Please check the examination details below before entering your candidate information

Candidate surname	Other names

Centre Number | Candidate Number

Pearson Edexcel International GCSE

Wednesday 7 June 2023

Morning (Time: 2 hours)

Paper reference **4MA1/2FR**

Mathematics A

PAPER 2FR

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 ▶

P72827A

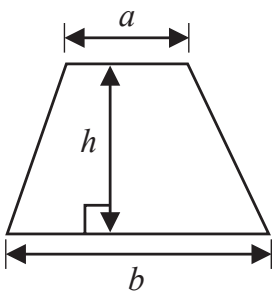
P 7 2 8 2 7 A 0 1 2 8

Pearson

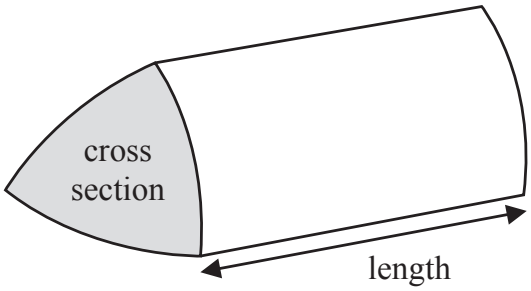
International GCSE Mathematics

Formulae sheet – Foundation Tier

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

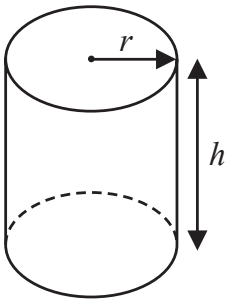


Volume of prism = area of cross section × length



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

20	21	23	25	27	29

From the numbers in the box, write down

(a) (i) the even number,

20 (1)

.....

(1)

(ii) the square number.

25 (1)

.....

(1)

prime	square	cube	factor	product

(b) Complete the following statements by writing a suitable word from the box on each of the dotted lines.

(i) 343 is the ..... cube (1) ..... of 7

(1)

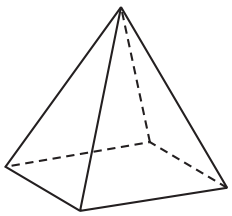
(ii) 9 is a ..... factor (1) ..... of 63

(1)

(Total for Question 1 is 4 marks)

---

2 Here is a solid shape.



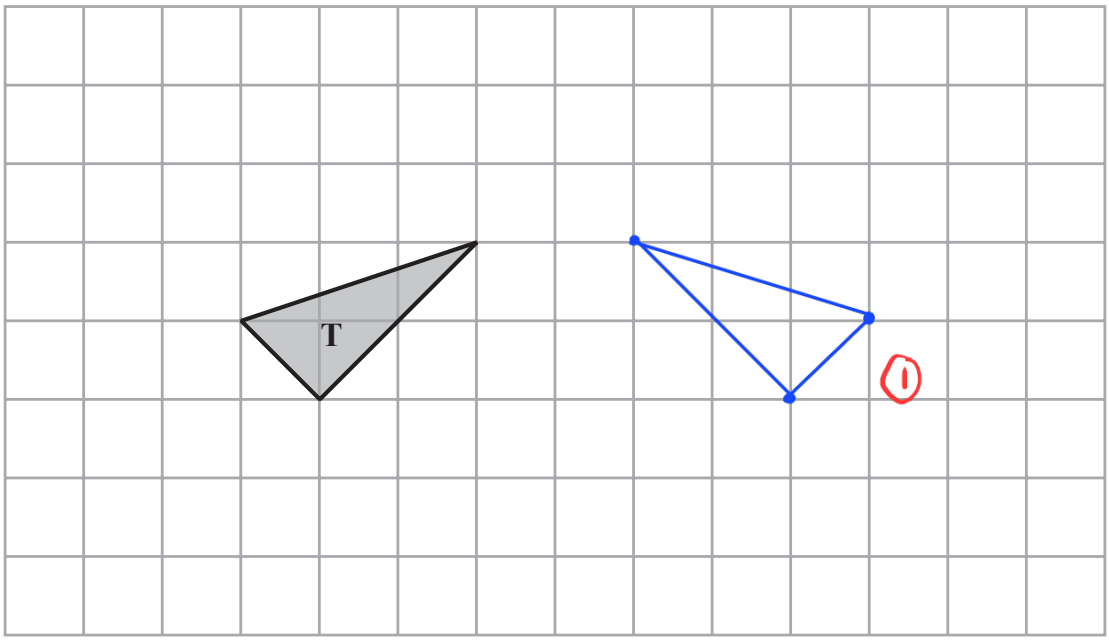
(a) Write down the number of edges of this shape.

8 (1)

.....

(1)

(b) On the grid below, draw a shape that is congruent to shape **T**



(1)

Here is a parallelogram.

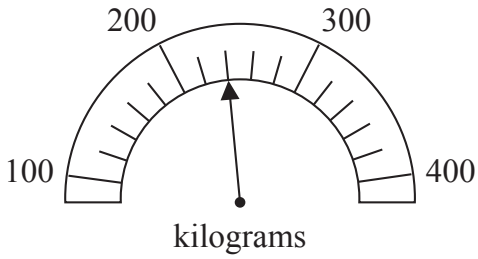
(c) Write down the order of rotational symmetry of the parallelogram.

2 (1)

.....

(1)

Here is a scale.



(d) Write down the weight marked by the arrow.

240 (1)

..... kilograms

(1)

(Total for Question 2 is 4 marks)

3 The table shows the mean daytime temperature for each of five planets.

Planet	Temperature (°C)
Jupiter	–160
Mars	–30
Mercury	430
Neptune	–210
Venus	470

(a) Which of these five planets has the lowest mean daytime temperature?

Neptune (1)

..... (1)

(b) Work out the difference between the mean daytime temperature for Jupiter and the mean daytime temperature for Venus.

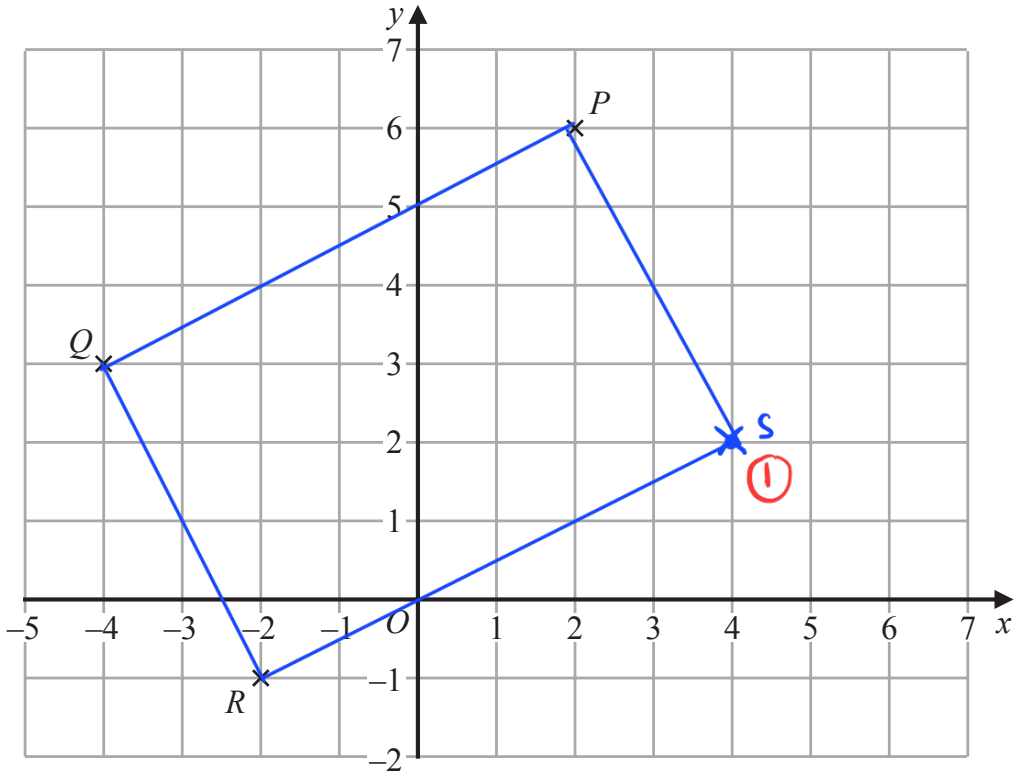
470 - (-160) = 630

630 (1) °C

..... (1)

(Total for Question 3 is 2 marks)

4



(a) Write down the coordinates of the point

(i) P

(2, 6) (1)

(ii) Q

(−4, 3) (1)

(b) On the grid above, mark with a cross (×) the point S so that $PQRS$ is a rectangle.

(1)

(Total for Question 4 is 3 marks)

5 Here is a list of fractions.

$$\frac{4}{5} \qquad \frac{3}{8} \qquad \frac{2}{3} \qquad \frac{12}{15} \qquad \frac{7}{10}$$

contains finite digits of number

One fraction from the list, when written as a decimal, is **not** a terminating decimal.

(a) Write down this fraction.

$\frac{2}{3}$ (1)

.....

(1)

Two fractions from the list are equivalent.

(b) Write down these two fractions.

$\frac{4}{5}$ and $\frac{12}{15}$ (1)

.....

(1)

(c) Write $\frac{7}{10}$ as a decimal.

0.7 (1)

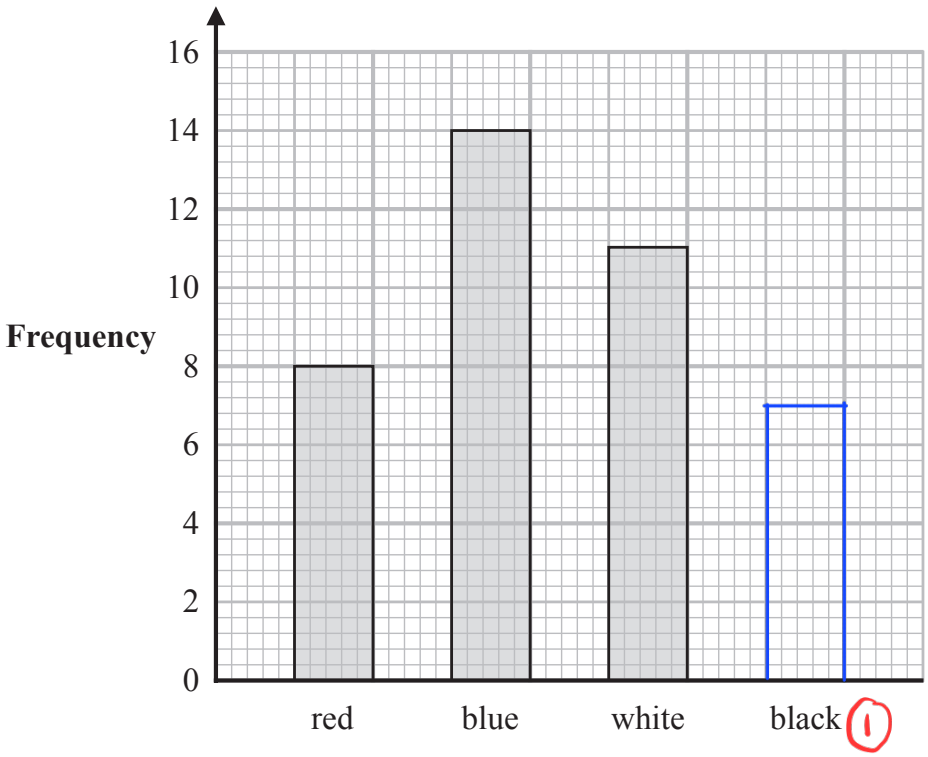
.....

(1)

(Total for Question 5 is 3 marks)

6 Tamzin recorded the colour of each of the cars she saw one afternoon.
She saw only red cars, blue cars, white cars and black cars.

The bar chart gives information about the numbers of red cars, blue cars and white cars that she saw.



(a) Write down the number of red cars that Tamzin saw.

8 (1)

(1)

Tamzin saw 40 cars in total.

(b) Draw a bar on the bar chart to show the number of black cars that Tamzin saw.

40 − 8 − 14 − 11 = 7 (1) (1)

(3)

(Total for Question 6 is 4 marks)

7 Gerhard is travelling from Zurich to Munich.

The table shows the exchange rate in each city.

Zurich	Munich
1 Swiss franc = 0.90 euros	1 euro = 1.08 Swiss francs

Gerhard wants to change 1620 Swiss francs to euros.

He would receive more euros if he changes his Swiss francs in Munich than he would receive if he changes his Swiss francs in Zurich.

How many more?

Zurich : $1620 \times 0.90 = 1458$ euros (1)

Munich : $1620 \div 1.08 = 1500$ euros (1)

difference : $1500 - 1458 = 42$ euros

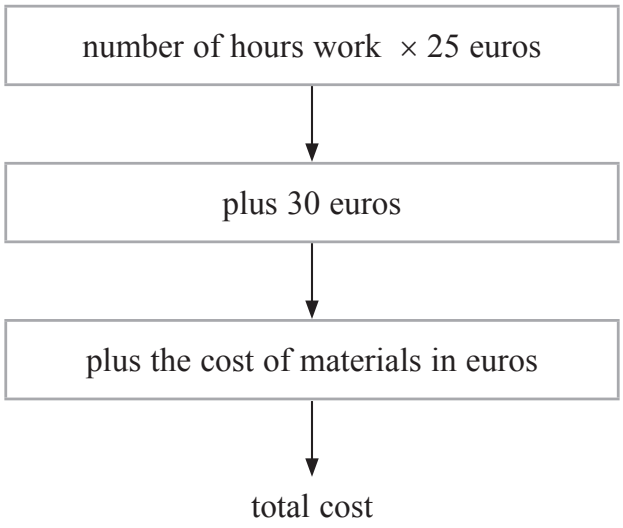
(1) (1)

42 euros

(Total for Question 7 is 4 marks)

8 Georgia is a plumber.

She uses this rule to work out the total cost, in euros, of her customers' bills.



Georgia does some plumbing work for Tallulah.

She works for 3 hours.
The cost of the materials she uses is 42 euros.

(a) Work out the total cost of Tallulah's bill.

Total cost : $(3 \times 25) + 30 + 42$ (1)

$= 75 + 30 + 42$

$= 147$ (1)

147 ..... euros

(2)

Georgia also does some plumbing work for Sam.

The cost of the materials she uses is 65 euros.
The total cost of Sam's bill is 220 euros.

(b) Work out the number of hours that Georgia works for Sam.

Let number of hours $= x$

$220 = 25x + 30 + 65$ (1)

$25x = 220 - 30 - 65$

$25x = 125$

$x = \frac{125}{25}$ (1) $= 5$ (1)

5 ..... hours

(3)

(Total for Question 8 is 5 marks)

9 The diagram shows quadrilateral *ABCD*

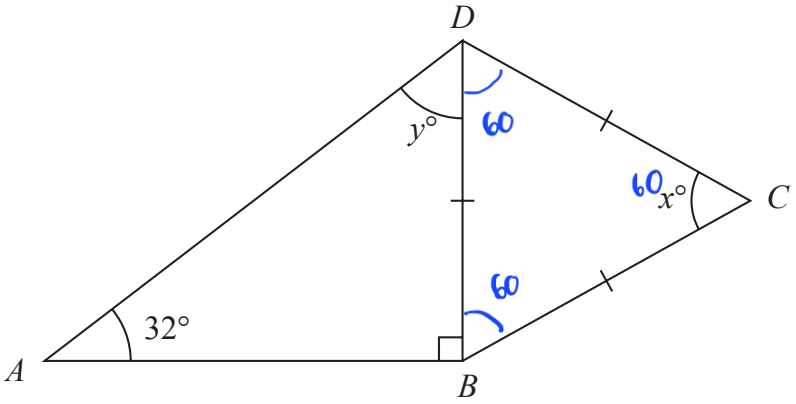


Diagram **NOT** accurately drawn

$BC = CD = DB$
angle $DBA = 90°$ and angle $DAB = 32°$

(a) Work out the value of x

$x =$ 60 (1)

(1)

(b) (i) Work out the value of y

180 - 90 - 32 = 58

$y =$ 58 (1)

(1)

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

Angles in a triangle add up to 180° (1)

(1)

(Total for Question 9 is 3 marks)

10 Haneul buys 120 packs of cherries.
Each pack of cherries that Haneul buys costs 28 Malaysian ringgits.

Haneul sells $\frac{4}{5}$ of the 120 packs of cherries.

He sells each of these packs for 46 Malaysian ringgits.

The remaining packs are unsold.

Work out Haneul's total profit.

Total sold : $\frac{4}{5} \times 120 = 96$ packs (1)

$96 \times 46 = 4416$ Malaysian ringgits (1)

Total price he bought : $120 \times 28 = 3360$ Malaysian ringgits

Profit : $4416 - 3360 = 1056$ (1) (1)

1056 Malaysian ringgits

(Total for Question 10 is 4 marks)

11 180 passengers travelled either to Seoul or to Tokyo.
They travelled either business class or economy class.

Of these 180 passengers

51 travelled business class to Seoul
69 travelled economy class to Tokyo
86 in total travelled business class

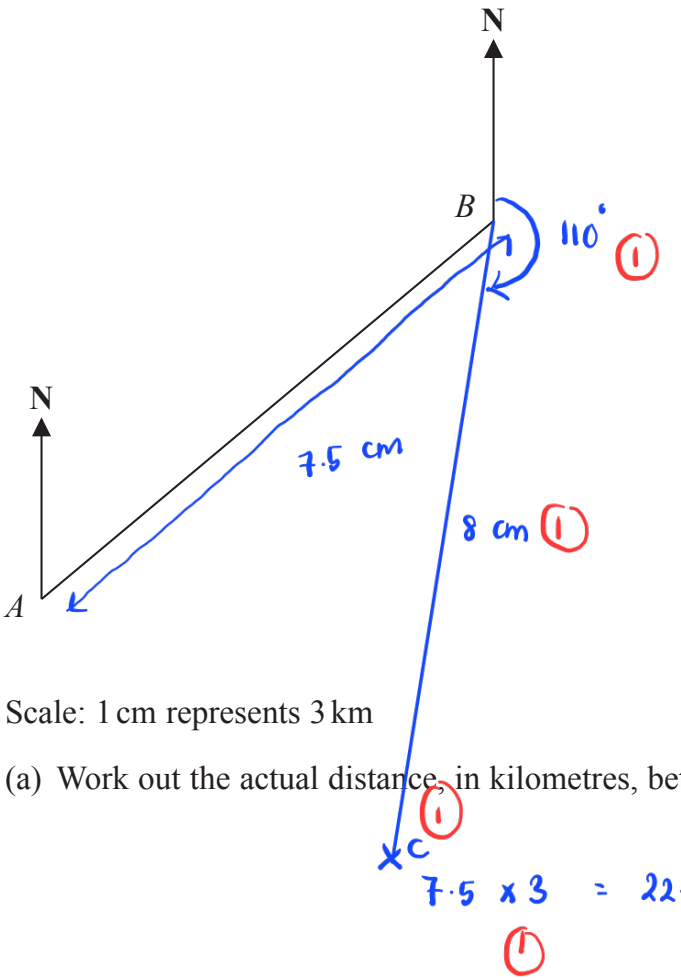
Use this information to complete the two-way table.

	Seoul	Tokyo	Total
Business class	51	35	86
Economy class	25	69	94
Total	76	104	180

(3)

(Total for Question 11 is 3 marks)

12 The scale drawing shows the positions of two boats, A and B



Scale: 1 cm represents 3 km

(a) Work out the actual distance, in kilometres, between A and B

22.5 km

(2)

Boat C is on a bearing of 110° from B
Boat C is 24 km from B

(b) On the scale drawing, mark with a cross (×) the position of boat C

(3)

(Total for Question 12 is 5 marks)

13 One week, an online company carried out a total of 175 deals.
49 of these deals were in yen.

Work out the percentage of deals carried out in yen.

$\frac{49}{175} \times 100\% = 28\%$ (1) (1)

28 %

(Total for Question 13 is 2 marks)

14 One month, Abbad raised money for charity by being sponsored to run and to walk.
His target was to raise 700 dirhams.

During the month, Abbad recorded a total distance of 135 km by running and by walking.
The ratio

number of km he ran : number of km he walked = 2 : 7

Abbad received 8 dirhams for each km he ran and 5 dirhams for each km he walked.

Abbad raised more money than his 700 dirhams target.

How much more?

Total ratio : $2 + 7 = 9$

distance he ran : $\frac{2}{9} \times 135 = 30$ km (1)

distance he walked : $\frac{7}{9} \times 135 = 105$ km (1)

Money raised : $30 \times 8 + 105 \times 5$

$= 240 + 525$

$= 765$ (1)

difference : $765 - 700$

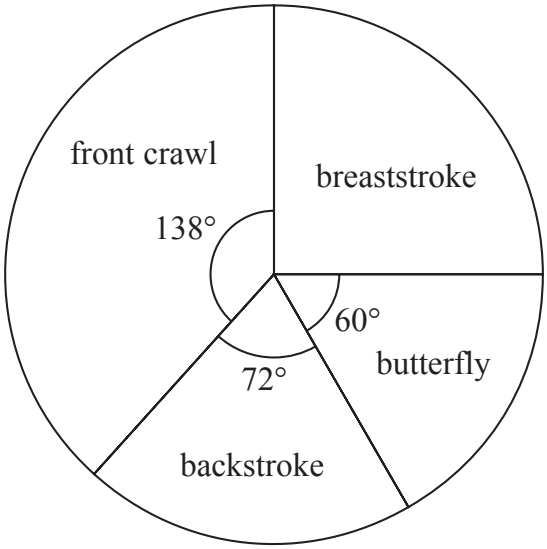
$= 65$ (1)

65 dirhams

(Total for Question 14 is 4 marks)

15 Sayeeda asked the members of a swimming club which one of front crawl, breaststroke, backstroke or butterfly is their favourite stroke.

The pie chart shows some information about their answers.



12 members said backstroke.

(a) Work out the number of members who said front crawl.

Front crawl = $\frac{138}{72} \times 12 = 23$ (1) (1)

23

(2)

There are 90 members in a diving club.
The diving club has a beginners group, an intermediate group and an advanced group.
Every member of the diving club is only in one of these groups.

The table shows information about the number of members in each group.

Group	beginners	intermediate	advanced
Frequency	18	x	$2x$

Kasim chooses at random one of the members of the diving club.

(b) Find the probability that this member is in the intermediate group.

Intermediate + advanced = 90 - 18 = 72 (1)

$3x = 72$
$x = 24$ (1)

$\frac{24}{90}$ (1)

(3)

(Total for Question 15 is 5 marks)

16 (a) Factorise $6y - 27$

$3(2y-9)$ (1)

(1)

(b) Expand $p(p - 2)$

$p^2 - 2p$ (1)

(1)

$T = 5g + 4r$

(c) Work out the value of r when $T = 46$ and $g = 17$

$46 = 5(17) + 4r$ (1)

$46 = 85 + 4r$

$4r = -39$

$r = \frac{-39}{4} = -9.75$ (1) (1)

$r =$ -9.75

(3)

$P = m^2 - 4c$

(d) Work out the value of P when $m = -5$ and $c = 3$

$P = (-5)^2 - 4(3)$

$= 25 - 12$ (1)

$= 13$ (1)

$P =$ 13

(2)

(e) Expand and simplify $(x + 5)(x - 7)$

$x^2 - 7x + 5x - 35$ (1)

$= x^2 - 2x - 35$ (1)

$x^2 - 2x - 35$

(2)

(Total for Question 16 is 9 marks)

17 Sandeep wants to buy some packets of pens and some boxes of pencils for his stationery shop.

Each packet of pens contains 9 pens.
Each box of pencils contains 12 pencils.

Each packet of pens costs £7.60
Each box of pencils costs £4.80

Sandeep can only buy full packets of pens and full boxes of pencils.
He wants to buy exactly the same number of pens as pencils.

Work out the minimum amount Sandeep needs to pay.

Multiples of 9 and 12 :

pens : 9, 18, 27, (36) (4 packets)

pencils: 12, 24, (36) (1) (3 boxes)

4(7·60) + 3(4·80) (1)

= 30·40 + 14·40 (1)

= 44·80 (1)

£ 44·80

(Total for Question 17 is 4 marks)

18 Anjali travels on the Eurostar train from Paris to Amsterdam.

The distance the train travels between Paris and Amsterdam is 515 km.
The time taken by the train to travel between Paris and Amsterdam is 3 hours 18 minutes.

Work out the average speed of the train.
Give your answer in km/h correct to the nearest whole number.

$\frac{18 \text{ minutes}}{60} = 0.3 \text{ hours}$

Time taken = 3.3 hours (1)

speed = $\frac{515 \text{ km}}{3.3 \text{ hours}}$ (1) = 156 km/h (1)

156 km/h

(Total for Question 18 is 3 marks)

19 Here are the first four terms of an arithmetic sequence.

38 (−7) 31 24 17

Find an expression, in terms of n, for the nth term of the sequence.

$a = 38$

$d = -7$

$T_n = 38 + (n-1)(-7)$

$= 38 - 7n + 7$

$= 45 - 7n$ (2)

$45 - 7n$

(Total for Question 19 is 2 marks)

20 A field is in the shape of a trapezium.

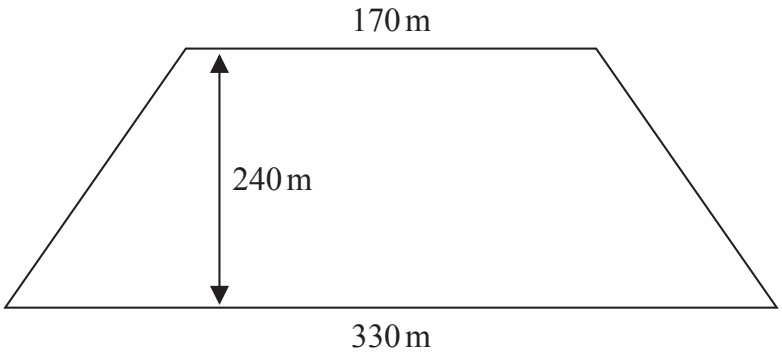


Diagram **NOT** accurately drawn

The field is sold for a price of \$49 650

Given that 1 hectare = 10 000 m^2

work out the average price of the field per hectare.

Area = $\frac{1}{2} \times 240 \times (170 + 330)$ (1)

= 120×500

= $60\,000\ m^2$

in hectare : $\frac{60\,000}{10000}$ (1)

= 6 hectares

price per hectare = $\frac{49\,650}{6}$ (1) = 8275 (1)

\$ 8275

(Total for Question 20 is 4 marks)

21 In his previous job, Pierre was paid 400 euros in total for working a 5-day week.

In his new job, Pierre is paid 14 euros per hour.
In his new job, Pierre works for 7 hours each day for a 5-day week.

(a) Work out the percentage increase in the amount that Pierre is paid for a 5-day week.

New job pay : $14 \times 7 \times 5 = 490$ euros (1)

increase in pay : $490 - 400 = 90$ euros (1)

% increase : $\frac{90}{400} \times 100\% = 22.5\%$ (1) (1)

22.5 ..... %

(4)

Marie changes her job.

Her salary decreases by 6%
Her new salary is 23 030 euros.

(b) Work out Marie's salary before she changes her job.

Let Salary before = x

$1 - 0.06 = 0.94$ (1)

$x \times 0.94 = 23030$

$x = \frac{23030}{0.94}$ (1) $= 24\,500$ (1)

24 500 ..... euros

(3)

(Total for Question 21 is 7 marks)

22 (a) Simplify $(4^{-2})^0$

1 (1)

.....

(1)

$3^{-14} \times 3^8 = 3^m$

(b) Find the value of m

$3^{-14+8} = 3^m$

$-14+8 = m$

$-6 = m$ (1)

$m =$ -6

.....

(1)

(Total for Question 22 is 2 marks)

23 (a) Solve $9 - 4x > 17$

$-4x > 17 - 9$ (1)

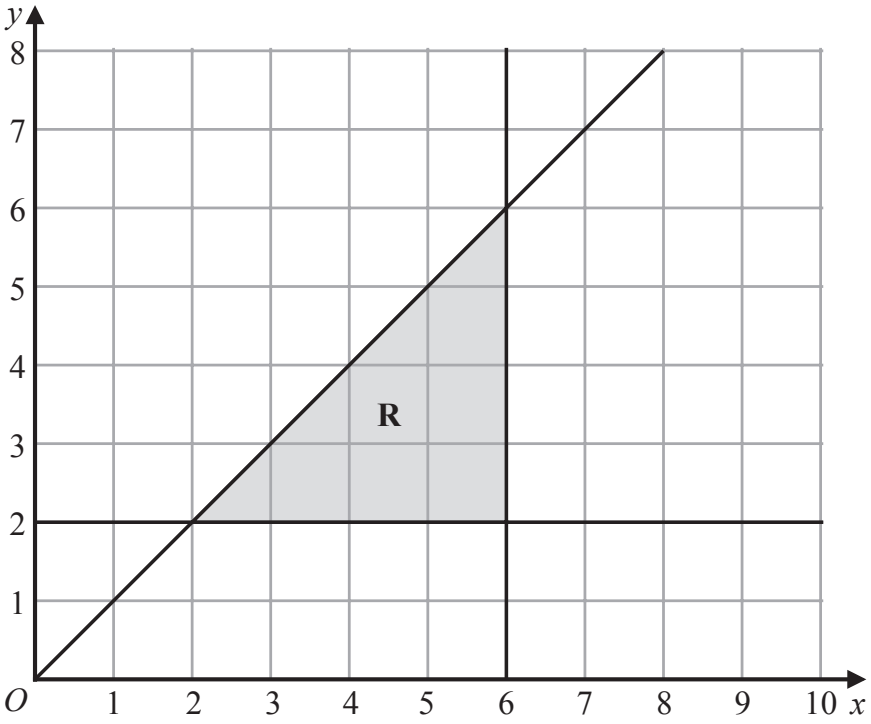
$-4x > 8$

$x < \frac{8}{-4}$

$x < -2$ (1)

$x < -2$

(2)



(b) Write down the three inequalities that represent the shaded region **R**

$x \leqslant 6$ (3)

$y \geqslant 2$

$y \leqslant x$

(3)

(Total for Question 23 is 5 marks)

24 The diagram shows a rectangular sheet of metal $ABCD$

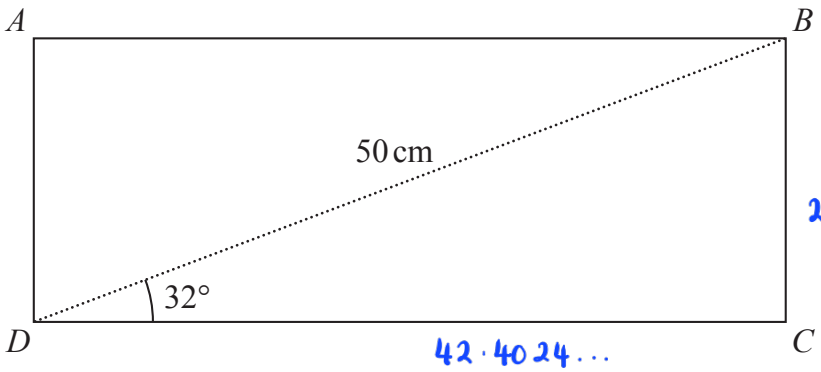


Diagram **NOT** accurately drawn

26.4959...

42.4024...

$BD = 50\,\text{cm}$ and angle $BDC = 32°$

Nasser joins side AD to side BC to form a cylinder.

BC is the height of the cylinder.
DC is the circumference of the cross section of the cylinder.

Work out the volume, in cm^3, of the cylinder.
Give your answer correct to 3 significant figures.

$\sin 32° = \frac{BC}{50}$ (1)

$BC = 50 \sin 32° = 26.4959...$ (1)

$\cos 32° = \frac{CD}{50}$ (1)

$CD = 50 \cos 32° = 42.4024...$

$42.4024... = 2\pi r$

$r = \frac{42.4024...}{2\pi} = 6.74855...$ (1)

Volume $= \pi \times 6.74855...^2 \times 26.4959...$ (1)

$= 3790$ (1)

3790

..... cm^3

(Total for Question 24 is 6 marks)

Turn over for Question 25

25 Gemara works as a taxi driver.
Last week, he recorded the following information about the distances he drove.

For the 5 days from Monday to Friday, the mean number of kilometres he drove was 104
For the 7 days from Monday to Sunday, the mean number of kilometres he drove was 127

On Saturday, Gemara drove 132 kilometres.

Work out the number of kilometres he drove on Sunday.

Total distance :

Monday to Friday : $5 \times 104 = 520$ km (1)

Monday to Sunday : $7 \times 127 = 889$ km

Saturday and Sunday : $889 - 520 = 369$ km (1)

Sunday : $369 - 132 = 237$ km (1)

237 kilometres

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

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