Please check the examination details below before entering your candidate information

Candidate surname	Other names

Pearson Edexcel International GCSE

Centre Number | | | | | |

Candidate Number | | | | |

Tuesday 19 May 2020

Morning (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 ▶

P62650A

1/1/1/

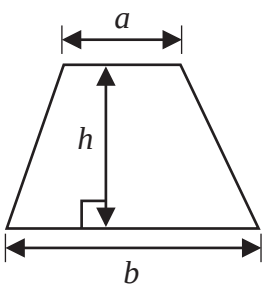
P 6 2 6 5 0 A 0 1 2 8

Pearson

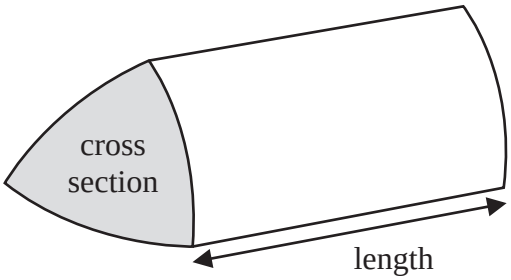
International GCSE Mathematics

Formulae sheet – Foundation Tier

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

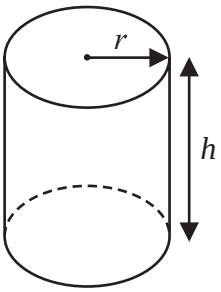


Volume of prism = area of cross section × length



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

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



Answer ALL TWENTY THREE questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table gives information about the amount of crude oil, in barrels, produced per day by each of six countries in 2015

Country	Crude oil produced per day (number of barrels)
Australia	322 300
Congo	269 000
Gabon	213 300
South Sudan	220 000
Thailand	248 200
Vietnam	333 400

(a) Write down the name of the country that produced the least number of barrels of crude oil.

Gabon (1)

.....

(1)

(b) Work out the difference between the number of barrels of crude oil produced by Vietnam and the number of barrels of crude oil produced by Australia.

333 400 - 322 300 = 11 100

11 100 (1) barrels

.....

(1)

Thailand produced 248 200 barrels of crude oil.

(c) Write 248 200 correct to the nearest thousand.

↖ 2 < 5, so we round down to 0.

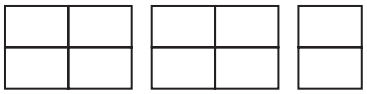
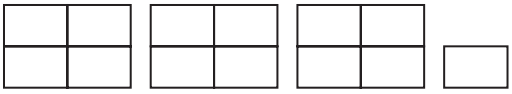
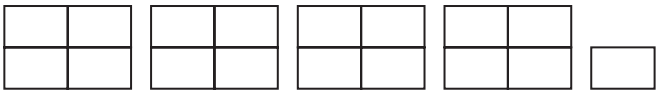
248 000 (1)

.....

(1)

(Total for Question 1 is 3 marks)

2 The pictogram shows information about the number of books sold in a shop each day from Monday to Thursday last week.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	 (1)

Key:

represents 20 books

$\frac{35}{20} = 1\frac{3}{4}$

(a) How many books were sold on Wednesday last week?

$5 \times 20 = 100$

100 (1)

(1)

35 books were sold in the shop on Friday last week.

(b) Show this information on the pictogram.

(1)

Last week

some books were sold in the shop on Saturday
no books were sold in the shop on Sunday
a total of 500 books were sold in the shop.

(c) Work out the number of books that were sold in the shop on Saturday last week.

Total books sold from Monday to Friday :  represents 5 books

$(10 \times 5) + (13 \times 5) + (20 \times 5) + (17 \times 5) + (7 \times 5)$

$= 50 + 65 + 100 + 85 + 35$

$= 335$ (1)

Total books sold on Saturday :

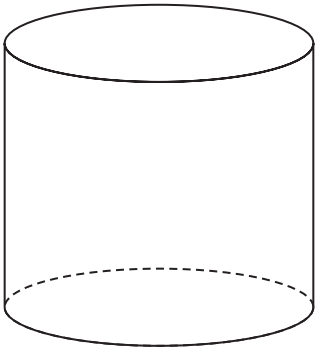
$500 - 335 = 165$ books (1) (1)

165

(3)

(Total for Question 2 is 5 marks)

3 (a) Write down the mathematical name of this 3-D shape.



cylinder (1)

(1)

Here is a solid cuboid.

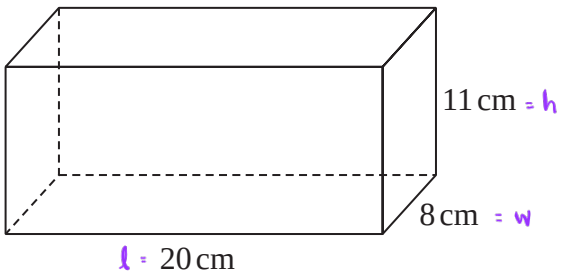


Diagram **NOT** accurately drawn

(b) (i) How many faces has the cuboid?

6 (1)

(ii) How many vertices has the cuboid?

8 (1)

(2)

(c) Work out the volume of the cuboid.

volume of cuboid = l x w x h

V = 20 x 8 x 11 (1)

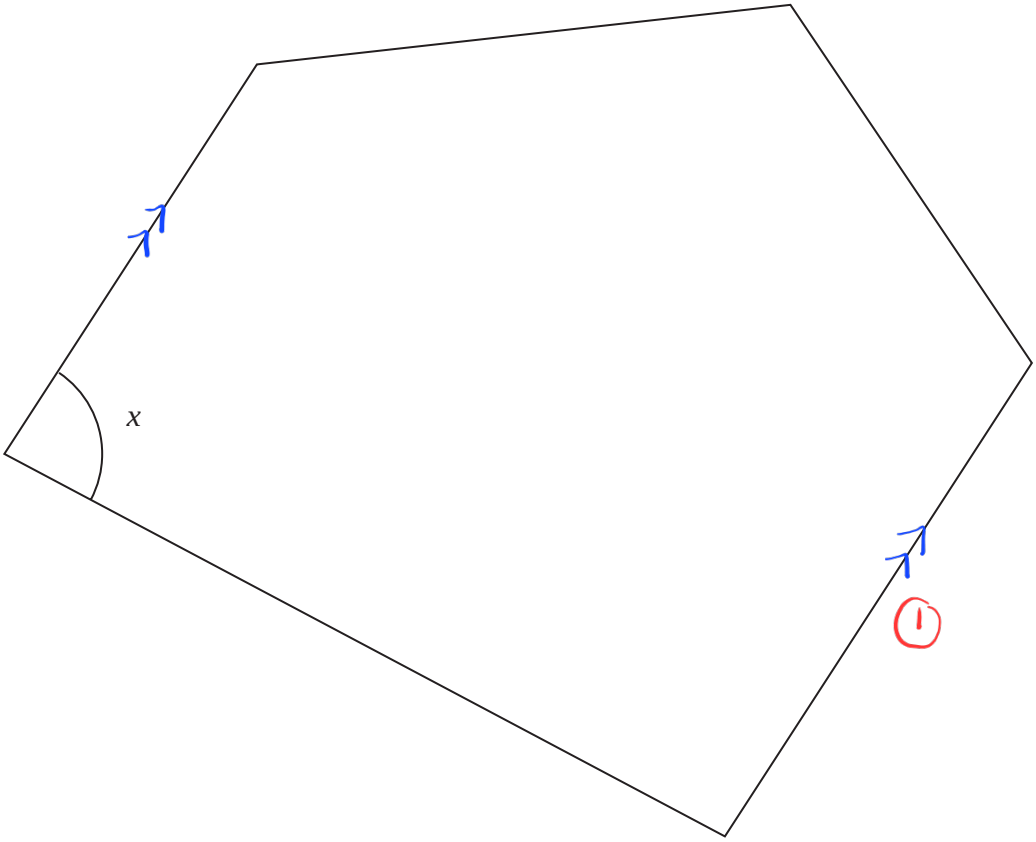
= 1760 (1)

1760 cm^3

(2)

(Total for Question 3 is 5 marks)

4 Here is a polygon with five sides.



(a) Write down the mathematical name of a polygon with five sides.

pentagon (1)

(1)

(b) Measure the size of the angle marked *x*.

85 (1) °

(1)

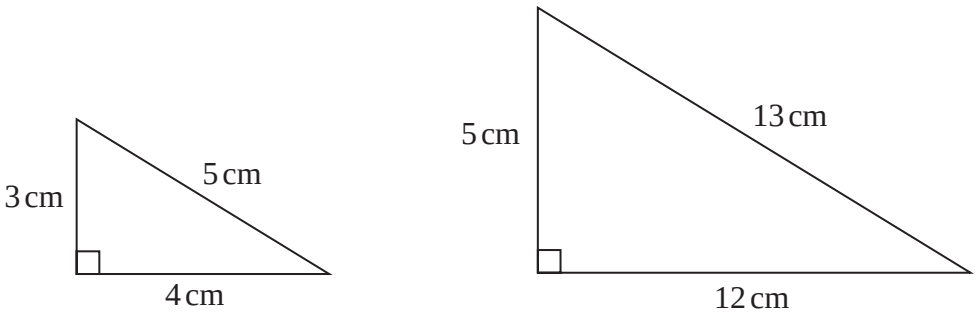
Two sides of the polygon are parallel. lines will never meet

(c) On the polygon, mark with arrows (>>) this pair of parallel lines.

(1)

Here are two triangles.

Diagram **NOT** accurately drawn



Triangle **A** Triangle **B**

(d) Are triangle **A** and triangle **B** similar triangles?
You must give a reason for your answer.

No. Because $12 \div 4 = 3$ but $13 \div 5$ does not equal to 3. (1)

(1)

(Total for Question 4 is 4 marks)

5 Matt buys a notebook and some pencils.

The notebook costs \$2.35
Each pencil costs \$0.74

Matt has a total of \$20 to spend on the notebook and the pencils.
He buys the greatest number of pencils that he can.

Work out how many pencils he buys.

Finding the amount of money Matt can spend on pencils:

$20 - 2.35 = 17.65$ (1)

Finding how many pencils he can buy:

$\frac{17.65}{0.74} = 23.85$ (1) ← not enough to buy 24

∴ Matt can by maximum of 23 pencils. (1)

23

(Total for Question 5 is 3 marks)

6 (a) Write $\frac{24}{40}$ as a fraction in its simplest form.

$\frac{24 \div 2}{40 \div 2} = \frac{12 \div 2}{20 \div 2} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$ (1) (1)

divide both numerator and denominator with their common factor

$\frac{3}{5}$

(2)

(b) Write $\frac{1}{5}$ as a decimal.

0.2 (1)

(1)

There are only blue bricks and white bricks in a box.
The ratio of the number of blue bricks to the number of white bricks is 3 : 7

(c) What fraction of the bricks in the box are blue bricks?

Total bricks ratio = 3 + 7 = 10

Blue brick = $\frac{3}{10}$ (1)

$\frac{3}{10}$

(1)

(d) Show that $\frac{3}{8} + \frac{1}{24} = \frac{5}{12}$

LHS : $\frac{3 \times 3}{8 \times 3} + \frac{1}{24}$

$= \frac{9}{24} + \frac{1}{24}$ (1)

$= \frac{10 \div 2}{24 \div 2} = \frac{5}{12}$ (shown) (1)

(2)

There are 280 counters in a bag.

$\frac{1}{2}$ of the counters are red.

$\frac{2}{5}$ of the counters are yellow.

The rest of the counters are green.

(e) Work out the number of green counters in the bag.

Red : $\frac{1}{2} \times 280 = 140$

Yellow : $\frac{2}{5} \times 280 = 112$ (1)

Green : $280 - 140 - 112$ (1)

$= 28$ (1)

28

(3)

(Total for Question 6 is 9 marks)

7 (a) Simplify $5c \times d$

5cd (1)

(1)

(b) Solve $x + 5 = 12$

$x + 5 = 12$

$x = 12 - 5$ (−5)

$= 7$

$x =$ 7 (1)

(1)

(c) Solve $9y = 36$

$9y = 36$

$y = \frac{36}{9}$ (÷9)

$= 4$

$y =$ 4 (1)

(1)

(d) Simplify $8k + 5m - 2k + 6m$

$8k + 5m - 2k + 6m$

$8k - 2k + 5m + 6m$

$6k + 11m$

6k + 11 m (2)

(2)

(e) Expand $4(3g + 1)$

$4(3g + 1)$

$12g + 4$

12g + 4 (1)

(1)

(Total for Question 7 is 6 marks)

8 Pavel asked 60 people at an airport where they came from.
All of the 60 people came from Europe or Africa or Asia.

9 people came from Africa.
14 females came from Europe.
3 males came from Africa.
16 of the 29 males came from Asia.

Using this information, complete the two-way table.

	Europe	Africa	Asia	Total
Male	10	3	16	29
Female	14	6	11	31
Total	24	9	27	60

(4)

(Total for Question 8 is 4 marks)

9 $c = 4$
$d = 7$

(a) Work out the value of $3c + 2d$

$3(4) + 2(7)$ (1)
$= 12 + 14$
$= 26$ (1)

26

(2)

$p = -6$
$m = -2$

(b) Work out the value of $2p^2 + 3m$

$2(-6)^2 + 3(-2)$ (1)
$= 2(36) - 6$
$= 72 - 6$
$= 66$ (1)

66

(2)

There are 6 eggs in a small box of eggs.
There are 12 eggs in a large box of eggs.

Alex buys g small boxes of eggs and h large boxes of eggs.
He buys a total of T eggs.

(c) Write down a formula for T in terms of g and h.

Alex buys :
small eggs : $6g$
large eggs : $12h$

Total, $T = 6g + 12h$ (3)

$T = 6g + 12h$

(3)

(Total for Question 9 is 7 marks)

10 (a) Use your calculator to work out the value of $\dfrac{67.8 + 4.6^2}{\sqrt{56}}$

Write down all the figures on your calculator display.

$= \dfrac{88.96}{7.4833..}$ (1)

$= 11.88778004$ (1)

11.88778004

(2)

(b) Give your answer to part (a) correct to 2 significant figures.

11.88778004

↑ since 8 > 5, round up 1 to 2.

12 (1)

(1)

(Total for Question 10 is 3 marks)

11 A circle has radius 18 cm.

Work out the circumference of the circle.
Give your answer correct to 3 significant figures.

circumference = $2\pi r$

$= 2 \times \pi \times 18$ (1)

$= 113$ (3 s.f.) (1)

113 ..... cm

(Total for Question 11 is 2 marks)

12 Gavin bought 3 pairs of jeans in the USA.
He paid a **total** of $72

Gavin sold the 3 pairs of jeans in England.
He sold each pair of jeans for £34.50

£1 = $1.34

Work out Gavin's percentage profit.
Give your answer correct to the nearest whole number.

Finding price he pays for 1 pair :

$\frac{\$72}{3} = \$24$

Converting the price to £ :

$\$24 \times \frac{1\,£}{\$1.34} = £17.91$ (1 pair) (1)

Calculating profit he earns for 1 pair :

£34.50 − £17.91 = £16.59 (1 pair) (1)

Calculating his percentage profit :

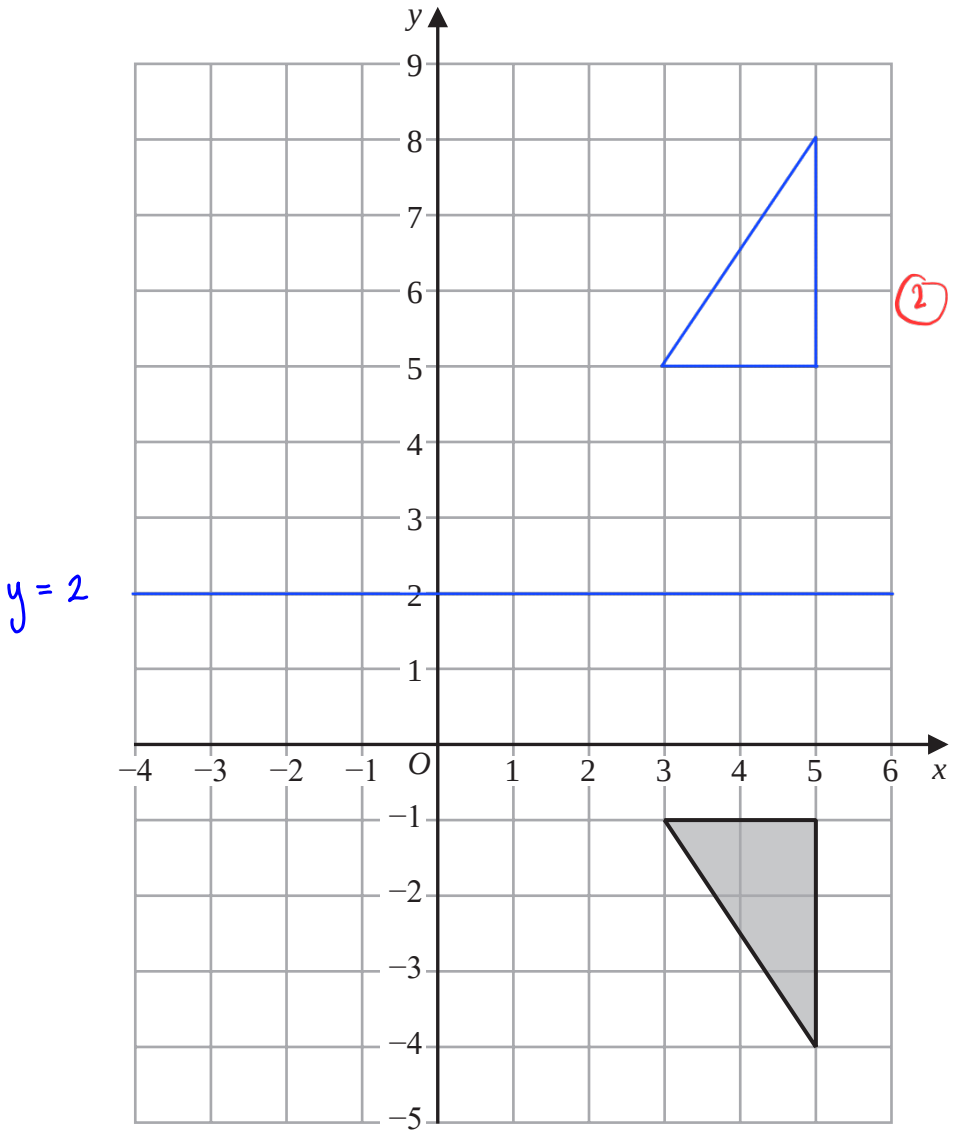
$\frac{16.59}{17.91} \times 100\% = 92.6\%$ (1)

= 93 % (nearest whole number) (1)

93 ..... %

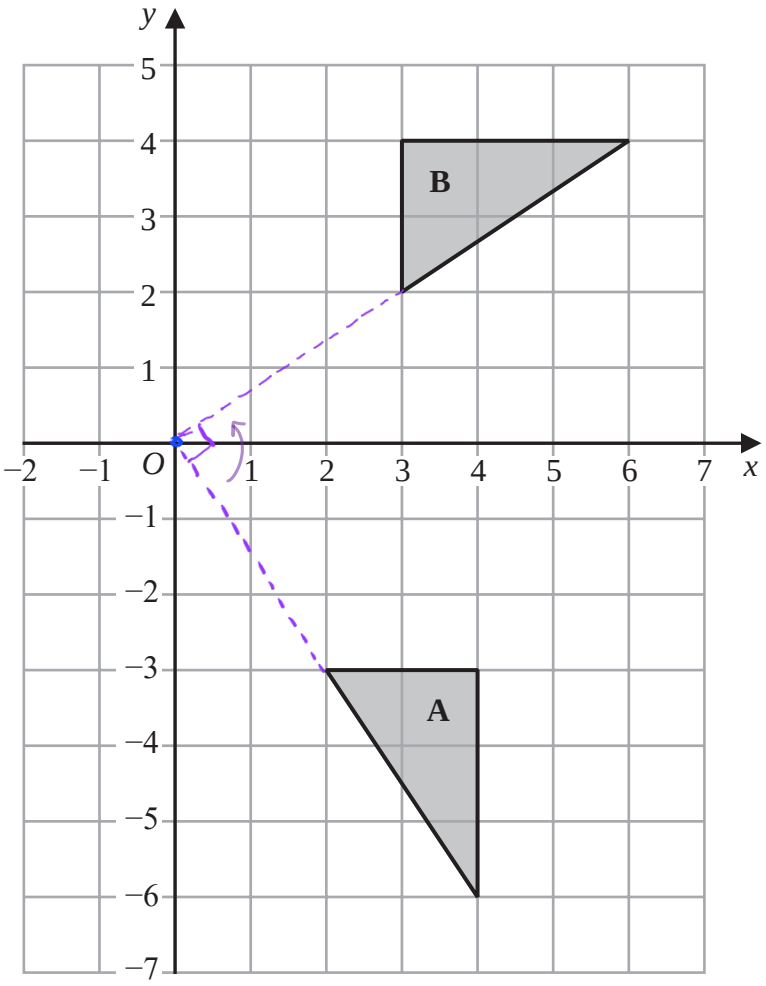
(Total for Question 12 is 4 marks)

13



(a) On the grid, reflect the shaded triangle in the line with equation $y = 2$

(2)



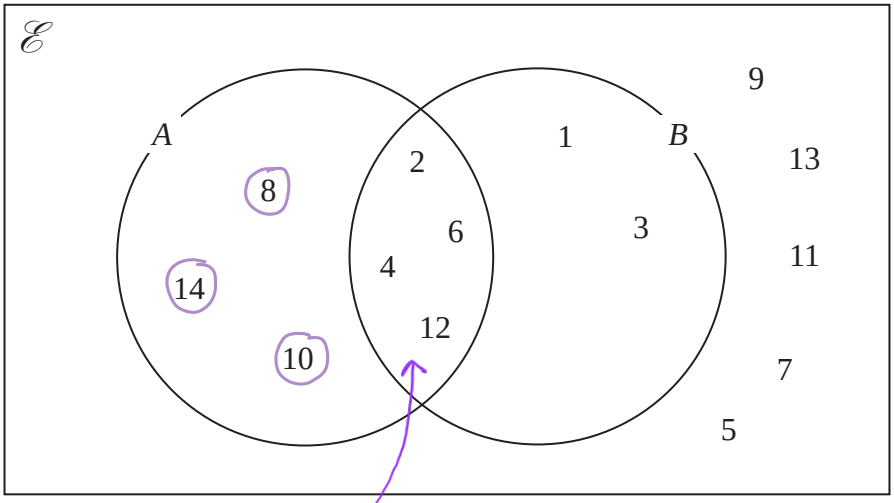
(b) Describe fully the single transformation that maps triangle **A** onto triangle **B**.

(3)

Rotation of 90° anticlockwise about (0,0) (3)

(Total for Question 13 is 5 marks)

14 The numbers from 1 to 14 are shown in the Venn diagram.



(a) List the members of the set $A \cap B$

2, 4, 6, 12 (1)

.....

(1)

(b) List the members of the set B' everything but B

5, 7, 8, 9, 10, 11, 13, 14 (1)

.....

(1)

A number is picked at random from the numbers in the Venn diagram.

(c) Find the probability that this number is in set A but is **not** in set B.

3 numbers out of 14

$\frac{3}{14}$ (2)

.....

(2)

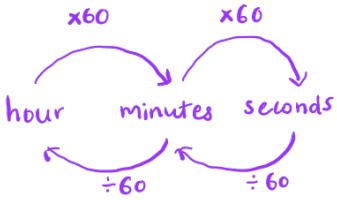
(Total for Question 14 is 4 marks)

15 Toy cars are made in a factory.
The toy cars are made for 15 hours each day.
5 toy cars are made every 12 seconds.

For the toy cars made each day, the probability of a toy car being faulty is 0.002

Work out an estimate of the number of faulty toy cars that are made each day.

15 hours × 60 × 60 = 54 000 seconds (1)



∴ 12 seconds = 5 cars

∴ 54000 seconds = $\frac{54000}{12}$ × 5 = 22500 cars (1)

∴ Faulty car each day = 0.002 × 22500 cars (1)

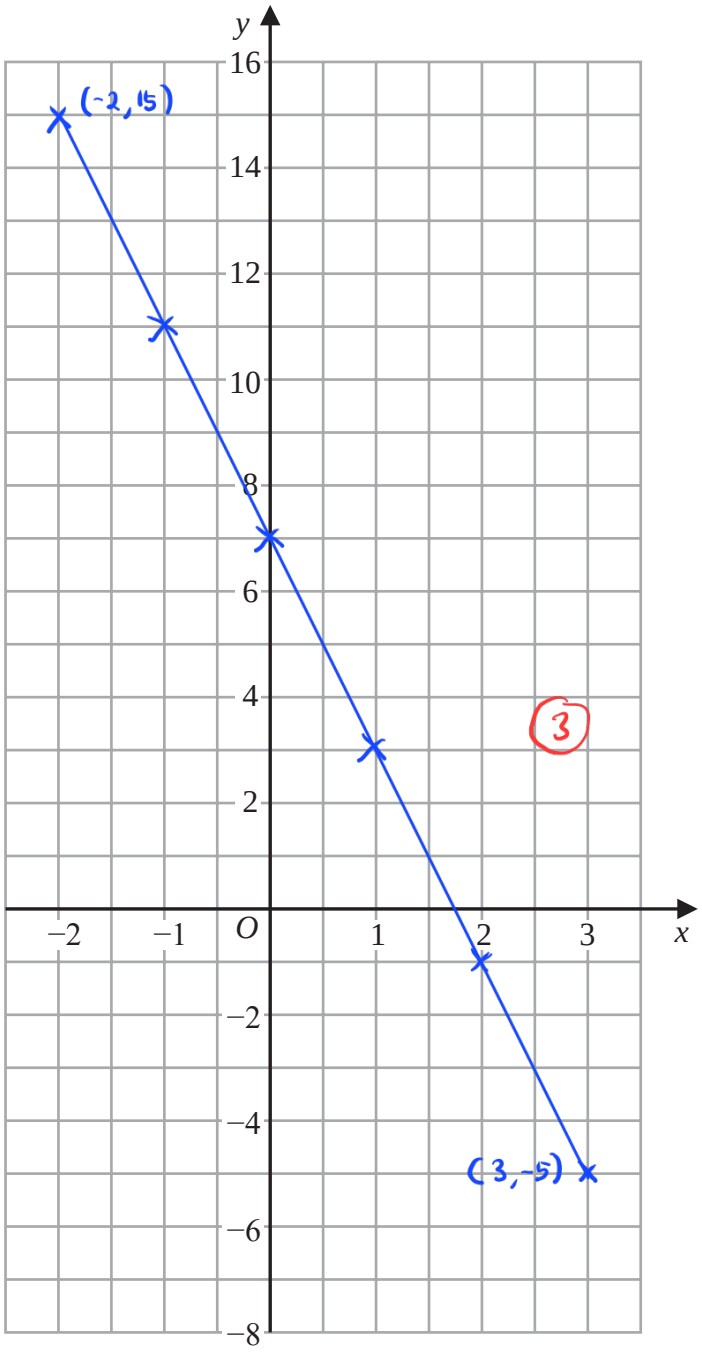
= 45 faulty cars (1)

45

(Total for Question 15 is 4 marks)

16 On the grid, draw the graph of $y = 7 - 4x$ for values of x from -2 to 3

x	-2	-1	0	1	2	3
y	15	11	7	3	-1	-5



(Total for Question 16 is 3 marks)

17 Here is a list of six numbers written in order of size.

4 7 x 10 y y

8

The numbers have

a median of 9
a mean of 11

Find the value of x and the value of y.

median = $\frac{10 + x}{2} = 9$ (1)

$10 + x = 18$ (−10)

$\therefore x = 8$

mean = $11 = \frac{4 + 7 + 8 + 10 + 2y}{6}$ (1)

$66 = 29 + 2y$ (×6)

$66 - 29 = 2y$ (−2y)

$2y = 37$ (1) (÷2)

$\therefore y = 18.5$

$x =$ 8 (1)

$y =$ 18.5

(Total for Question 17 is 4 marks)

18 (a) Write 5.7×10^{-3} as an ordinary number.

0 . 0 0 5 . 7

0.0057 (1)

(1)

(b) Write 800 000 in standard form.

800 000
5 times

8.0×10^5 (1)

(1)

(c) Work out $\dfrac{3 \times 10^5 - 2.7 \times 10^4}{6 \times 10^{-2}}$

$3 \times 10^5 \rightarrow 30 \times 10^4$

$$\frac{30 \times 10^4 - 2.7 \times 10^4}{6 \times 10^{-2}} = \frac{(30 - 2.7) \times 10^4}{6 \times 10^{-2}}$$

$$= \frac{273\,000}{0.06} \text{ (1)}$$

$= 4550\,000$ (1)

4550 000

(2)

(Total for Question 18 is 4 marks)

19 A rocket travelled 100 km at an average speed of 28 440 km/h.

Work out how long it took the rocket to travel the 100 km.
Give your answer in seconds, correct to the nearest second.

speed = distance / time

time = distance / speed

$= \dfrac{100 \text{ km}}{28\,440 \text{ km/h}}$ (1)

convert h to s

$= 0.0035 \text{ h} \times \dfrac{3600 \text{ s}}{1 \text{ h}}$ (1)

$= 12.6 \text{ s}$

$= 13 \text{ s}$ (nearest second) (1)

hour ×60 minute ×60 second ÷60 ÷60

13 seconds

(Total for Question 19 is 3 marks)

20 (a) Solve $5(4 - x) = 7 - 3x$
Show clear algebraic working.

$5(4-x) = 7 - 3x$

$20 - 5x = 7 - 3x$ (1)

$20 - 7 = -3x + 5x$ (1)

$13 = 2x$

$x = \frac{13}{2} = 6.5$ (1)

$x =$ 6.5

(3)

(b) Factorise fully $16m^3g^3 + 24m^2g^5$

$8(2m^3g^3 + 3m^2g^5)$ – factorise integers

$= 8m^2(2mg^3 + 3g^5)$ (1) – factorise m terms

$= 8m^2g^3(2m + 3g^2)$ (1) – factorise g terms

$8m^2g^3(2m+3g^2)$

(2)

(c) (i) Factorise $y^2 - 2y - 48$

$y = \frac{2 \pm \sqrt{(-2)^2 - 4(-48)}}{2}$

$= \frac{2 \pm 14}{2}$

$y = 8$ or -6 (1) Hence, $(y+6)(y-8)$ (1)

$(y+6)(y-8)$

(2)

(ii) Hence, solve $y^2 - 2y - 48 = 0$

8, −6 (1)

(1)

(Total for Question 20 is 8 marks)

21 Here is a 10-sided polygon.

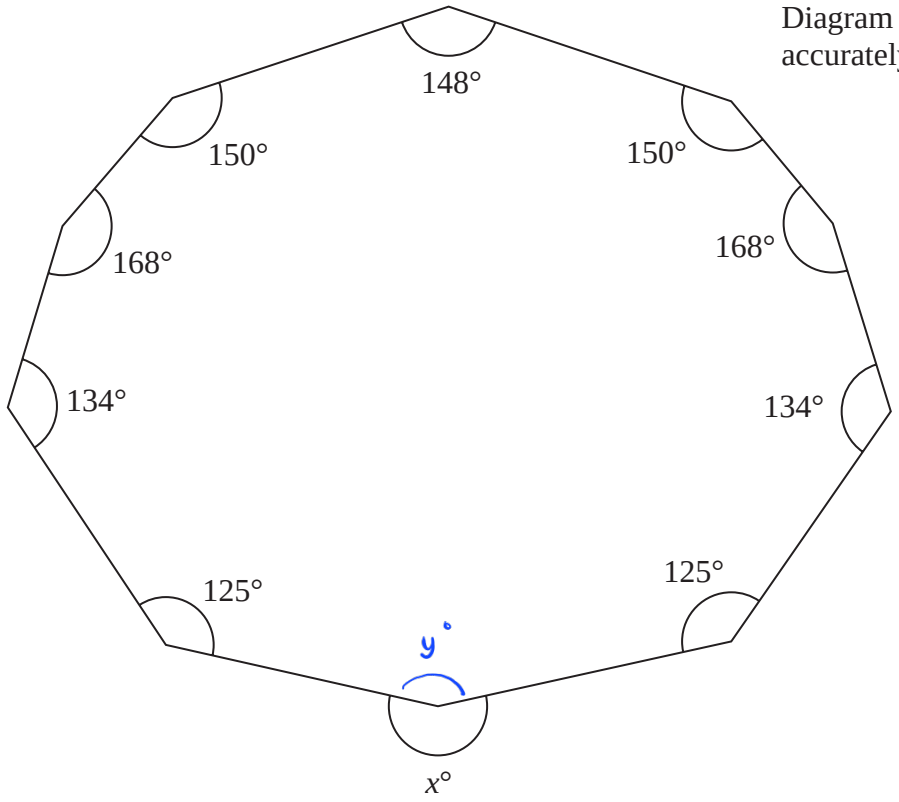


Diagram **NOT** accurately drawn

Work out the value of x.

angle inside polygon : $(n-2) \times 180^\circ$

$: (10-2) \times 180^\circ = 1440^\circ$ (1)

$125^\circ + 134^\circ + 168^\circ + 150^\circ + 148^\circ + 150^\circ + 168^\circ + 134^\circ + 125^\circ + y^\circ = 1440^\circ$

$y^\circ = 1440^\circ - 1302^\circ$

$= 138^\circ$ (1)

$\therefore x^\circ = 360^\circ - y^\circ$

$: 360^\circ - 138^\circ$ (1)

$: 222^\circ$ (1)

$x =$ 222°

(Total for Question 21 is 4 marks)

22 In a sale, normal prices are reduced by 20%

A bag costs 1080 rupees in the sale.

Work out the normal price of the bag.

Normal price $- \frac{20}{100} \times$ normal price $= 1080$

(1)

$0.8 \times$ normal price $= 1080$

normal price $= \frac{1080}{0.8}$ (1)

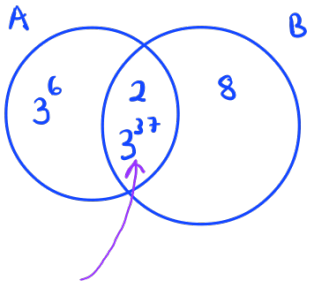
$= 1350$ (1)

1350 ..... rupees

(Total for Question 22 is 3 marks)

23 $A = 2 \times 3^{43}$
$B = 16 \times 3^{37}$

(a) Find the highest common factor (HCF) of A and B.



HCF of A and B is 2×3^{37}

2×3^{37} (1)

(1)

(b) Express the number $A \times B$ as a product of powers of its prime factors.
Give your answer in its simplest form.

$A = 2 \times 3^{43}$

$B = 16 \times 3^{37}$

$= 2^4 \times 3^{37}$

$A \times B = (2 \times 3^{43}) \times (2^4 \times 3^{37})$ (1)

$= 2 \times 2^4 \times 3^{43} \times 3^{37}$

$= 2^{1+4} \times 3^{43+37}$

$= 2^5 \times 3^{80}$ (1)

$2^5 \times 3^{80}$

(2)

(Total for Question 23 is 3 marks)

TOTAL FOR PAPER IS 100 MARKS

BLANK PAGE

BLANK PAGE