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 11 June 2019

Morning (Time: 1 hour 30 minutes)

Paper Reference **1MA1/3F**

Mathematics

Paper 3 (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

P 5 5 6 0 6 A 0 1 2 4

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1   Write 478 to the nearest hundred.

.... 500 ....

(Total for Question 1 is 1 mark)

2   Write down a multiple of 8 that is between 41 and 60

.... 48 ....

(Total for Question 2 is 1 mark)

3   Change 1.5 kilometres to metres.

1.5×1000

.... 1500 .... metres

(Total for Question 3 is 1 mark)

4   Here is a list of numbers.

    4   6   9   10   15   27   30   40

From the list, write down all the numbers that are powers of 3

$9 = 3^2 \ , \ 27 = 3^3$

9, 27

(Total for Question 4 is 1 mark)

5   Write 19% as a fraction.

$\dfrac{19}{100}$

(Total for Question 5 is 1 mark)

2

6 Work out 20% of 80

0.2×80

16

(Total for Question 6 is 2 marks)

7 There are four types of counter in a bag.

The table shows the number of each type of counter in the bag.

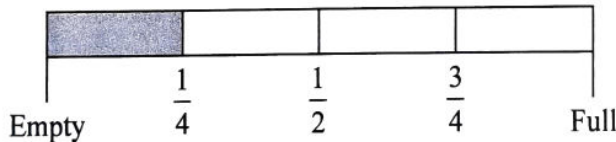| Type of counter	red circle	green circle	red square	green square
Number of counters	16	26	11	7

There are more green counters than red counters.
How many more?

$(26 + 7) - (16 + 11) = 6$

6

(Total for Question 7 is 2 marks)

8 Here is the gauge for the fuel tank of a car.

Empty $\dfrac{1}{4}$ $\dfrac{1}{2}$ $\dfrac{3}{4}$ Full

The fuel tank holds 52 litres of fuel when the tank is full.

The tank is $\dfrac{1}{4}$ full of fuel.

Work out how many more litres of fuel are needed to fill the tank.

$\tfrac{3}{4}$ of tank needed to fill.

$\tfrac{3}{4} \times 52L = 39L$

39 litres

(Total for Question 8 is 3 marks)

P 5 5 6 0 6 A 0 3 2 4

9 Simplify $4e + 6f + 7e - f$

$$(4e + 7e) + (6f - f)$$

$$= 11e + 5f$$

11e + 5f

(Total for Question 9 is 2 marks)

10 Bill has 400 counters in a bag.

He gives
35 of the counters to Sameena
50 of the counters to Henry
75 of the counters to Lucas

What fraction of the 400 counters is left in Bill's bag?
Give your fraction in its simplest form.

$$35 + 50 + 75 = 160.$$

$$\frac{400 - 160}{400} = \frac{240}{400} = \frac{6}{10} = \frac{3}{5}$$

$\frac{3}{5}$

(Total for Question 10 is 3 marks)

11 The table shows the costs of sending a parcel by the Express service and by the Rapid service.

Type of service	Cost
Express	£15.25
Rapid	£35.38

Brendan has to send 12 parcels.
It will be cheaper to send the parcels by the Express service than by the Rapid service.

(a) How much cheaper?

$(£35.38 \times 12) - (£15.25 \times 12)$

$= £424.56 - £183$

$=$

£ 241.56

(3)

Luke wants to send 21 parcels by the Express service.

He does the calculation $20 \times £15 = £300$ to estimate the cost.

(b) Explain why Luke's calculation shows the actual cost will be more than £300

Both the number of parcels (21) and cost of sending
a parcel (£15.25) have been rounded down.

(1)

(Total for Question 11 is 4 marks)

P 5 5 6 0 6 A 0 5 2 4

12 Ali, Ben and Cathy share an amount of money in the ratio 6 : 9 : 10

What fraction of the money does Ben get?

$6 + 9 + 10 = 25$

Ben : $\dfrac{9}{25}$

$\dfrac{9}{25}$

(Total for Question 12 is 2 marks)

13 The first term of a sequence of numbers is 24
The term-to-term rule of this sequence is 'add 8'

Josie says,
    "No number in this sequence is in the 5 times table."

(a) Give an example to show that Josie is wrong.

$24 + (8 \times 2) = 40.$

40

(1)

(b) Is 85 a number in this sequence?
    Give a reason for your answer.

No, $8n + 16 = 85$ gives $n = 8.625$, So, this which is not an integer. can't be a term in the sequence.

(1)

(Total for Question 13 is 2 marks)

P 5 5 6 0 6 A 0 6 2 4

14 Find the value of $\dfrac{5.27 + 3.5}{7.9 - 4.36}$

Give your answer as a decimal.
Write down all the figures on your calculator display.

$\dfrac{8.77}{3.54} =$

.......2.4774013.......

(Total for Question 14 is 2 marks)

15 You can use this rule to work out the total hire charge, in pounds (£),
for hiring a 3D printer for a number of weeks.

> Total hire charge (£) = number of weeks × 70 + 50

Mia wants to hire a 3D printer for 4 weeks.

(a) Work out the total hire charge.

$(4 \times 70) + 50 = 330$

£........330.......

(2)

Zahir hires a 3D printer.
The total hire charge is £680

(b) For how many weeks does Zahir hire the 3D printer?

$680 - 50 = 630$

$\dfrac{630}{70} = 9$
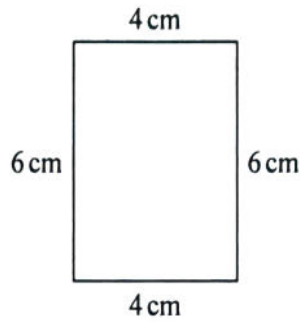
.......9....... weeks
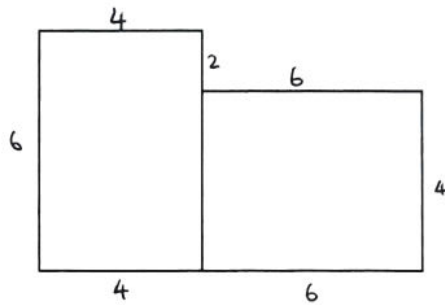
(2)

(Total for Question 15 is 4 marks)

16 Here is a rectangle.

4 cm

6 cm   6 cm

4 cm

The 6-sided shape below is made from two of these rectangles.

4

2

6

6

6

4

4

6

Work out the perimeter of this 6-sided shape.

6 + 6 + 6 + 4 + 4 + 4 + 2 = 32cm

................32................ cm

(Total for Question 16 is 3 marks)

P 5 5 6 0 6 A 0 8 2 4

17 The accurate scale diagram shows a telephone mast and a box.
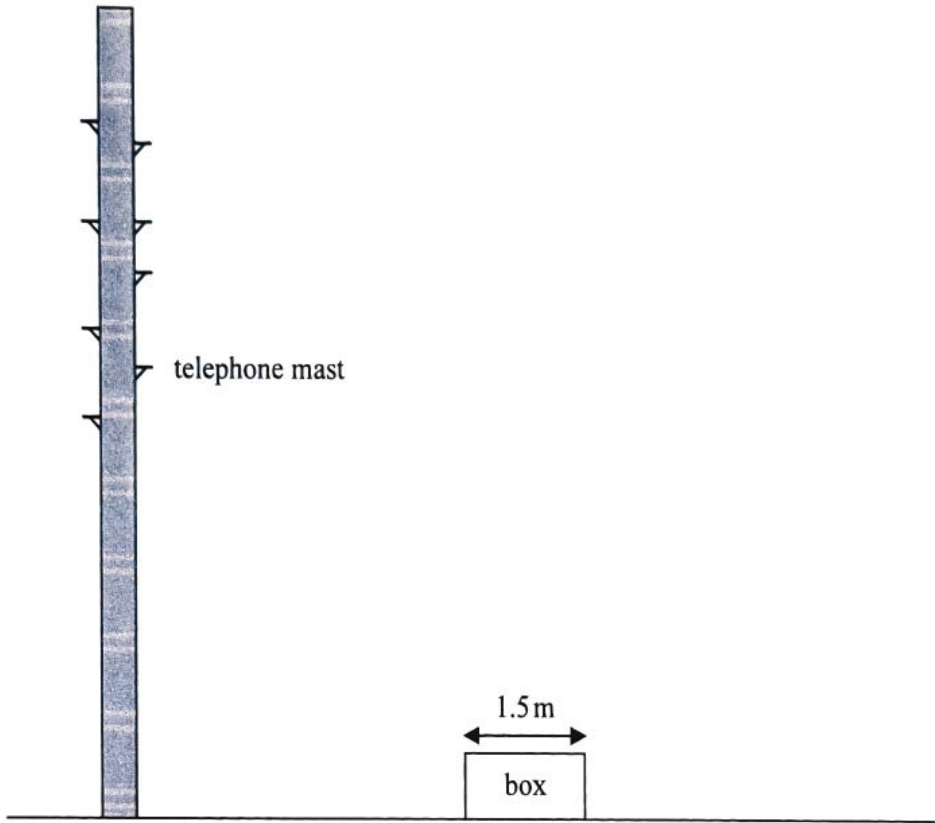
The box has a real width of 1.5 metres.

Find an estimate for the real height, in metres, of the telephone mast.

$$\frac{10.8}{1.8} = 6.$$

$$6 \times 1.5m = 9m$$

.... **9** .... metres

(Total for Question 17 is 2 marks)

18 The table shows information about the numbers of points scored by 30 students in a quiz.

Number of points	Frequency
0	4
1	3
2	7
3	5
4	6
5	5

(a) Find the modal number of points.

2

(1)

(b) Work out the total number of points scored.

$(1 \times 3) + (2 \times 7) + (3 \times 5) + (4 \times 6) + (5 \times 5) = 81$

81

(2)

(Total for Question 18 is 3 marks)

P 5 5 6 0 6 A 0 1 0 2 4

19 Make x the subject of the formula $y = 2x + 4$
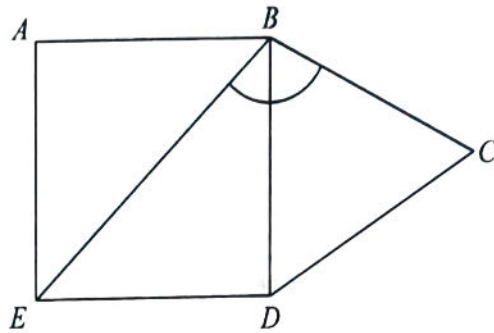
$$y = 2x + 4$$

$$\Rightarrow y - 4 = 2x$$

$$\Rightarrow \frac{y-4}{2} = x$$

$$x = \frac{y-4}{2}$$

(Total for Question 19 is 2 marks)

20 The diagram shows a square *ABDE* and an equilateral triangle *BCD*.

Work out the size of angle *EBC*.

$\angle CBD = \dfrac{180°}{3} = 60°$

$\angle DBE = \dfrac{90°}{2} = 45°$

$\Rightarrow \quad \angle CBE = 60° + 45° = 105°$

_____105_____ °

(Total for Question 20 is 2 marks)

P 5 5 6 0 6 A 0 1 2 2 4

21 Liz goes on holiday to South Africa.

Liz wants to change £850 into South African rand.
She wants to get as many 200 rand notes as possible.

The exchange rate is £1 = 18.53 rand.

Work out the greatest number of 200 rand notes that Liz can get for £850

£850 = 15750.5 rand

$$\frac{15750.5}{200} = 78.7525$$

max. 78   200 rand   notes

78

(Total for Question 21 is 3 marks)

22 In October Sally drove 560 miles in her car.
The car travelled 34.5 miles for each gallon of petrol used.

Petrol cost £1.08 per litre.
1 gallon = 4.55 litres.

Work out the cost of the petrol the car used in October.

$$\frac{560 \text{ mi}}{34.5 \text{ mi/gal}} = 16.23 \text{ gallons}$$

16.23 × 4.55 = ~~74~~ 73.8551

73.855 × £1.08 = £79.76

£ 79.76

(Total for Question 22 is 4 marks)

P 5 5 6 0 6 A 0 1 3 2 4

23 Costcorp sells packets of mints to shop owners.

On Monday three shop owners buy mints from Costcorp.
Each shop owner buys small packets, medium packets and large packets of mints.

Alan buys 400 packets of mints.
    32% are small packets.
    40% are large packets.

Beryl buys 500 packets of mints.

    $\dfrac{3}{10}$ are small packets.

    $\dfrac{1}{10}$ are large packets.

Charlie buys 150 small packets of mints so that

    number of small packets : number of medium packets = 3 : 4

Work out the total number of medium packets of mints these shop owners buy.
You must show all your working.

Alan: 100% − (32% + 40%) = 28% medium. 28% of 400
                                       = 112.

Beryl: $\dfrac{10}{10} - \left(\dfrac{3}{10} + \dfrac{1}{10}\right) = \dfrac{6}{10}$ medium.

                      $\dfrac{6}{10} \times 500 =$ ~~300~~ 300

Charlie: 3:4 ratio
               = 150 : n.

      $n = 4 \times \dfrac{150}{3} = \underline{200}$

                    300
112 + ~~~~ + 200 = 612

                                               612

(Total for Question 23 is 5 marks)

P 5 5 6 0 6 A 0 1 4 2 4

24 $\mathscr{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$
$A = \{1, 5, 6, 8, 9\}$
$B = \{2, 6, 9\}$
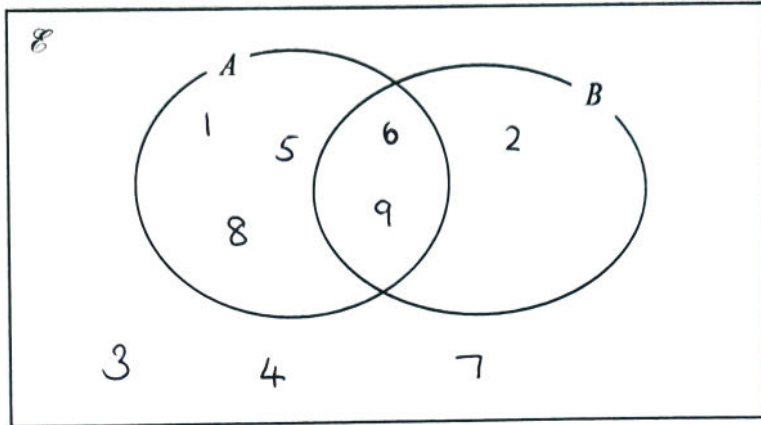
(a) Complete the Venn diagram to represent this information.

(3)

A number is chosen at random from the universal set $\mathscr{E}$.

(b) Find the probability that the number is in the set $A \cap B$

$A \cap B = 6$ or 9.

$\dfrac{2}{9}$

(2)

(Total for Question 24 is 5 marks)

25 Katy invests £200 000 in a savings account for 4 years.
The account pays compound interest at a rate of 1.5% per annum.

Calculate the total amount of interest Katy will get at the end of 4 years.

1 year : $200\ 000 \times 1.015 = 203000.$

4 years : $200\ 000 \times 1.015^{4} = 212\ 272.7101$

$$
\begin{array}{r}
212272.71 \\
-\ 200000.00 \\
\hline
12272.71
\end{array}
$$

£ 12,272.71

(Total for Question 25 is 3 marks)

P 5 5 6 0 6 A 0 1 6 2 4

26 The table shows information about the heights of 80 plants.

Height (h cm)	Frequency
$10 < h \leqslant 20$	7
$20 < h \leqslant 30$	13
$30 < h \leqslant 40$	14
$40 < h \leqslant 50$	12
$50 < h \leqslant 60$	16
$60 < h \leqslant 70$	18

(a) Find the class interval that contains the median.

$40 < h \leq 50$

(1)

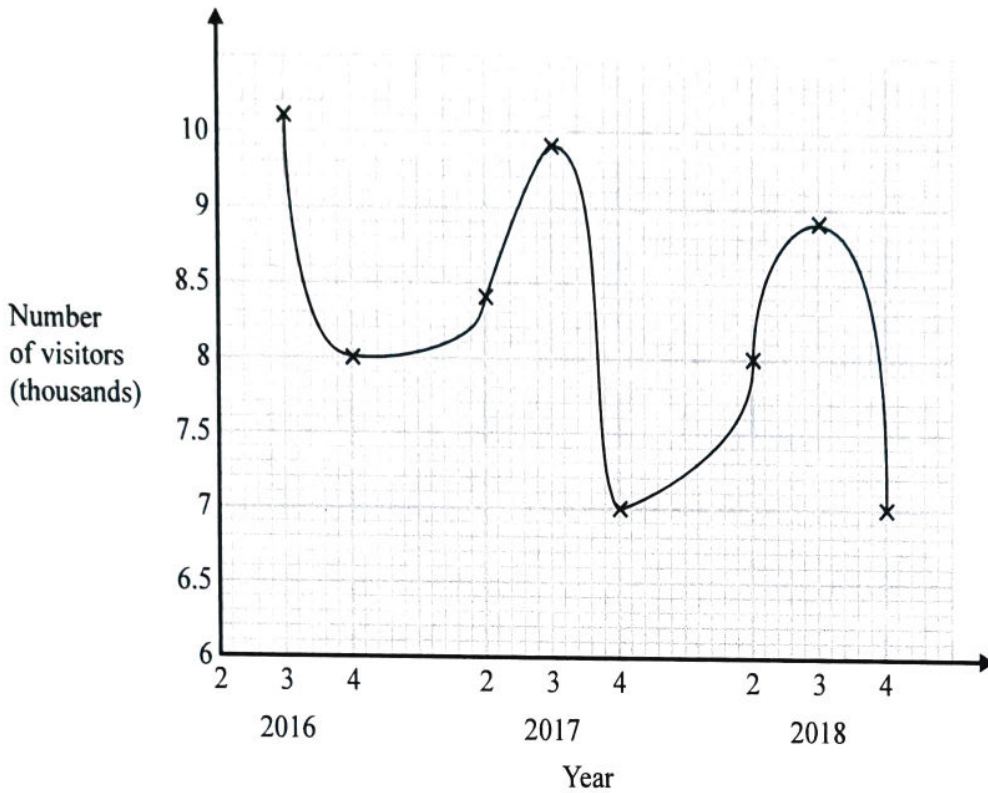(b) On the grid, draw a frequency polygon for the information in the table.

Height (h cm)

(2)
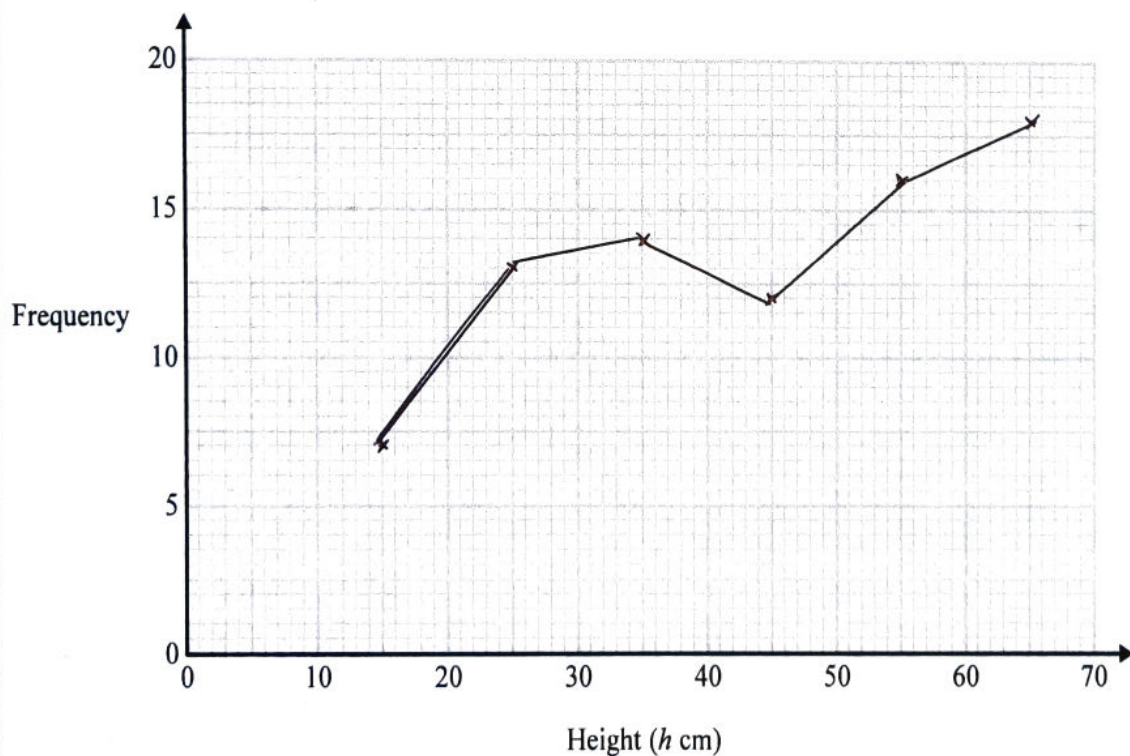
(Total for Question 26 is 3 marks)

27 Sean has drawn a time series graph to show the numbers, in thousands, of visitors to a
    fun park.

Number
of visitors
(thousands)

(time series graph showing number of visitors, in thousands, against year from 2016 to 2018, with vertical axis from 6 to 10 and points plotted at quarters 3 and 4 of each year and quarter 2)

Year

Write down two things that are wrong or could be misleading with this graph.

1 .... 1st quarter of each year not plotted. ....

2 .... 9.5 missing from vertical axis. ....

(Total for Question 27 is 2 marks)

28 The diagram shows a hexagon.
The hexagon has one line of symmetry.
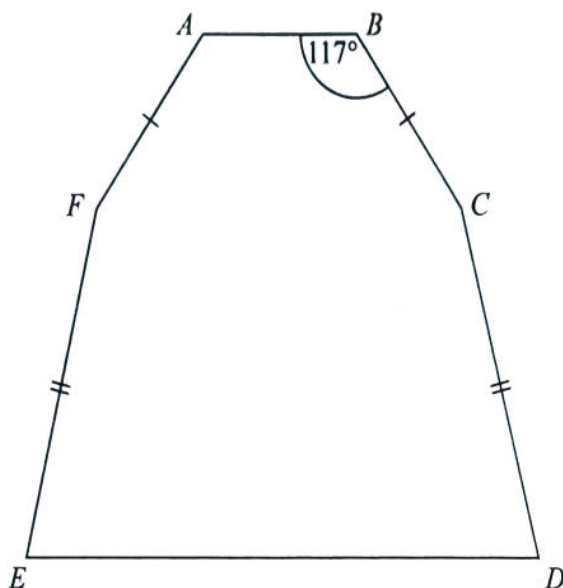
$FA = BC$
$EF = CD$
Angle $ABC = 117°$

Angle $BCD = 2 \times$ angle CDE

Work out the size of angle AFE.
You must show all your working.

Interior angles in a hexagon: $(6-2) \times 180° = 720°$.

$2 \times (\angle ABC + \angle BCD + \angle CDE) = 720°$

$\angle BCD = 2 \angle CDE$

$\Rightarrow 2 \times (117 + 3 \angle CDE) = 720°$

$\Rightarrow \angle COE = \dfrac{\frac{720}{2} - 117}{3} = \dfrac{360 - 117}{3} = \dfrac{243}{3} = 81°$

$\Rightarrow \angle AFE = \angle BCD = 81° \times 2 = 162°$
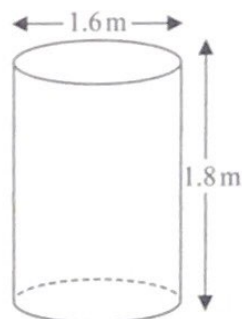
162 °

(Total for Question 28 is 4 marks)

29 Jeremy has to cover 3 tanks completely with paint.

Each tank is in the shape of a cylinder with a top and a bottom.
The tank has a diameter of 1.6 m and a height of 1.8 m.

Jeremy has 7 tins of paint.
Each tin of paint covers 5 m²

Has Jeremy got enough paint to cover completely the 3 tanks?
You must show how you get your answer.

Area of top and bottom $= 2 \times \pi \times 0.8^2 = 1.28\pi$
Area of curved surface $= 1.8 \times 1.6\pi = 2.88\pi$
Total area of 1 tank $= 2.88\pi + 1.28\pi = 4.16\pi$
Area of 3 tanks $= 3 \times 4.16\pi = 12.48\pi$
$\qquad\qquad\qquad = 39.21 \text{ cm}^2$

Area of 7 tins $= 7 \times 5 = 35 \text{ cm}^2$.

$\qquad 35 < 39.21$

Jeremy does <u>not</u> have enough paint.

(Total for Question 29 is 5 marks)

30 Solve the simultaneous equations

$$① \quad 3x - 4y = 11$$
$$② \quad 9x + 2y = 5$$

③ $= 2 \times$ ② $\Rightarrow$ $18x + 4y = 10.$

  ① + ③ $:$ $3x - 4y = 11$
              $18x + 4y = 10$

         $\Rightarrow$ $21x = 21$

           $\Rightarrow x = 1$

             $\Rightarrow y = -2$

$x =$ ....1........

$y =$ ....-2........

(Total for Question 30 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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