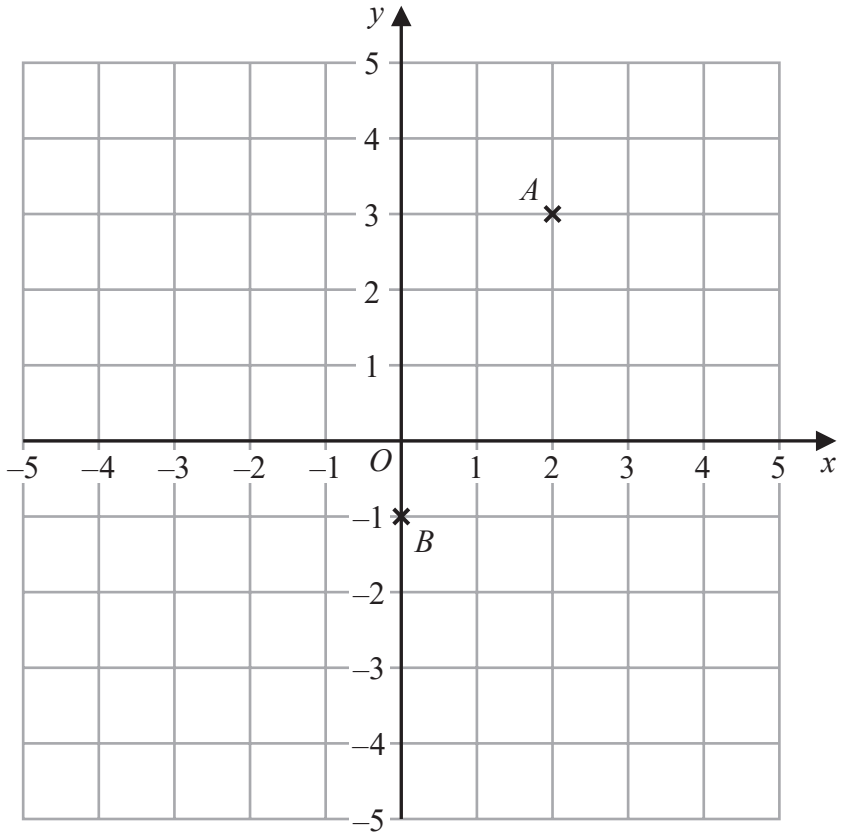
There are 6 quarters of the symbol for Monday and these represent 18. So each quarter of a symbol must represent... There are 4 quarters in a whole symbol so each symbol must represent...

Once we have worked out how many eggs one of the symbol represents, fill in the key.

We can work out how many quarters of a symbol are needed to represent the 24 and 27 eggs for Tuesday and Wednesday then convert this into a number of whole symbols

(Total for Question 7 is 4 marks)

8



(a) Write down the coordinates of the point A.

x-coordinate y-coordinate

(.....,.....)

(1)

(b) Write down the coordinates of the point B.

x-coordinate y-coordinate

(.....,.....)

(1)

(c) On the grid, mark with a cross (×) the point (–2, 1)
Label this point C.

x-coordinate y-coordinate

(1)

(Total for Question 8 is 3 marks)

9 (a) A bag contains red counters and blue counters only.

number of red counters : number of blue counters = 3 : 4

Write down the fraction of the counters that are red.

There are 7 parts in total in the ratio. Out of these, 3 are red

.....

(1)

(b) Write the ratio 12 : 30 in the form 1 : n

To get 1 part on the left side, both sides need to be divided by 12

.....

(2)

(Total for Question 9 is 3 marks)

10 Jenny has 12 marbles.

$\frac{1}{4}$ of these 12 marbles are large.

The rest of these 12 marbles are small.

Each large marble has a weight of 70 grams.
Each small marble has a weight of 50 grams.

Work out the total weight of the 12 marbles.

Work out 1/4 of 12 by dividing 12 by 4 to find out how many large marbles there are. Subtract the number of large marbles from the total number of marbles to find how many small marbles there are.

Multiply the number of large marbles by the weight of each large marble to find the weight of the large marbles. Multiply the number of small marbles by the weight of each small marble to find the weight of the small marbles.

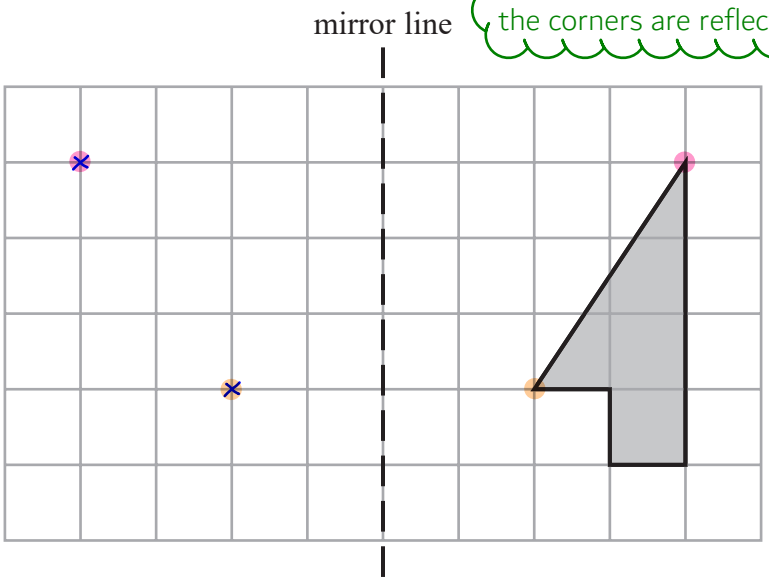
Add the weight of the large marbles to the weight of the small marbles to get the total weight of all 12 marbles

..... grams

(Total for Question 10 is 4 marks)

11

Reflect each corner one at a time by counting the number of jumps to the mirror line then doing the same number of jumps on the other side. Once all the corners are reflected, join them up with a ruler



Reflect the shaded shape in the mirror line.

(Total for Question 11 is 2 marks)

12 The diagram shows a number machine.

(a) Find the output when the input is 7

Multiply 7 by 2 then subtract 3

.....

(1)

(b) Find the input when the output is 41

Start with the output and work backward to the input. The reverse operations need to be done.
41 + 3 = ...

.....

(2)

(Total for Question 12 is 3 marks)

13 The diagram shows two points, A and B, on a map.

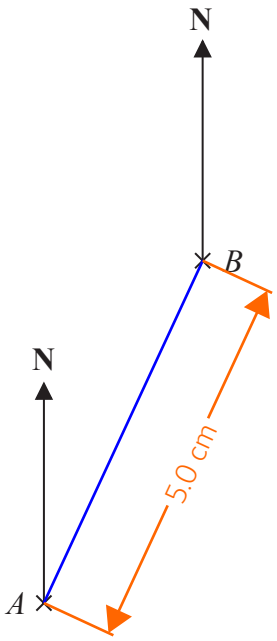


Diagram accurately drawn

Scale: 1 to 25 000

(a) Find the bearing of B from A.

The bearing is the number of degrees turned clockwise from North at A to face B

The angle can be measured using a protractor

The answer should be given with 3 figures

..... °

(1)

(b) Work out the real distance between A and B.
Give your answer in kilometres.

The scale is 1 to 25000 so the 5cm measured on the diagram is actually 25000 times greater.

The answer in centimetres needs to be converted to kilometres. There are 100cm in 1m and there are 1000m in 1km.

..... kilometres

(3)

(Total for Question 13 is 4 marks)

14 Ishmael asked 30 students at college to tell him the sport they each like the best from cricket or tennis or swimming.

11 of the 20 female students said swimming.
2 of the male students said tennis.
5 students said cricket.

The number of male students who said cricket was the same as the number of male students who said swimming.

Complete the two-way table.

	Cricket	Tennis	Swimming	Total
Male students		2		10
Female students			11	20
Total	5			30

(Total for Question 14 is 3 marks)

15 Jamil makes a drink by mixing
1 part of orange squash with 9 parts of water.

He uses 750 millilitres of orange squash.

Jamil is going to put the drink he has mixed into 1 litre bottles.

Work out the greatest number of 1 litre bottles that Jamil can completely fill.

1 part is 750ml. There are 10 parts in total. Work out the total amount of drink in millilitres then convert it to litres. There are 1000ml in 1L. The number litres of drink will be a decimal so this needs to be rounded up or down. Consider that the bottles need to be completely full

(Total for Question 15 is 3 marks)

16 The table gives information about the number of points scored by each of 16 students in a game.

Number of points	Frequency
0	1
1	3
2	5
3	4
4	3

This is not the median

Tina worked out the median of the number of points scored to be 5

(a) Explain why it is **not** possible for the median to be 5

The median is the middle score when they are put in order

.....

.....

.....

(1)

Tina also worked out the total number of points scored by the 16 students in the game.
Here is her working.

$$(0 \times 1) + (1 \times 3) + (2 \times 5) + (3 \times 4) + (4 \times 3) = 1 + 3 + 10 + 12 + 12 = 38$$

Tina made a mistake in her working to find the total number of points scored.

(b) Describe the mistake that Tina made.

.....

.....

.....

(1)

(Total for Question 16 is 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

17 In a shop, a TV has a normal price of £500
The shop has a sale.

On Monday, the normal price of the TV is reduced by $\frac{1}{10}$ to give the sale price.

On Tuesday, the sale price of the TV is reduced by 20%

Chris wants to buy the TV.
He has £400 to spend on the TV.

Does Chris have enough money to buy the TV on Tuesday?
You must show how you get your answer.

Work out 1/10 of the normal price by dividing it by 10. Then subtract this amount from the normal price to get the sale price on Monday. Work out 10% of the sale price on Monday by dividing it by 10. Then work out 20% by multiplying this by 2. Subtract the 20% from the sale price on Monday to get the sale price on Tuesday. Compare this to the £400 Chris has to decide if he has enough money

(Total for Question 17 is 5 marks)

18 Work out an estimate for $\dfrac{790 \times 289}{49}$

800 × ...

...

Rounding each number to 1 significant figure

.....

(Total for Question 18 is 3 marks)

19 (a) Expand $x(x - 4)$

.....

(1)

(b) Factorise $15y - 10$

Find the highest common factor of 15y and -10. Bring this out as a factor and leave the rest in a bracket

.....

(1)

(c) Solve $7(f - 5) = 28$

Follow BIDMAS backwards to rearrange the equation until f is the subject. Brackets should be dealt with last so first we can get rid of the multiplication by 7. Do the opposite operations to get rid of the the 7 and -5

$f =$ .....

(2)

(Total for Question 19 is 4 marks)

20 The first five terms of an arithmetic sequence are

1 4 7 10 13

Write down an expression, in terms of n, for the nth term of this sequence.

It will be in the form an + b, where a is the amount it changes by between each term and b is the 0th term, the one which would be before the 1st term

.....

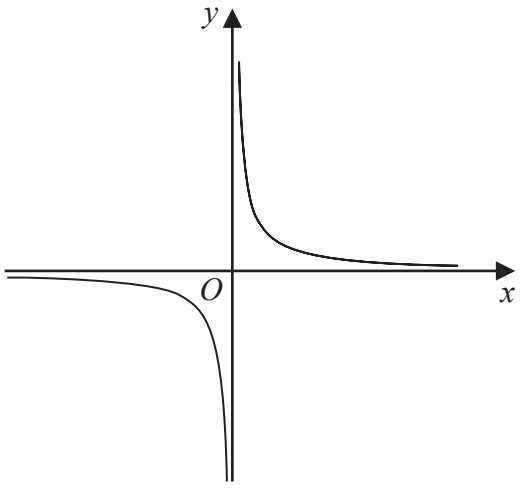
(Total for Question 20 is 2 marks)

21 Show that $2\frac{1}{3} \times 3\frac{3}{4} = 8\frac{3}{4}$

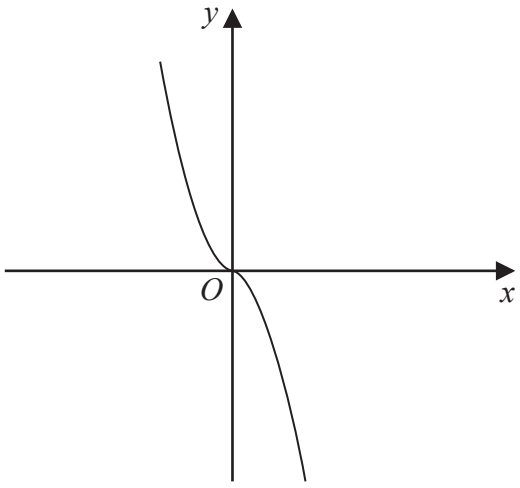
Convert the mixed numbers into improper fractions by multiplying the whole number by the denominator then adding the result to the numerator. The fractions can be multiplied by multiplying the numerators and denominators. The fraction should be an improper fraction, which can now be written as $8^3/_4$

(Total for Question 21 is 3 marks)

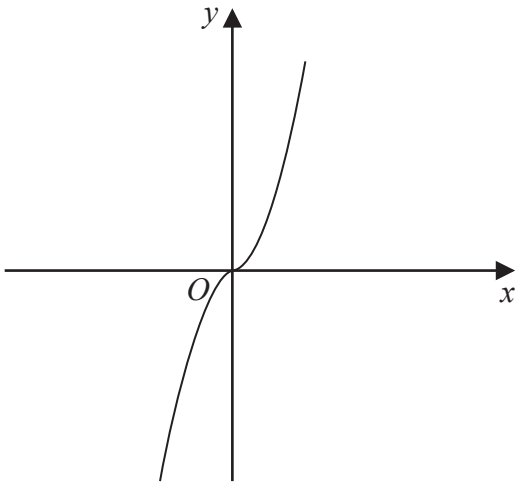
22 The diagram shows four graphs.



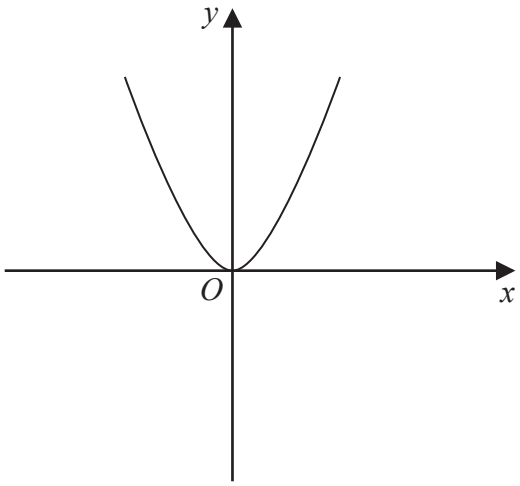
Graph **A**



Graph **B**



Graph **C**



Graph **D**

Each of the equations in the table is the equation of one of the graphs.

Complete the table.

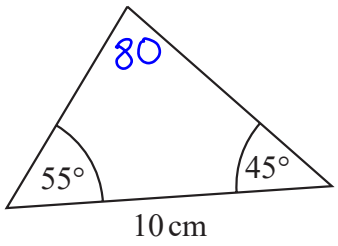
x	-2	-1	0	1	2
y					
y					
y					
y					

Equation	Letter of graph
$y = -x^3$	
$y = x^3$	
$y = x^2$	
$y = \frac{1}{x}$	

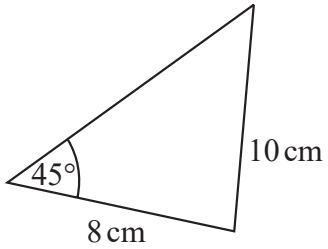
Doing a table of values for x values from -2 to 2 can work out which graph is which equation

(Total for Question 22 is 2 marks)

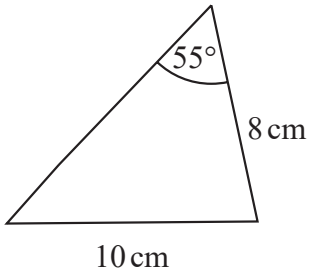
23 The diagram shows four triangles.



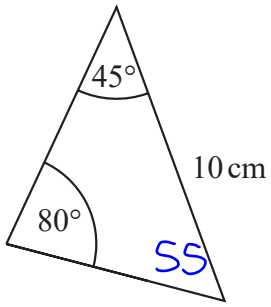
Triangle **A**



Triangle **B**



Triangle **C**



Triangle **D**

Two of these triangles are congruent. ← All the sides and angles are the same

Write down the letters of these two triangles.

The 10cm needs to be opposite the same angle

..... and .....

(Total for Question 23 is 1 mark)

24 Sean pays £10 for 24 chocolate bars.

He sells all 24 chocolate bars for 50p each.

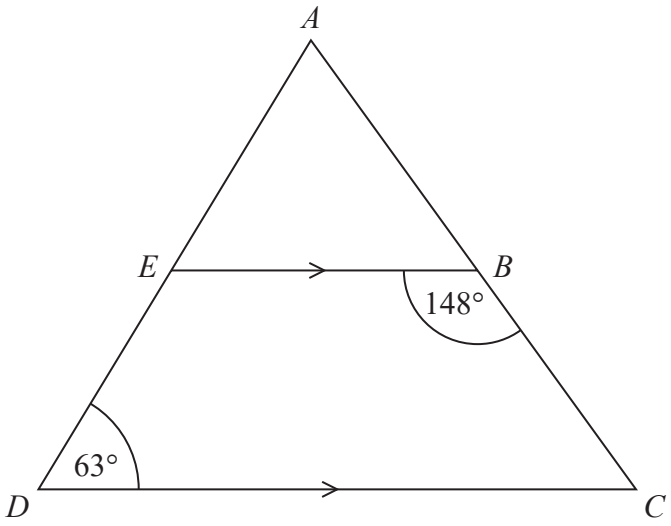
Work out Sean's percentage profit.

Percentage profit = percentage change = (new - old)/old x 100. The new value is the amount of income he gets. The old value is the amount he paid

..... %

(Total for Question 24 is 3 marks)

25 *ADC* is a triangle.



AED and *ABC* are straight lines.
EB is parallel to *DC*.

Angle *EBC* = 148°
Angle *ADC* = 63°

Work out the size of angle *EAB*.
You must give a reason for each stage of your working.

Co-interior angles and angles in a triangle both sum to 180

(Total for Question 25 is 5 marks)

26 The table shows information about the heights, in cm, of a group of Year 9 girls.

least height	150 cm
median	165 cm
greatest height	170 cm

This stem and leaf diagram shows information about the heights, in cm, of a group of 15 Year 9 boys.

15	8 9 9
16	4 5 7 7 8
17	0 3 4 4 7
18	0 2

Key: 15 | 8 represents 158 cm

Compare the distribution of the heights of the girls with the distribution of the heights of the boys.

The medians and ranges need to be compared and backed up with figures. The formula (n + 1)/2, where n is the number of boys, can be used to work out which value is the median for the boys. They are arranged in order in the stem and leaf diagram so we can count to this value from the top left to the bottom right. Range = greatest - least

(Total for Question 26 is 3 marks)

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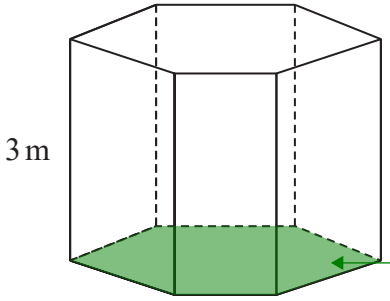
27 The diagram shows a prism placed on a horizontal floor.



$$\text{pressure} = \frac{\text{force}}{\text{area}}$$

This is the cross sectional area, the area in contact with the floor

The prism has height 3 m
The volume of the prism is 18 m^3

The pressure on the floor due to the prism is 75 newtons/m^2

Work out the force exerted by the prism on the floor.

Rearrange to make the force the subject of the formula by multiplying both sides by the area.
Volume of prism = cross sectional area x length

..... newtons

(Total for Question 27 is 3 marks)

28 Write these numbers in order of size.
Start with the smallest number.

6.72×10^5 67.2×10^{-4} 672×10^4 0.000 672

Convert the numbers into ordinary form.
$x10^n$ means to multiply by 10 n times
$x10^{-n}$ means to divide by 10 n times

....

(Total for Question 28 is 2 marks)

29 Given that $\frac{a}{b} = \frac{2}{5}$ and $\frac{b}{c} = \frac{3}{4}$

find $a : b : c$

a | b | c

a could be 2 while b could be 5. b could be 3 while c could be 4. Write these as ratios in columns to see what is in common to both ratios

b should be in common to both ratios. Find a common multiple of the number of parts for b in both ratios. Multiply both sides of the first ratio and both sides of the second ratio by amounts which make the number of parts for b the same and makes it so that the ratios can be combined

.....

(Total for Question 29 is 3 marks)

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DO NOT WRITE IN THIS AREA

30 (a) Make q the subject of $p = 6q + 7$

Follow BIDMAS backward to decide whether the multiplication by 6 or the addition of 7 needs to be got rid of first. Do the opposite operations to eliminate both the 6 and 7 from the right side to leave q on its own

$q =$

.....

(2)

(b) Simplify $(m^{-2})^{-3}$

$(a^x)^y = a^{xy}$

.....

(1)

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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