Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE

Time 2 hours

Paper reference **4MA1/1F**

Mathematics A

PAPER: 1F

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.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided
  – *there may be more space than you need.*
- **Calculators may be used.**
- You must **NOT** write anything on the formulae page.
  Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- 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.
- Check your answers if you have time at the end.

Turn over ▶

P68795A

1/1/1

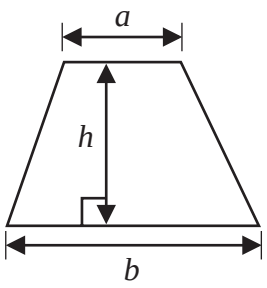
P 6 8 7 9 5 A 0 1 2 8

Pearson

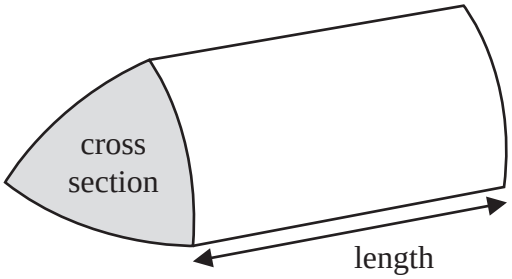
International GCSE Mathematics

Formulae sheet – Foundation Tier

Area of trapezium = $\frac{1}{2}(a + b)h$

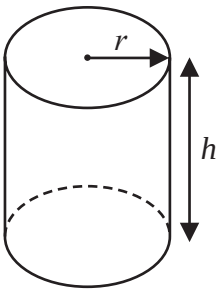


Volume of prism = area of cross section × length



Volume of cylinder = $\pi r^2 h$

Curved surface area of cylinder = $2\pi rh$



Answer ALL TWENTY FIVE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Nav found the following table that shows the age, in years, of each of seven cities.

City	Age (years)
Cadiz	3124
Suzhou	2534
Jenin	4469
Istanbul	2704
Nanjing	2516
Gaziantep	5669
Alexandria	2351

(a) Write down the name of the city with the greatest age.

Gaziantep (1)

..... (1)

(b) Write the number 2534 in words.

Two thousand, five hundred and thirty four. (1)

..... (1)

(c) Write the number 2351 correct to the nearest ten.

2350 (1)

..... (1)

(d) Work out the difference between the age of Cadiz and the age of Nanjing.

608 (1) years

..... (1)

A millennium is 1000 years.

(e) What is the age of Jenin in whole millenniums?

4 (1) millenniums

..... (1)

(Total for Question 1 is 5 marks)

2 (a) Simplify $12a + 3a - 7a$

8a (1)

.....

(1)

(b) Simplify $8 \times 3b$

$(8 \times 3)b = 24b$

24b (1)

.....

(1)

(c) Solve $\frac{c}{3} = 9$

$c = 9(3)$

$= 27$

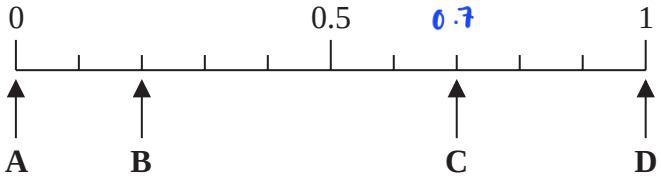
$c =$ 27 (1)

.....

(1)

(Total for Question 2 is 3 marks)

3 Here is a probability scale.



In a fruit bowl, there are only

3 bananas
7 pears

Shimon is going to take at random one of the fruits from the bowl.

(a) Write down the letter of the arrow that points to the probability that Shimon takes

(i) a pear,

$\frac{7}{10} = 0.7$

C (1)

.....

(1)

(ii) a grape.

0

A (1)

.....

(1)

Emma has some carrots, some potatoes and some onions in a bag.
She says that the probability of taking at random a carrot from the bag is 1.4

Emma is not correct.

(b) Explain why.

Probability cannot be more than 1. (1)

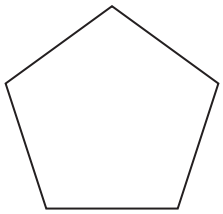
.....

.....

(1)

(Total for Question 3 is 3 marks)

4 Here is a polygon.

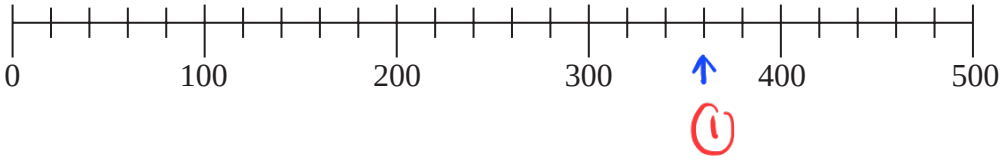


(a) Write down the mathematical name of this polygon.

Pentagon (1)

(1)

Here is a scale.

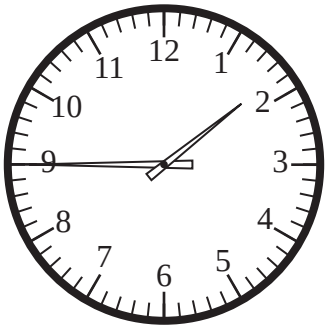


(1)

(b) On the scale, mark with an arrow (↑) the number 360

(1)

Here is a clock face.



(c) Write down the time shown on the clock face.

1.45 (1)

(1)

(d) Complete the following sentence by writing a suitable metric unit on the dotted line.

The length of a pen is 16 centimetres (1)

(1)

(Total for Question 4 is 4 marks)

5 Here is a list of numbers.

3 6 7 8 11 25 27

(a) From the numbers in the list, write down

(i) an even number

6 or 8 (1)

(1)

(ii) a multiple of 9

27 (1)

(1)

(iii) a square number

25 (1)

(1)

(iv) a prime number

3 or 7 or 11 (1)

(1)

(b) Use brackets to make the statement correct.
You may use more than one pair of brackets in the statement.

$(2^2 + 5) \times (2 + 3^2) = 99$ (1)

(1)

(Total for Question 5 is 5 marks)

6

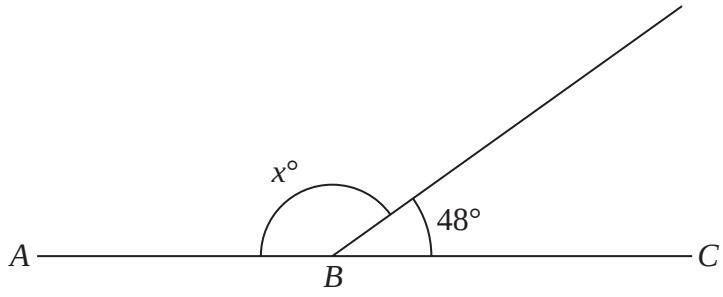


Diagram **NOT** accurately drawn

ABC is a straight line.

(a)(i) Work out the value of *x*

$x =$ 132 (1)

(1)

(ii) Give a reason for your answer to (i)

angles on straight line adds up to 180° · (1)

(1)

Question 6 continued

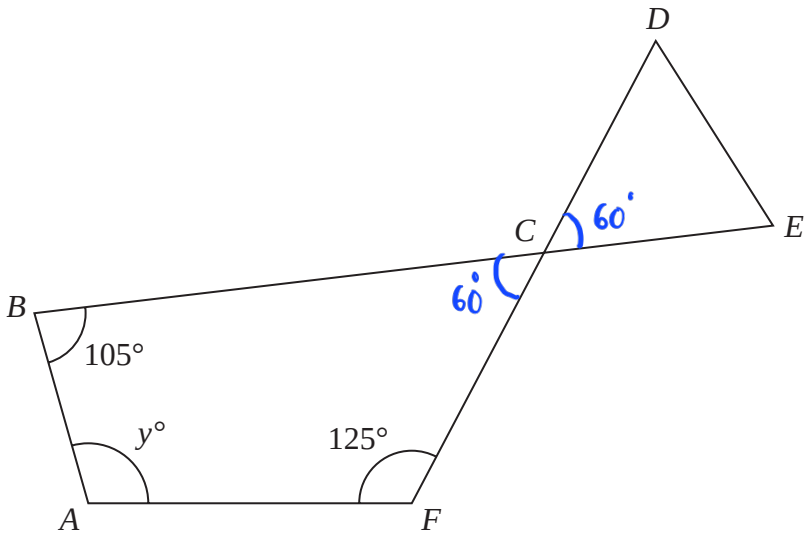


Diagram **NOT** accurately drawn

CDE is an equilateral triangle.
ABCF is a quadrilateral.

BCE and *DCF* are straight lines.

(b) Work out the value of *y*
You must show your working.

CDE : $180^\circ \div 3$
$= 60^\circ$ each angle (1)

$y^\circ = 360^\circ - (105^\circ + 125^\circ + 60^\circ)$ (1)
$= 360^\circ - 290^\circ$
$= 70^\circ$ (1)

$y =$ 70

(3)

(Total for Question 6 is 5 marks)

7 Sandeep buys some flowers.
He has 5000 rupees to spend.

He buys 6 carnations at 220 rupees each.
He also buys some roses at 295 rupees each.

Sandeep should receive 140 rupees in change from his 5000 rupees.

Work out how many roses Sandeep buys.

Carnations : $6 \times 220 = 1320$ (1)

Roses : $5000 - 1320 = 3680$ (1)

$(3680 - 140) \div 295 = 12$ roses
(1) (1)

12

(Total for Question 7 is 4 marks)

8 (a) Simplify $12g - 8e - 5g + 6e$

$(12g - 5g) + (-8e + 6e)$

$= 7g - 2e$

$7g - 2e$

(2)

(2)

$A = 3b - 5c$

(b) Work out the value of A when $b = 12$ and $c = 4$

$A = 3(12) - 5(4)$ (1)

$= 36 - 20$

$= 16$ (1)

$A =$ 16

(2)

(c) Solve $4p + 9 = 24$

$4p = 24 - 9$ (1)

$p = \frac{15}{4}$ (1)

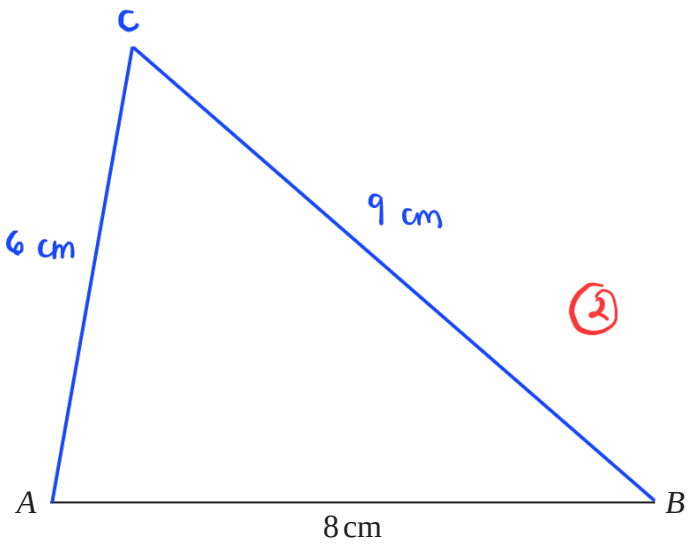
$p =$ $\frac{15}{4}$

(2)

(Total for Question 8 is 6 marks)

9 *ABC* is a triangle.
AB = 8 cm, *AC* = 6 cm and *BC* = 9 cm.

Use a ruler and compasses to construct the triangle *ABC*.
The side *AB* has been drawn for you.
You must show all your construction lines.



(Total for Question 9 is 2 marks)

10 Anjali wants to go on a boat at the seaside.

At the seaside there are 20 boats.

Of these boats
- 2 are white
- 5 are blue
- 7 are green
- 6 are yellow

Anjali selects at random one of these boats.

Write down the probability that she selects

(i) a green boat,

$\frac{7}{20}$ (1)

.....

(1)

(ii) a white boat or a yellow boat.

$\frac{2}{20} + \frac{6}{20} = \frac{8}{20}$ (1)

(1)

$\frac{8}{20}$

.....

(2)

(Total for Question 10 is 3 marks)

11 Johan wants to make some small cakes.

He finds a recipe that says he needs 360 grams of flour to make 15 small cakes.

Johan has 0.85 kg of flour.

Johan works out how much flour he would need to make 38 small cakes, using the information given in the recipe.

Does Johan have enough flour, according to the recipe, to make 38 small cakes? Show your working clearly.

Convert to grams : 0.85 kg × 1000 = 850 g (1)

Flour for 1 small cake : 360 g ÷ 15 = 24 g (1)

Flour for 38 small cakes : 24 g × 38 = 912 g (1)

No. Johan only has 850 g flour but needs 912 g.
(1)

(Total for Question 11 is 4 marks)

12 The table gives information about the number of gold stars won by each of 25 students in class 7T last week.

Number of gold stars	Number of students
0	6
1	5
2	4
3	7
4	3

(a) Work out the mean number of gold stars won.

$$\text{mean} = \frac{(0\times6)+(1\times5)+(2\times4)+(3\times7)+(4\times3)}{25} \quad (1)$$

$$= \frac{0+5+8+21+12}{25}$$

$$= \frac{46}{25} \quad (1)$$

$$= 1.84 \quad (1)$$

1.84

(3)

A student in class 8R is to be chosen at random.

The probability that this student won at least one gold star last week is 0.39

(b) Work out the probability that this student did **not** win at least one gold star last week.

$$1 - 0.39 = 0.61 \quad (1)$$

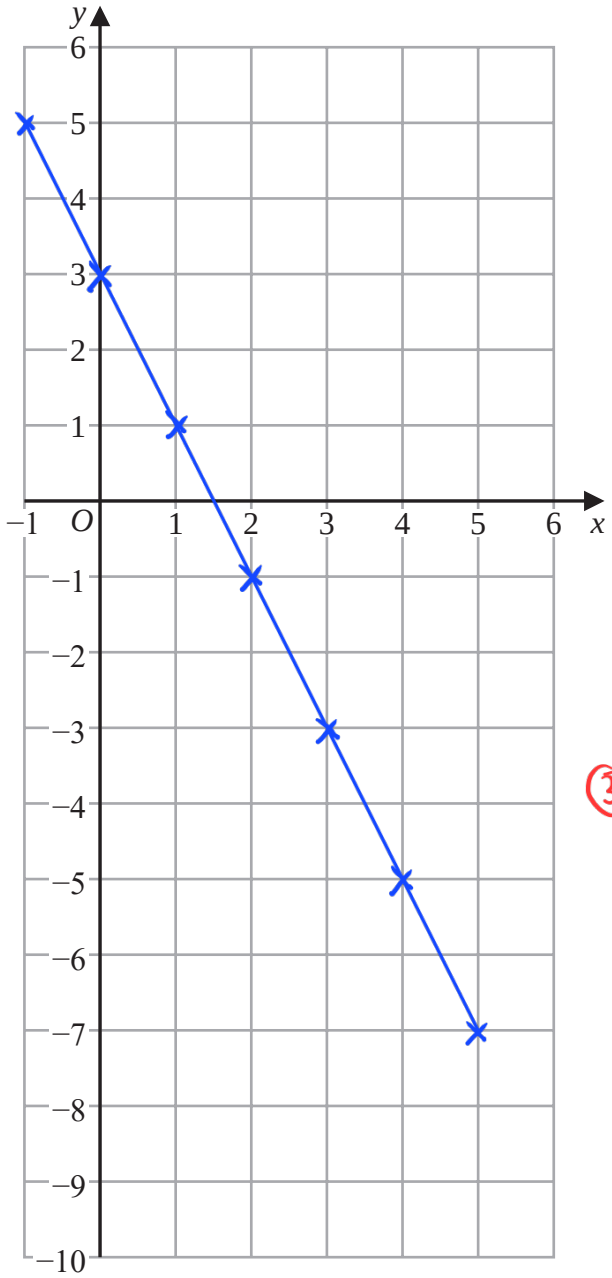
0.61

(1)

(Total for Question 12 is 4 marks)

13 On the grid, draw the graph of $y = -2x + 3$ for values of x from -1 to 5

x	-1	0	1	2	3	4	5
y	5	3	1	-1	-3	-5	-7



(3)

(Total for Question 13 is 3 marks)

14 In 2001, the total number of cars produced in the world was 39.8 million.

In 2006, the total number of cars produced in the world was 10.1 million greater than the total number produced in 2001

(a) Express 10.1 million as a percentage of 39.8 million.
Give your answer correct to one decimal place.

$\frac{10.1}{39.8} \times 100\% = 25.4\%$ (1) (1)

25.4 ..... %

(2)

In 2011, the total number of cars produced in the world was 59.9 million.

In 2016, the total number of cars produced in the world was 21% greater than the total number produced in 2011

In 2016, the total number of cars produced in the world was N million.

(b) Work out the value of N.
Give your answer correct to the nearest whole number.

$\frac{21}{100} \times 59.9 = 12.579$ (1)

$59.9 + 12.579 = 72.479$
(1)
$= 72$ (nearest whole number)
(1)

$N =$ 72 .....

(3)

(Total for Question 14 is 5 marks)

15 The diagram shows a shape *ABCDEFG* made from a square *ABDF* and three identical isosceles triangles *BCD*, *DEF* and *FGA*.

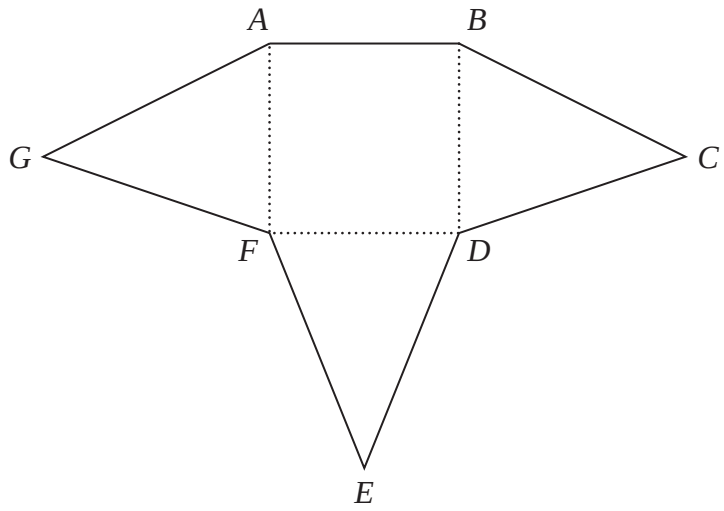


Diagram **NOT** accurately drawn

The perimeter of the square *ABDF* is 48 cm.
The perimeter of each isosceles triangle is 30 cm.

Work out the perimeter of the shape *ABCDEFG*.

length AB : $\frac{48}{4}$ = 12 cm (1)

length AG : $\frac{30-12}{2}$ = 9 cm (1)

Perimeter : (6 × 9) + 12

: 54 + 12 (1)

: 66 cm (1)

66 cm

(Total for Question 15 is 4 marks)

16 Here are the first five terms of an arithmetic sequence.

1 5 9 13 17

(a) Find an expression, in terms of n, for the nth term of this sequence.

$d = 4$

$a = 1$

$T_n = a + (n-1)d$

$= 1 + (n-1)4$ (1)

$= 1 + 4n - 4$

$= 4n - 3$ (1)

$4n - 3$

(2)

The nth term of another arithmetic sequence is $3n + 5$

(b) Find an expression, in terms of m, for the $(2m)$th term of this sequence.

$= 3(2m) + 5$

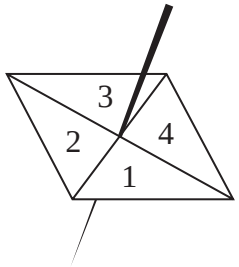
$= 6m + 5$ (1)

$6m + 5$

(1)

(Total for Question 16 is 3 marks)

17 Here is a biased 4-sided spinner.



The table gives the probabilities that, when the spinner is spun once, it will land on 1 or it will land on 3

Number	1	2	3	4
Probability	0.26	0.28	0.18	0.28

The probability that the spinner will land on 2 is equal to the probability that the spinner will land on 4

Ravina is going to spin the spinner a number of times.

Ravina works out that an estimate for the number of times the spinner will land on 3 is 45

Work out an estimate for the number of times the spinner will land on 4

$P(2 \text{ or } 4) = \frac{(1 - 0.26 - 0.18)}{2}$

$= \frac{0.56}{2} = 0.28$ (1)

Land on 4 : $\frac{45}{0.18} \times (0.28)$

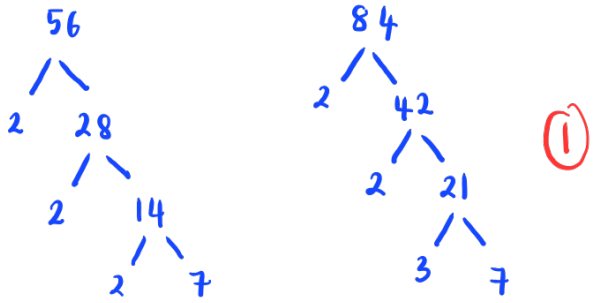
$= 250\,(0.28)$ (1) (1)

$= 70$ (1)

70

(Total for Question 17 is 4 marks)

18 (a) Find the highest common factor (HCF) of 56 and 84
Show your working clearly.



(1)

HCF : $2 \times 2 \times 7 = 28$ (1)

28

(2)

(b) Find the lowest common multiple (LCM) of 60 and 72
Show your working clearly.

multiple of 60 : 60, 120, 180, 240, 300, 360

multiple of 72 : 72, 144, 216, 288, 360 (1)

360 (1)

(2)

(Total for Question 18 is 4 marks)

19 The diagram shows parts of three regular polygons, **A**, **B** and **C**, meeting at a point.

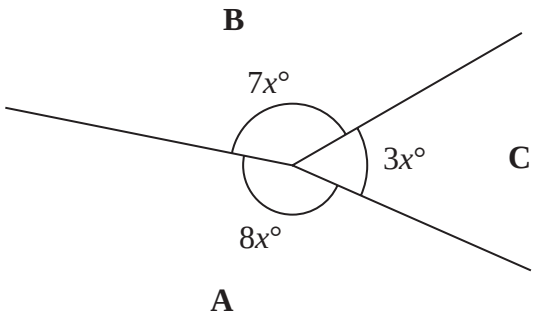


Diagram **NOT** accurately drawn

Polygon **B** has n sides.

Work out the value of n.

$7x + 3x + 8x = 360^\circ$ (1)

$18x = 360^\circ$

$x = 20^\circ$ (1)

$\frac{(n-2) \times 180^\circ}{n} = 7 \times 20^\circ$ (1)

$180^\circ n - 360^\circ = 140n$

$40^\circ n = 360^\circ$

$n = 9$ (1)

$n =$ 9

(Total for Question 19 is 4 marks)

20 (a) Expand and simplify $(n - 6)(n + 4)$

$n^2 + 4n - 6n - 24$ (1)

$n^2 - 2n - 24$ (1)

$n^2 - 2n - 24$

(2)

(b) Solve $2x - 3 = \frac{3x - 5}{4}$

Show clear algebraic working.

$8x - 12 = 3x - 5$ (1)

$5x = 7$ (1)

$x = \frac{7}{5}$ (1)

$x = \frac{7}{5}$

(3)

(Total for Question 20 is 5 marks)

21 Asha bought an apartment.

The table gives information about the value of apartments, in euros, and the annual service charge band.

Value (x euros)	Service charge band
$x \geqslant 700\,000$	A
$600\,000 \leqslant x < 700\,000$	B
$500\,000 \leqslant x < 600\,000$	C
$400\,000 \leqslant x < 500\,000$	D
$0 < x < 400\,000$	E

In 2021, the value of Asha's apartment was 634 400 euros.

The value of Asha's apartment had increased by 4% from its value in 2020

(a) Has the annual service charge band changed for Asha's apartment?
Show your working clearly.

$1 + 0.04 = 1.04$ (1)

$\frac{634\,400}{1.04} \times 100\% = 610\,000$ (1)

No. Annual service charge has not changed. (1)

(3)

Pam bought a boat.

In each year after Pam bought the boat, the value of the boat depreciated by 15%

(b) Work out the total percentage by which the value of the boat had depreciated by the end of the second year after Pam bought the boat.

$100 - 15 = 85\%$

$0.85 \times 0.85 = 0.7225$ (1)

$1 - 0.7225 = 0.2775 \times 100\%$ (1)

$= 27.75\%$ (1)

27.75 ..... %

(3)

(Total for Question 21 is 6 marks)

22 A cylinder is placed on the ground.

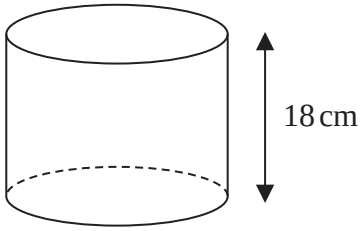


Diagram **NOT** accurately drawn

The height of the cylinder is 18 cm.

The force exerted by the cylinder on the ground is 72 newtons.
The pressure on the ground due to the cylinder is 1.4 newtons / cm^2

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

Work out the volume of the cylinder.
Give your answer correct to 3 significant figures.

area = force / pressure

= 72 / 1.4 = 51.4 (1) (1)

$51.4 = \pi \times r^2$

$r = \sqrt{\frac{51.4}{\pi}}$

= 4.046 (1)

Volume : $\pi \times (4.046)^2 \times 18$

: 926 (1)

926 ..... cm^3

(Total for Question 22 is 4 marks)

23 (a) Write 0.000 089 in standard form.

8.9×10^{-5} (1)

(1)

(b) Write 8.34×10^4 as an ordinary number.

83 400 (1)

(1)

(Total for Question 23 is 2 marks)

24 (a) Simplify $8 \times (4t)^0$

8 (1)

(1)

$x^6 \div x^{-5} = x^p$

(b) Find the value of p

$6 - (-5) = 11$

$p =$ 11 (1)

(1)

(c) Simplify fully $(2k^2m^4)^3$

$2^3 \times k^{2\times3} \times m^{4\times3}$ (1)

$= 8k^6m^{12}$ (1)

$8k^6m^{12}$

(2)

(Total for Question 24 is 4 marks)

25 Two circles, C_1 and C_2, are drawn on a centimetre grid, with a scale of 1 cm for 1 unit on each axis.

The centre of circle C_1 is at the point with coordinates (–1, 3) and the radius of C_1 is 13 cm.

The centre of circle C_2 is at the point with coordinates (7, 18) and the radius of C_2 is 6 cm.

(a) Work out the distance between the centre of C_1 and the centre of C_2

$(18-3)^2 + (7-(-1))^2 = 289$ (1)

distance : $\sqrt{289}$ (1)

$= 17$ (1)

17

..... cm

(3)

(b) Explain why circle C_1 intersects circle C_2

Total radii = 19 cm. Distance = 17 cm. They overlap by 2 cm. (1)

.....

.....

(1)

(Total for Question 25 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

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