

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

Pearson Edexcel Level 1/Level 2 GCSE (9–1)**Friday 19 May 2023**

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, Formulae Sheet (enclosed). 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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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P 7 5 1 4 7 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.

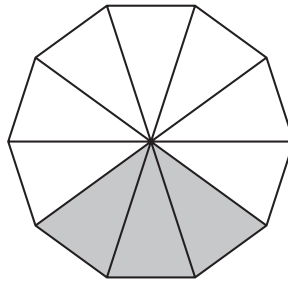
- 1 Write 38% as a decimal.

0.38

✓ ①

(Total for Question 1 is 1 mark)

- 2 What fraction of this shape is shaded?



3 shaded
10 total

$\frac{3}{10}$ ✓ ①

(Total for Question 2 is 1 mark)

- 3 Here is a list of numbers.

1.6 1.4 2.1 0.5 1.3

From the list, write down the smallest number.

0.5

✓ ①

(Total for Question 3 is 1 mark)

- 4 Work out $-9 + 5$

-4 ✓ ①

(Total for Question 4 is 1 mark)

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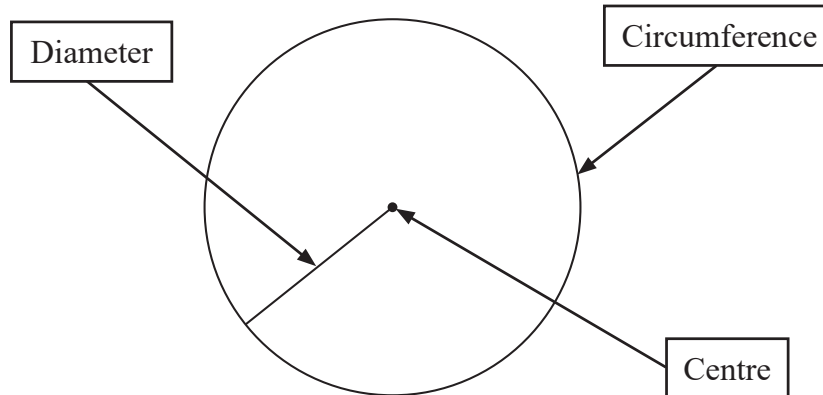
5 Solve $p - 2 = 3$

$$\begin{array}{r} +2 \quad +2 \\ p = 5 \end{array}$$

$$p = \dots\dots\dots 5 \quad \text{✓ ①}$$

(Total for Question 5 is 1 mark)

6 Freddie adds labels to this diagram of a circle.



Explain why one of the labels is wrong.

diameter meant to go from one side of the circle to the other, passing the centre ✓ ①

(Total for Question 6 is 1 mark)



7 Write down **three** different factors of 20

factor = a number that can divide into it

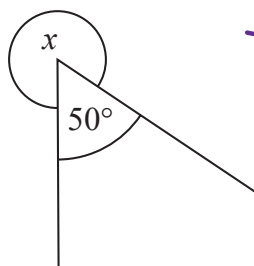
all factors

$$\left[\begin{array}{l} 1 \times 20 = 20 \\ 5 \times 4 = 20 \\ 10 \times 2 = 20 \end{array} \right.$$

$$\begin{array}{r} \text{JJ } \textcircled{2} \\ 1 \quad 5 \quad 20 \\ \hline \end{array}$$

(Total for Question 7 is 2 marks)

8



→ a full circle minus the 50°

(a) Work out the size of the angle marked x .

$$360^\circ - 50^\circ = 310$$

JJ $\textcircled{1}$

$$\begin{array}{r} \text{JJ } \textcircled{1} \\ 310 \\ \hline (2) \end{array}$$

A student says that an angle of 50° is an obtuse angle.

The student is wrong.

(b) Explain why.

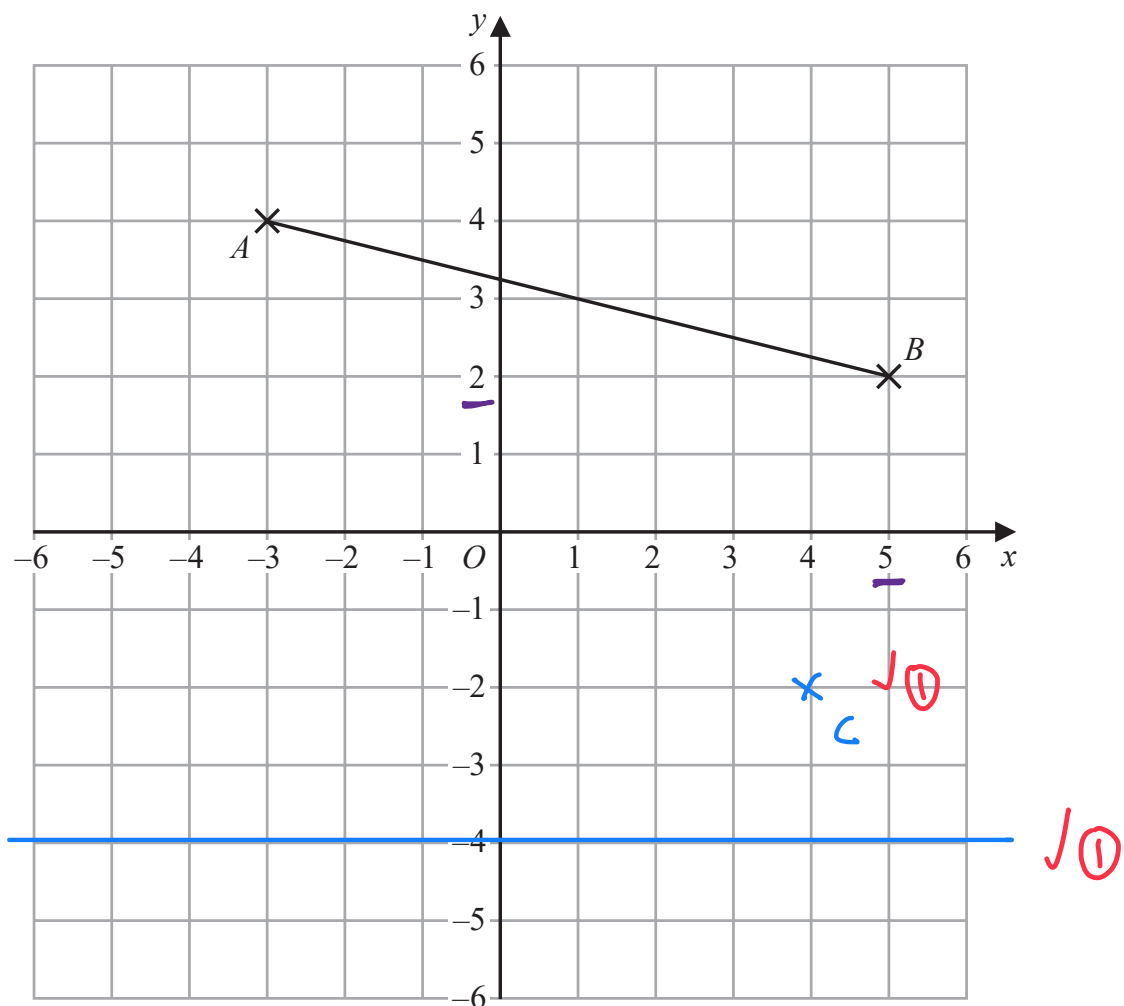
obtuse angle has to be over 90 and less than 180° JJ $\textcircled{1}$

(1)

(Total for Question 8 is 3 marks)



9



- (a) Write down the coordinates of point B.

B is 5 along, 2 up

(5, 2)
(1)

- (b) Plot the point with coordinates (4, -2)
Label this point C.

4 along, 2 down

(1)

- (c) Write down the coordinates of the midpoint of AB.

Start at A
A to B : 8 across
2 down
half : 4 across
1 down

Start at A
 $-3 + 4 = 1$
 $4 - 1 = 3$

(1, 3)
(1)

- (d) Draw the line with equation $y = -4$

horizontal line

(1)

(Total for Question 9 is 4 marks)



10 Max sees this special offer in a shop.

Buy one large plate and get one small plate for half the normal price.

The normal price of a large plate is £2

The normal price of a small plate is 80p

so half = 40p

Max wants to buy 6 large plates and 6 small plates using this offer.

He has £15

Has Max got enough money?

You must show how you get your answer.

with the offer: 1 large plate + half £ for 1 small plate

$$\begin{array}{rcl} \text{he wants} & & \\ \text{6 of each} & \downarrow & \\ \text{£2} & + & 40\text{p} \quad \checkmark \textcircled{1} \\ \times 6 & & \times 6 \end{array}$$

$$\text{£12} + \text{£2.40} \quad \checkmark \textcircled{1}$$

$$= \text{£14.40} \quad \checkmark \textcircled{1}$$

Final statement : Yes he has enough money $\checkmark \textcircled{1}$
because it only costs £14.40

(Total for Question 10 is 4 marks)



11 A total of 700 tickets were on sale for a football match.

452 of the tickets were sold.

(a) How many tickets were not sold?

$$\begin{array}{r} 700 \text{ total} \\ - 452 \text{ sold} \\ \hline 248 \text{ remaining} \end{array}$$

$$\begin{array}{r} \text{J} \textcircled{1} \\ 248 \end{array}$$

(2)

For a different football match,

297 tickets were sold for £9.50 each.

399 tickets were sold for £19.50 each.

(b) Work out an estimate for the total amount of money paid for these tickets.
You must show all your working.

estimate = rounding the numbers

297 tickets $\times$ £9.50 a ticket

↳ rounds to 300 tickets $\times$ £10 a ticket $\text{J} \textcircled{1}$
= £3000 total

399 tickets $\times$ £19.50 a ticket

↳ rounds to 400 tickets $\times$ £20 a ticket $\text{J} \textcircled{1}$
= £8000 total

£3000 + £8000 = £11,000

£ 11,000 $\text{J} \textcircled{1}$
(3)

(c) Is your answer to part (b) an underestimate or an overestimate?
Give a reason for your answer.

Overestimate because we rounded the price and tickets
up $\text{J} \textcircled{1}$

(1)

(Total for Question 11 is 6 marks)



12 Here are 6 numbers.

13 5 4 9 3 8

Work out the mean.

mean = $\frac{\text{add up all the numbers}}{\text{how many there are}}$

$$\frac{13 + 5 + 4 + 9 + 3 + 8}{6 \text{ numbers in total}} = \frac{42}{6} = 7$$

✓ ①

✓ ①
7

(Total for Question 12 is 2 marks)

13 (a) Simplify $\frac{15a}{3}$

divide

✓ ①
5a

(1)

(b) Simplify $19 + 5b + 4c - 7b + c$

collect 'like' terms

→ put the letters together

$$19 + 5b - 7b + 4c + c$$

$$19 - 2b + 5c$$

✓ ①

✓ ①

$$19 - 2b + 5c$$

(2)

(c) Factorise $8d - 6$

2 goes into both

$$2(4d - 3)$$

✓ ①

$$2(4d - 3)$$

(1)

(Total for Question 13 is 4 marks)

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14 Last week, 73% of the tickets sold at a cinema were adult tickets.

(a) What percentage of the tickets sold were **not** adult tickets?

$$100\% \text{ total} - 73\% \text{ adults} = 27\%$$

$$\begin{array}{r} 27 \\ \hline \end{array} \% \quad \text{J ①} \quad (1)$$

Some people watched a film at the cinema.

number of adults : number of children = 2 : 5

(b) What fraction of these people were adults?

$$\begin{array}{ccc} \text{adults} & : & \text{children} \\ 2 & : & 5 \end{array} \quad \begin{array}{c} \text{total} \\ 7 \end{array}$$

$$\text{so adults} = \frac{2 \text{ parts}}{7 \text{ parts}} \quad \text{J ①} \quad \frac{2}{7} \quad (1)$$

On Friday,

500 people watched a film at the cinema.

70% of these people were children.

On Saturday,

720 people watched the film at the cinema.

$\frac{5}{8}$ of these people were children.

Kasim thinks more children watched the film on Friday than on Saturday.

(c) Is Kasim correct?

You must show how you get your answer.

Friday: 70% of 500 were children

$$10\% \text{ of } 500 = 50$$

$$70\% = 50 \times 7 = 350 \text{ children} \quad \text{J ①}$$

Saturday: $\frac{5}{8}$ of 720 were children

$$720 \div 8 = 90$$

$$90 \times 5 = 450 \text{ children} \quad \text{J ①}$$

Final statement : Kasim is wrong because 450 children went on Saturday but 350 went on Friday J ①

(3)

(Total for Question 14 is 5 marks)



15 Work out $\frac{6}{7} \times \frac{5}{12}$

Give your answer as a fraction in its simplest form.

Simplify first

$$\frac{6 \times 5}{7 \times 12} \quad \begin{array}{l} 6 \text{ and } 12 \\ \text{can both be} \\ \text{divided by } 6 \end{array} \quad \begin{array}{l} \text{✓} \\ \text{①} \end{array} \quad \frac{1 \times 5}{7 \times 2} = \frac{5}{14}$$

$$\begin{array}{l} \text{✓} \\ \text{①} \end{array} \quad \frac{5}{14}$$

(Total for Question 15 is 2 marks)

16 Here is the list of ingredients for making 20 biscuits.

Ingredients for 20 biscuits

150 g butter
100 g sugar
250 g flour

Harry wants to make 60 biscuits.

How much flour does Harry need?

$$\begin{array}{l} 250 \text{ g for } 20 \text{ biscuits} \\ \downarrow \times 3 \quad \downarrow \times 3 \\ 750 \text{ g for } 60 \text{ biscuits} \end{array} \quad \begin{array}{l} \text{✓} \\ \text{①} \end{array}$$

$$\begin{array}{l} \text{✓} \\ \text{①} \end{array} \quad 750 \text{ g}$$

(Total for Question 16 is 2 marks)



17 There are 200 counters in a bag.

38 counters are red.

52 counters are blue.

The rest of the counters are yellow or green.

There are the same number of yellow counters as green counters.

What percentage of the counters in the bag are yellow?

$$200 \text{ total} - 38 - 52 = 110 \text{ yellow or green} \quad \checkmark (1)$$

same number of yellow and green

$$110 \div 2 = 55 \rightarrow 55 \text{ yellow} \quad \checkmark (1)$$

$$55 \text{ green}$$

yellow as a %

$$\frac{55}{200 \text{ total}} \div 2 \quad \checkmark (1) \quad \frac{27.5}{100} \times 100 = 27.5 \%$$

$$27.5 \quad \checkmark (1) \quad \%$$

(Total for Question 17 is 4 marks)

18 Naomi has b bags of apples and c crates of apples.

There are 5 apples in each bag.

There are 28 apples in each crate.

Naomi has a total of T apples.

Write a formula for T in terms of b and c .

for T total apples, put the number next to the letter

$$T = 5b + 28c \rightarrow 28 \text{ apples} \times \text{every crate} \quad \checkmark (1)$$

$$\downarrow$$

$$5 \text{ apples} \times \text{every bag} \quad \checkmark (1)$$

$$T = 5b + 28c \quad \checkmark (1)$$

(Total for Question 18 is 3 marks)



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

$$\begin{array}{ccccccccc} -5 & & 3 & & 11 & & 19 & & 27 \\ & \xrightarrow{+8} & & \xrightarrow{+8} & & & & & \end{array}$$

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

find the jumps : $8n$

find the term before -5 : $-5 - 8 = -13$

$$8n - 13 \quad \checkmark \textcircled{1}$$

$$8n - 13 \quad \checkmark \textcircled{1}$$

(Total for Question 19 is 2 marks)

20 Work out $8.46 \div 0.15$

$$\frac{8.46}{0.15} \times \frac{100}{100} = \frac{846}{15} \quad \checkmark \textcircled{1}$$

$$\begin{array}{r} 56.4 \\ 15 \overline{) 846.0} \\ \underline{75} \\ 96 \\ \underline{90} \\ 60 \\ \underline{60} \\ 0 \end{array} \quad \checkmark \textcircled{1}$$

$$56.4 \quad \checkmark \textcircled{1}$$

(Total for Question 20 is 3 marks)

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21 Work out $7\frac{3}{8} - 2\frac{1}{2}$

Give your answer as a mixed number.

change to improper fractions

$$\frac{59}{8} - \frac{5}{2} \quad \text{need same denominator before subtracting}$$

$$\frac{59}{8} - \frac{20}{8} = \frac{39}{8} \quad \text{as a mixed number} \\ = 4\frac{7}{8} \quad (8 \text{ goes into '39' 4 times with 7 remaining})$$

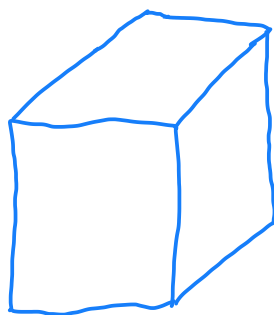
$$4\frac{7}{8}$$

(Total for Question 21 is 3 marks)

22 A cube has a total surface area of 150 cm^2

Work out the volume of the cube.

diagram



$$\begin{aligned} \text{surface area} &= 150 \text{ cm}^2 \\ 6 \text{ sides} \times \text{area of one side} &= 150 \text{ cm}^2 \\ \text{area of one side} &= \frac{150}{6} = 25 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} x^2 &= 25 \\ x &= \sqrt{25} = 5 \text{ cm length} \end{aligned}$$

$$\begin{aligned} \text{volume of cube} &= 5 \times 5 \times 5 \\ &= 125 \text{ cm}^3 \end{aligned}$$

$$125 \text{ cm}^3$$

(Total for Question 22 is 4 marks)

23 The table shows information about the daily rainfall in a town for 60 days.

Midpoint

2.5

7.5

12.5

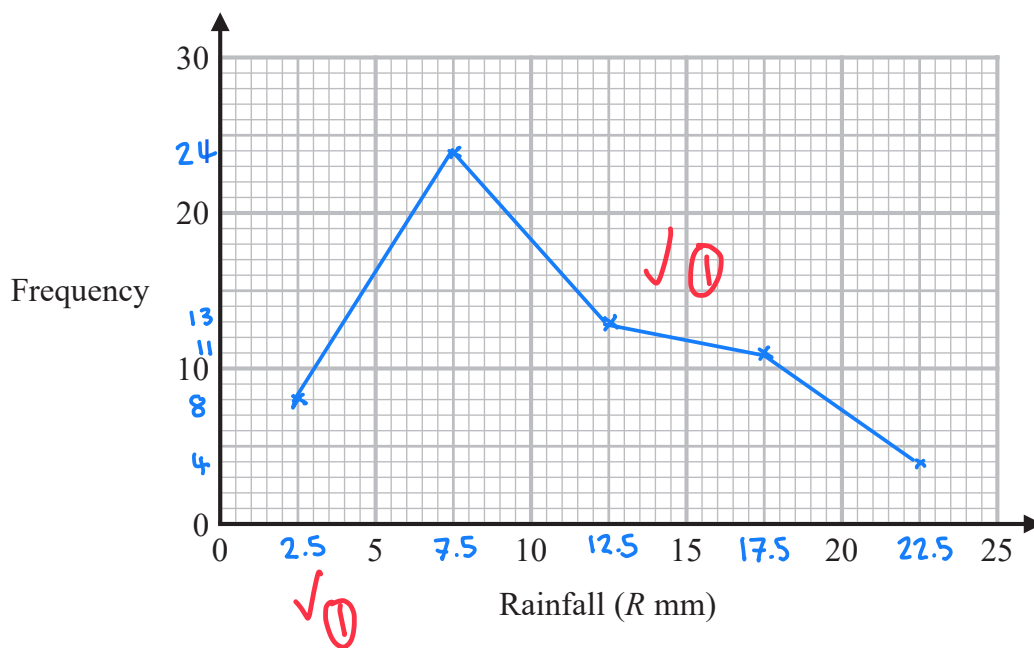
17.5

22.5

Rainfall (R mm)	Frequency
$0 \leq R < 5$	8
$5 \leq R < 10$	24
$10 \leq R < 15$	13
$15 \leq R < 20$	11
$20 \leq R < 25$	4

Draw a frequency polygon for this information.

plot midpoint and frequency



(Total for Question 23 is 2 marks)



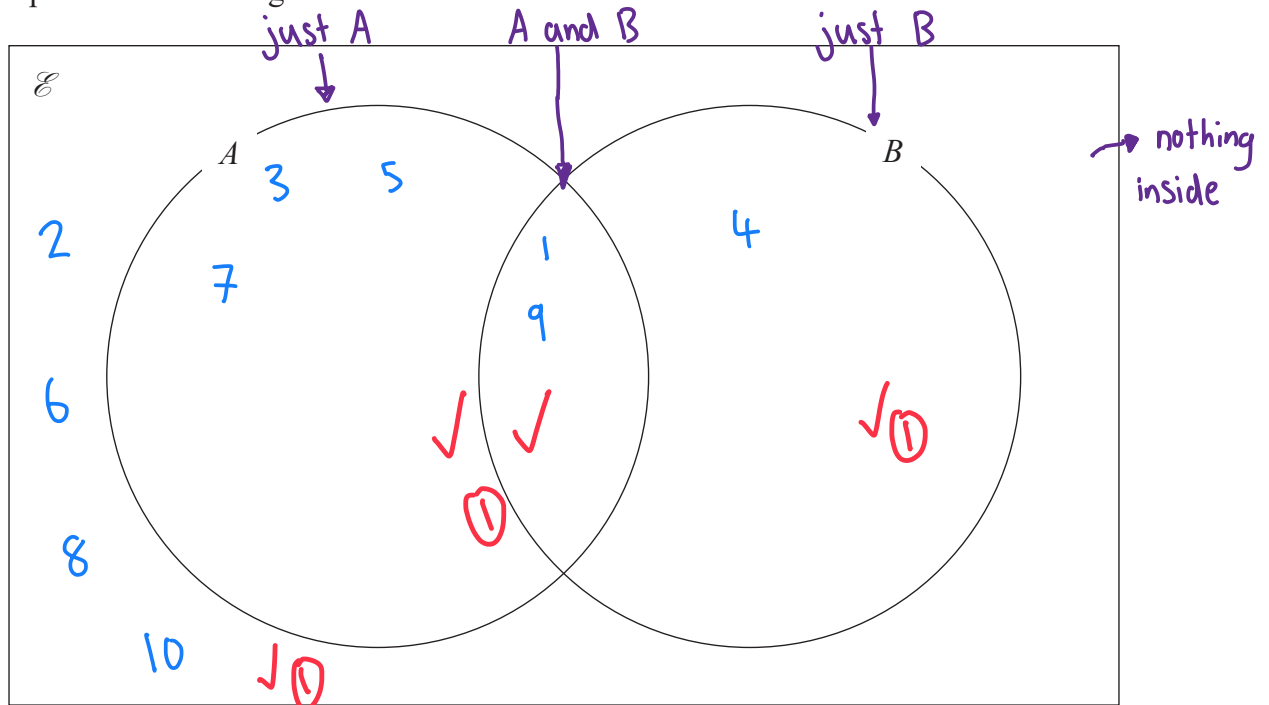
24 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$

$A = \{\text{odd numbers}\}$

$B = \{\text{square numbers}\}$

$\rightarrow 1, 3, 5, 7, 9 \rightarrow \text{there's no}$
 $\rightarrow 1, 4, 9 \rightarrow 2, 6, 8, 10$

(a) Complete the Venn diagram for this information.

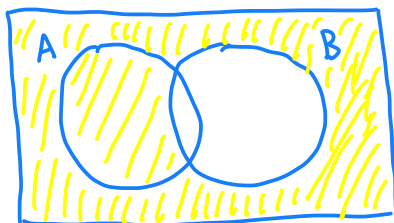


(3)

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

(b) Find the probability that this number is in the set B'

B' means not B (yellow area) ✓ ①



7 numbers outside B circle
 10 total numbers

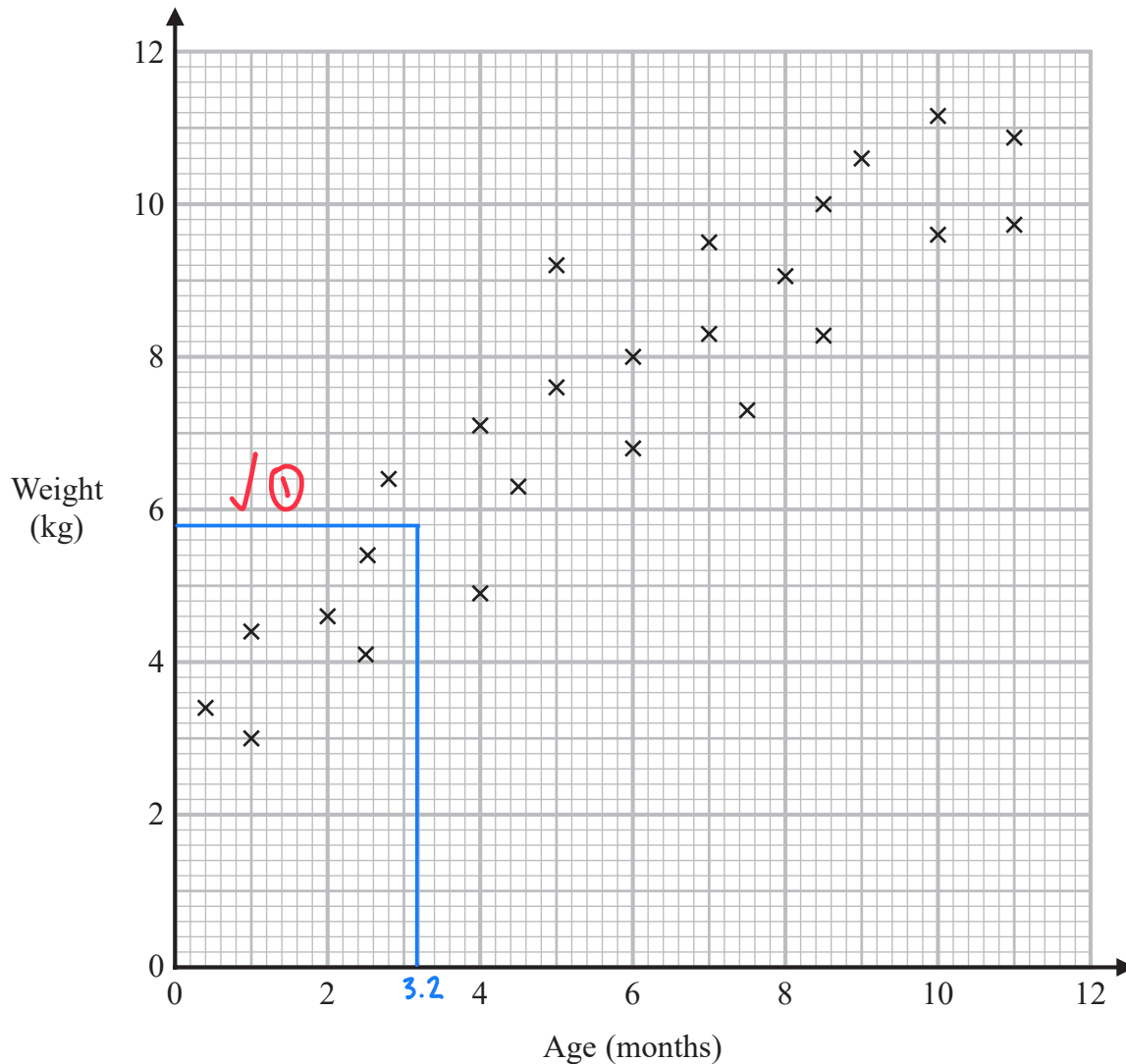
$\frac{7}{10}$ ✓ ①

(2)

(Total for Question 24 is 5 marks)



25 The scatter graph shows information about the ages and weights of some babies.



(a) Describe the relationship between the age and the weight of the babies.

positive correlation : as age increases , weight also increases

(1)

Another baby has a weight of 5.8 kg

(b) Using the scatter graph, find an estimate for the age of this baby.

go across from 5.8 kg

3.2 months

(2)

(Total for Question 25 is 3 marks)



- 26 The price of a holiday increases by 20%
This 20% increase adds £240 to the price of the holiday.

Work out the price of the holiday before the increase.

let p = price of holiday

$$p \times 1.2 = p + 240$$

price increasing by 20% = original price + £240

$$1.2p = p + 240$$

collect p 's

$$1.2p - p = 240$$

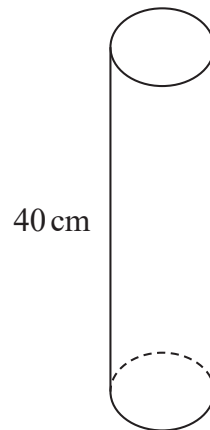
$$0.2p = 240$$

$$p = \frac{240}{0.2} \times 10 = \frac{2400}{2} = £1200$$

£ 1200

(Total for Question 26 is 2 marks)

27 The diagram shows a solid cylinder on a horizontal floor.



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

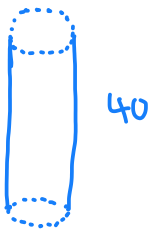
The cylinder has a

volume of 1200 cm^3
height of 40 cm.

The cylinder exerts a force of 90 newtons on the floor.

Work out the pressure on the floor due to the cylinder.

→ already have force so area is needed



$$\text{volume} = 1200$$

$$\text{area cross section} \times \text{height} = 1200$$

$$\text{area} \times 40 = 1200$$

$$\text{area} = 30 \text{ cm}^2 \quad \checkmark \textcircled{1}$$

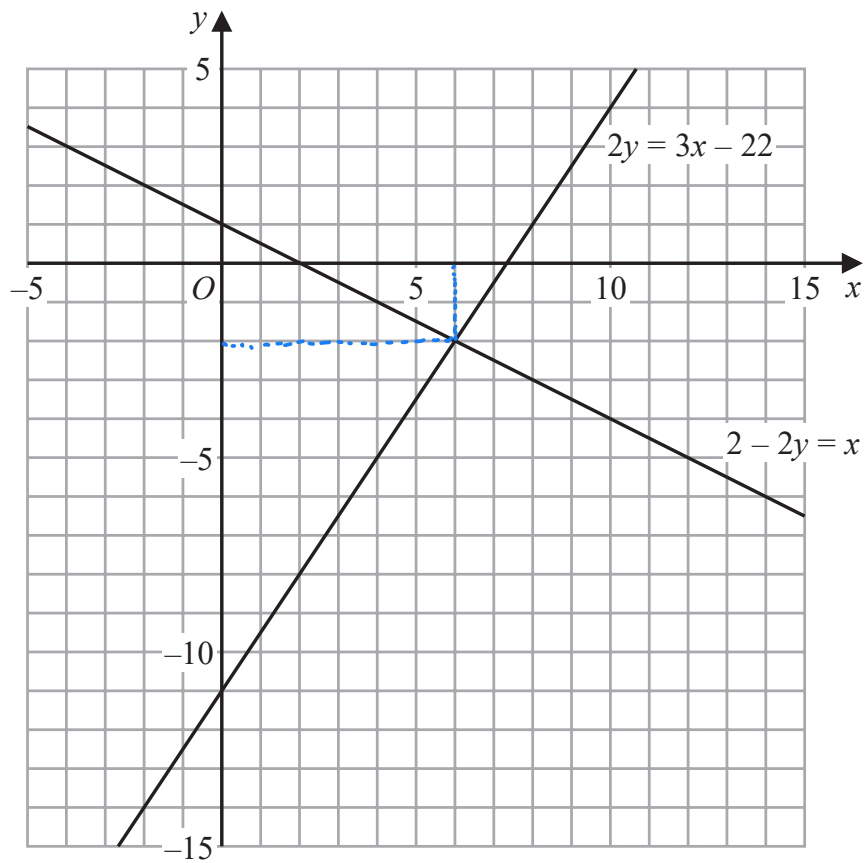
$$\text{Pressure} = \frac{\text{Force}}{\text{Area}} = \frac{90}{30} = 3 \quad \checkmark \textcircled{1}$$

$$3 \quad \checkmark \textcircled{1} \quad \text{newtons/cm}^2$$

(Total for Question 27 is 3 marks)



28



Use these graphs to solve the simultaneous equations

means where the graphs meet

$$2 - 2y = x$$

$$2y = 3x - 22$$

6 across
2 down

$$x = 6 \quad \text{✓}$$

$$y = -2 \quad \text{✓}$$

(Total for Question 28 is 1 mark)



29 Work out the value of $\frac{4^{-6} \times 4^9}{4}$ same base number
so use indice laws

$$4^{-6} \times 4^9, \text{ add powers } \Rightarrow 4^3 \quad \checkmark \textcircled{1}$$

$$4^3 \div 4^1, \text{ subtract powers } \Rightarrow 4^2 = 16$$

$$16 \quad \checkmark \textcircled{1}$$

(Total for Question 29 is 2 marks)

30 Write down the exact value of $\cos 60^\circ$

$$1/2 \quad \checkmark \textcircled{1}$$

(Total for Question 30 is 1 mark)

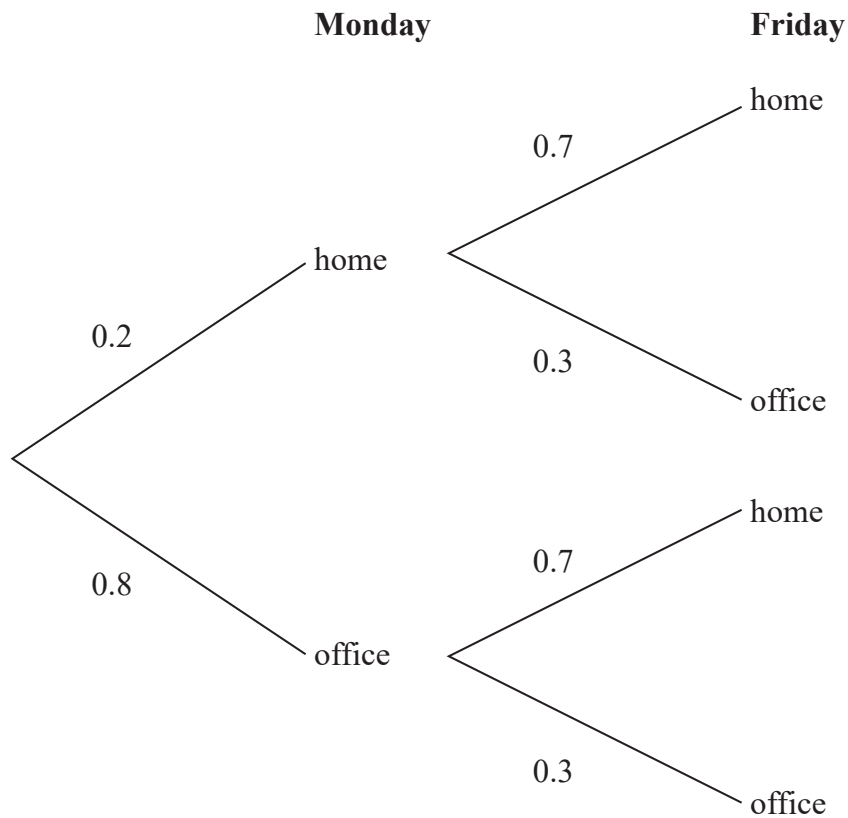
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- 31 The probability tree diagram shows the probabilities that Shayla will work at home or will work at the office on two days next week.



Work out the probability that Shayla will work at home on Monday and work at the office on Friday.

$$0.2 \times 0.3 = 0.06$$

0.06

(Total for Question 31 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

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