

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

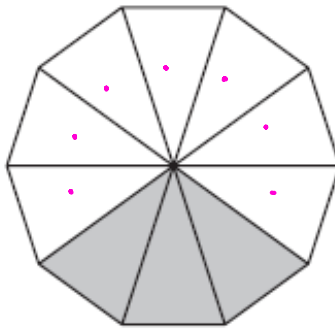
1 Write 64% as a decimal.

Percentage \rightarrow decimal
 $\div 100$

0.64

(Total for Question 1 is 1 mark)

2 What fraction of this shape is unshaded? = 7



10 sections in total

$\frac{7}{10}$

(Total for Question 2 is 1 mark)

3 Here is a list of numbers.

2.6

2.4

3.1

1.5

2.3

From the list, write down the smallest number.

1.5

(Total for Question 3 is 1 mark)

4 Work out $-3 + 5$



2

(Total for Question 4 is 1 mark)

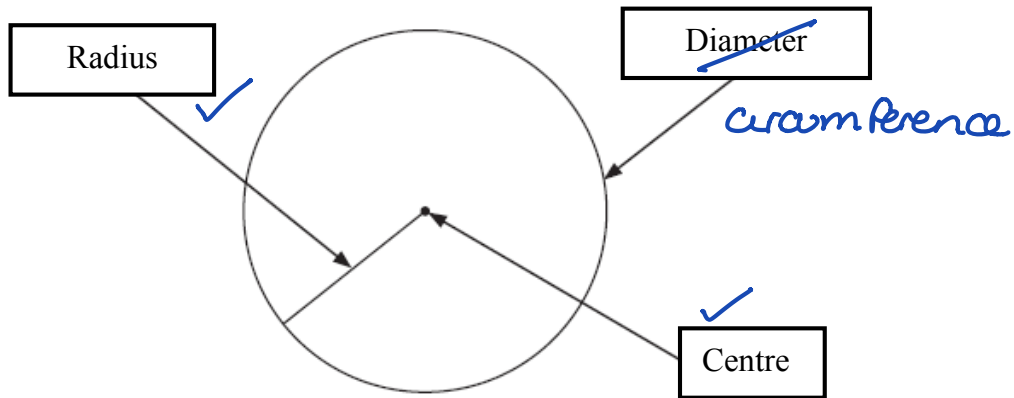
5 Solve $7 - p = 3$

$$7 - \boxed{4} = 3$$
$$p = 4$$

$$p = \dots\dots\dots 4 \dots\dots\dots$$

(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.

The circumference is labelled incorrectly (as the diameter)

(Total for Question 6 is 1 mark)

7 Write down **three** different factors of 30

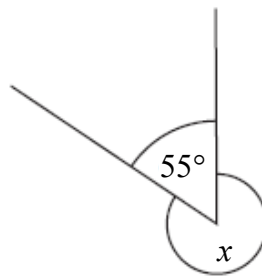
any three from

1, 30 2, 15, 3, 10 5, 6 ~~6, 5~~

e.g. 1 , 30 , 2

(Total for Question 7 is 2 marks)

8



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

$$360 - 55 = 305$$

..... 305 °
(2)

A student says that an angle of 55° is a reflex angle.

The student is wrong.

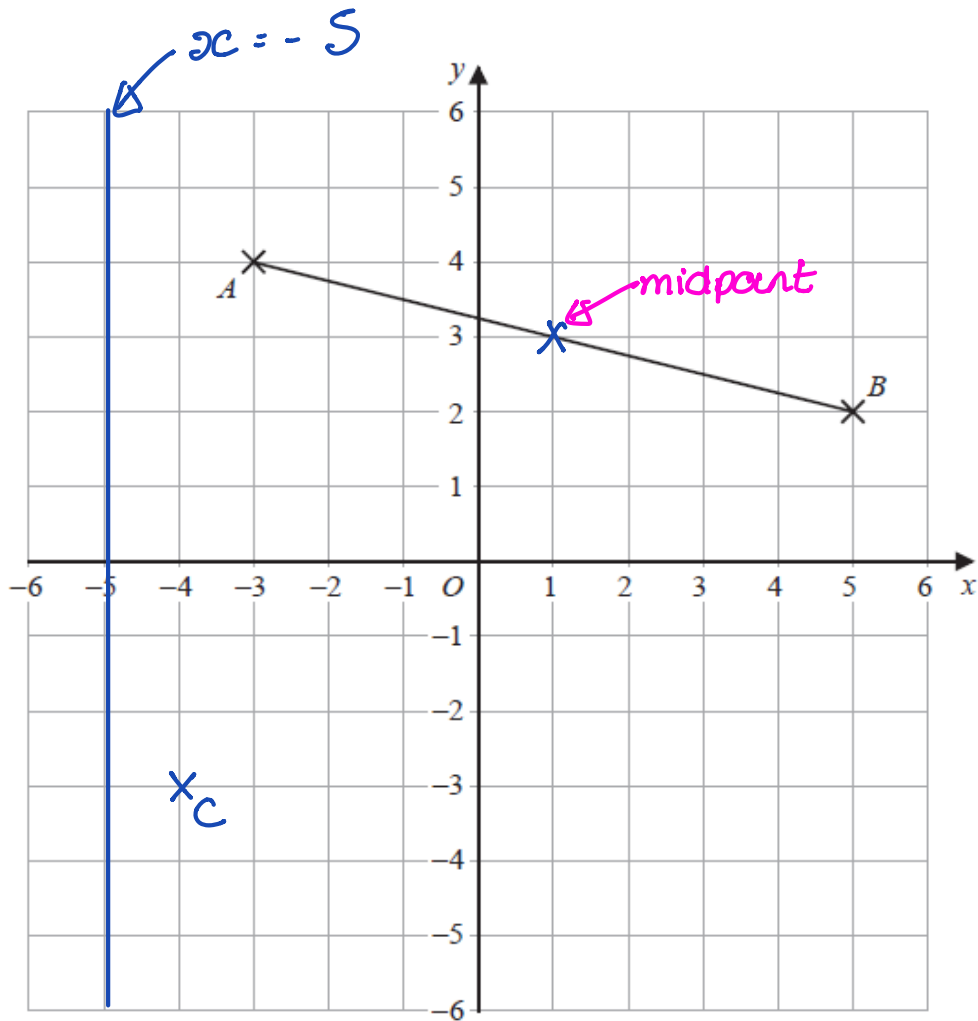
(b) Explain why.

..... An angle less than 90 is an acute angle not a
..... reflex angle

(1)

(Total for Question 8 is 3 marks)

9



(a) Write down the coordinates of point A .

(.....⁻³.....,⁴.....)
(1)

(b) Plot the point with coordinates $(-4, -3)$
Label this point C .

(1)

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

(.....¹.....,³.....)

(1)

(d) Draw the line with equation $x = -5$

(1)

(Total for Question 9 is 4 marks)

10 Jenny sees this special offer in a shop.

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

The normal price of a large bowl is £5

The normal price of a small bowl is ~~£3~~ £1.50

Jenny wants to buy 8 large bowls and 4 small bowls using this offer.

She has £45

Has Jenny got enough money?

You must show how you get your answer.

$$\text{Large} \quad 8 \times £5 = £40$$

$$\text{Small} \quad 4 \times £1.50 = £6$$

$$\begin{aligned} \text{Total} &= 40 + 6 \\ &= £46 \end{aligned}$$

Jenny does not have enough money
 $46 > 45$

(Total for Question 10 is 4 marks)

11 A total of 800 tickets were on sale for a concert.

262 of the tickets were **not** sold.

(a) How many tickets were sold?

not sold = 262

800

$$\begin{array}{r} 800 \\ - 262 \\ \hline 538 \end{array}$$

check 538

$$\begin{array}{r} 538 \\ + 262 \\ \hline 800 \end{array}$$

$$\begin{array}{r} 538 \\ \hline \end{array} \quad (2)$$

For a different concert,

303 tickets were sold for £20.50 each.

405 tickets were sold for £31 each.

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

303 → 300 ↓

20.50 → 20 ↓

405 → 400 ↓

31 → 30 ↓

$$300 \times 20 = 6000$$

$$400 \times 30 = 12000$$

$$\text{Total} = 6000 + 12000$$

$$\text{£} \begin{array}{r} 18000 \\ \hline \end{array} \quad (3)$$

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

Underestimate, all the numbers were rounded down in the estimation calculations.

(1)

(Total for Question 11 is 6 marks)

12 Here are 8 numbers.

13 5 6 11 3 7 6 5
 18 24 35 38 45 51 56

Work out the mean.

$$56 \div 8 = 7$$

.....
7

(Total for Question 12 is 2 marks)

13 (a) Simplify $\frac{15h}{5}$

$$15 \div 5 = 3$$

.....
3h

(1)

(b) Simplify $21 - 7b + 4c + 5b - c$

$$21 - 7b + 5b + 4c - c$$

.....
 $21 - 2b + 3c$

(2)

(c) Factorise $9d - 6$

$$3 \times \underline{\underline{3}}$$

$$2 \times \underline{\underline{3}}$$

.....
 $3(3d - 2)$

(1)

(Total for Question 13 is 4 marks)

14 Last week, 67% of the tickets sold for a pantomime were children's tickets.

(a) What percentage of the tickets sold were **not** children's tickets?

$$100 - 67 = 33$$

$$\frac{33}{\dots\dots\dots} \%$$

(1)

Some people watched another pantomime.

number of adults : number of children = 3 : 8

(b) What fraction of these people were adults?

3 out of 11

$$\frac{3}{11} \dots\dots\dots$$

(1)

On Friday,

200 people saw a play at the theatre.
12% of these people were children.

$$\begin{aligned} 10\% &= 20 \\ 1\% &= 2 \\ 2\% &= 4 \end{aligned} \quad \text{so } 12\% = 24$$

On Saturday,

240 people saw a play at the theatre.
 $\frac{1}{8}$ of these people were children.

$$\frac{1}{8} \text{ of } 240 = 240 \div 8 = 30$$

Karen thinks more children saw a play on Saturday than on Friday.

(c) Is Karen correct?
You must show how you get your answer.

Karen is correct, Saturday was 30
Friday was 24. $30 > 24$

(3)

(Total for Question 14 is 5 marks)

15 Work out $\frac{4}{7} \times \frac{11}{12}$

Give your answer as a fraction in its simplest form.

$$\frac{\cancel{4}^1}{7} \times \frac{11}{\cancel{12}_3} = \frac{11}{21}$$

$$\frac{11}{21}$$

(Total for Question 15 is 2 marks)

16 Here is the list of ingredients for making 15 biscuits.

Ingredients for 15 biscuits

120 g butter
80 g sugar
220 g flour

Helen wants to make 60 biscuits.

How much sugar does Helen need?

$$\begin{array}{l}
 \times 4 \quad \left\{ \begin{array}{l} 15 \text{ biscuits} = 80\text{g} \\ 60 \text{ biscuits} = 320\text{g} \end{array} \right. \times 4
 \end{array}
 \qquad
 \begin{array}{r}
 80 \\
 \times 4 \\
 \hline
 320
 \end{array}$$

$$320$$

..... g
(Total for Question 16 is 2 marks)

17 There are 200 counters in a bag.

52 counters are red.
73 counters are blue.

The rest of the counters are yellow or green.
There are twice as many yellow counters as green counters.

What percentage of the counters in the bag are green?

$$\begin{array}{r} \text{R} = 52 \qquad \text{B} = 73 \\ \hline 125 \end{array}$$

$$\begin{array}{r} \text{Y} \qquad \text{G} \\ \hline 200 - 125 = 75 \end{array}$$

$$\begin{array}{r} 2 : 1 \\ \hline 75 \div 3 = 25 \\ 50 : 25 \end{array}$$

$$\% \text{ green} = \frac{25}{200} = \frac{12.5}{100}$$

..... 12.5 %
(Total for Question 17 is 4 marks)

18 Terry has m bags of lemons and n crates of lemons.

There are 7 lemons in each bag. $\rightarrow 7m$
There are 32 lemons in each crate. $\rightarrow 32n$

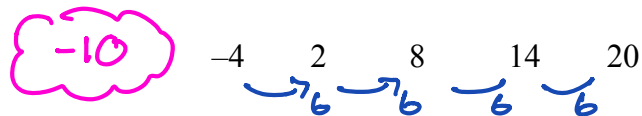
Terry has a total of A lemons.

Write a formula for A in terms of m and n .

$$A = 7m + 32n$$

.....
(Total for Question 18 is 3 marks)

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



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

$$6n - 10$$

$$6n - 10$$

(Total for Question 19 is 2 marks)

20 Work out $4.62 \div 0.12$

$$\frac{4.62 \times 100}{0.12 \times 100}$$

$$\frac{462}{12}$$

$$12 \overline{) 4462.60} \\ \underline{0385} \\ 1080 \\ \underline{1080} \\ 0$$

$$\begin{array}{r} 12 \\ 24 \\ 36 \leftarrow \\ 48 \\ 60 \\ 72 \\ 84 \\ 96 \leftarrow \\ 108 \end{array}$$

$$38.5$$

(Total for Question 20 is 3 marks)

21 Work out $5\frac{3}{10} - 3\frac{2}{5}$

Give your answer as a mixed number.

$$5\frac{3}{10} = \frac{53}{10}$$

$$3\frac{2}{5} = \frac{17}{5}$$

$$\frac{53}{10} - \frac{17}{5}$$

$$\frac{53}{10} - \frac{34}{10}$$

$$= \frac{19}{10}$$

↙ x2

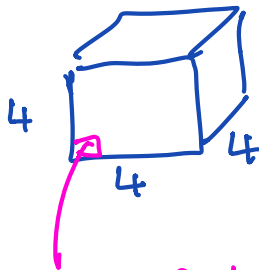
$$\begin{array}{r} 53 \\ -34 \\ \hline 19 \end{array}$$

$$1\frac{9}{10}$$

(Total for Question 21 is 3 marks)

22 A cube has a total volume of 64 cm^3

Work out the surface of the cube.



$$4 \times 4 \times 4 = 64 \text{ cm}^3$$

area of 1 face = $4 \times 4 = 16$

so 6 faces = 16×6
 $= 96$

$$\begin{array}{r} 16 \\ \times 6 \\ \hline 96 \\ 3 \end{array}$$

$$96$$

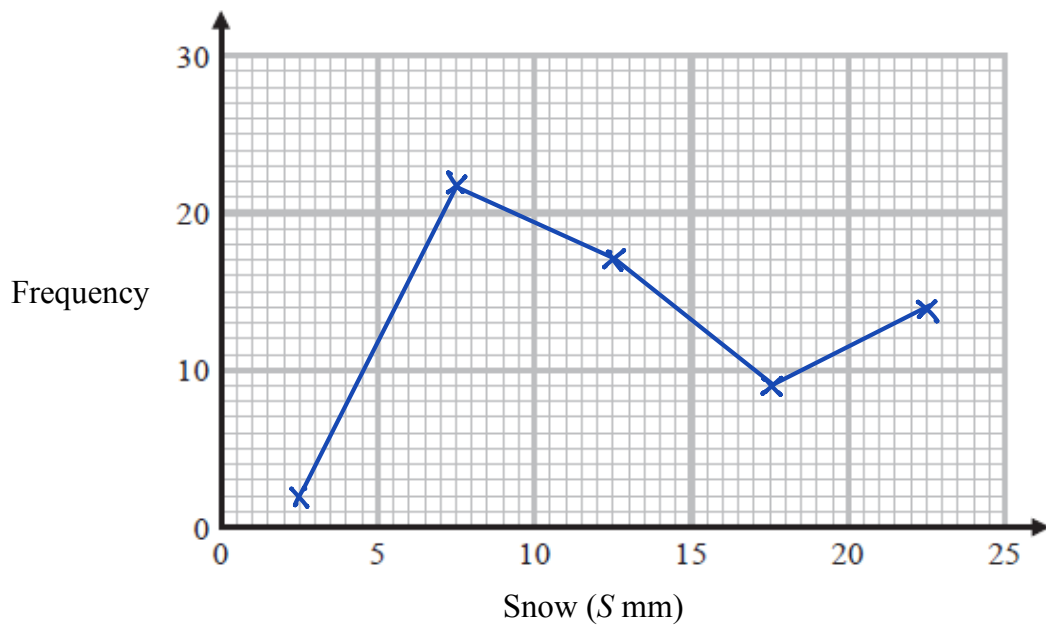
..... cm^2

(Total for Question 22 is 4 marks)

23 The table shows information about the amount of snow, in mm, in a town for 70 days in winter.

Snow (S mm)	Frequency
$0 \leq S < 5$	2
$5 \leq S < 10$	22
$10 \leq S < 15$	17
$15 \leq S < 20$	9
$20 \leq S < 25$	14

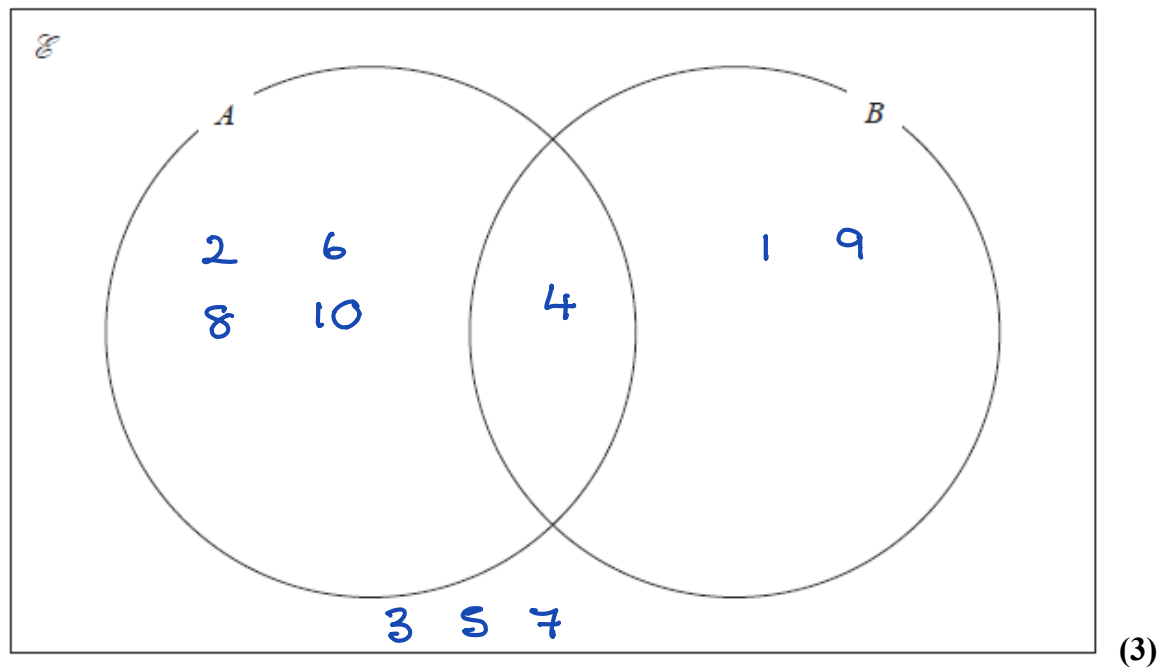
Draw a frequency polygon for this information.



(Total for Question 23 is 2 marks)

24 $\mathcal{E} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$
 $A = \{\text{even numbers}\}$ 2 4 6 8 10
 $B = \{\text{square numbers}\}$ 1 4 9

(a) Complete the Venn diagram for this information.



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

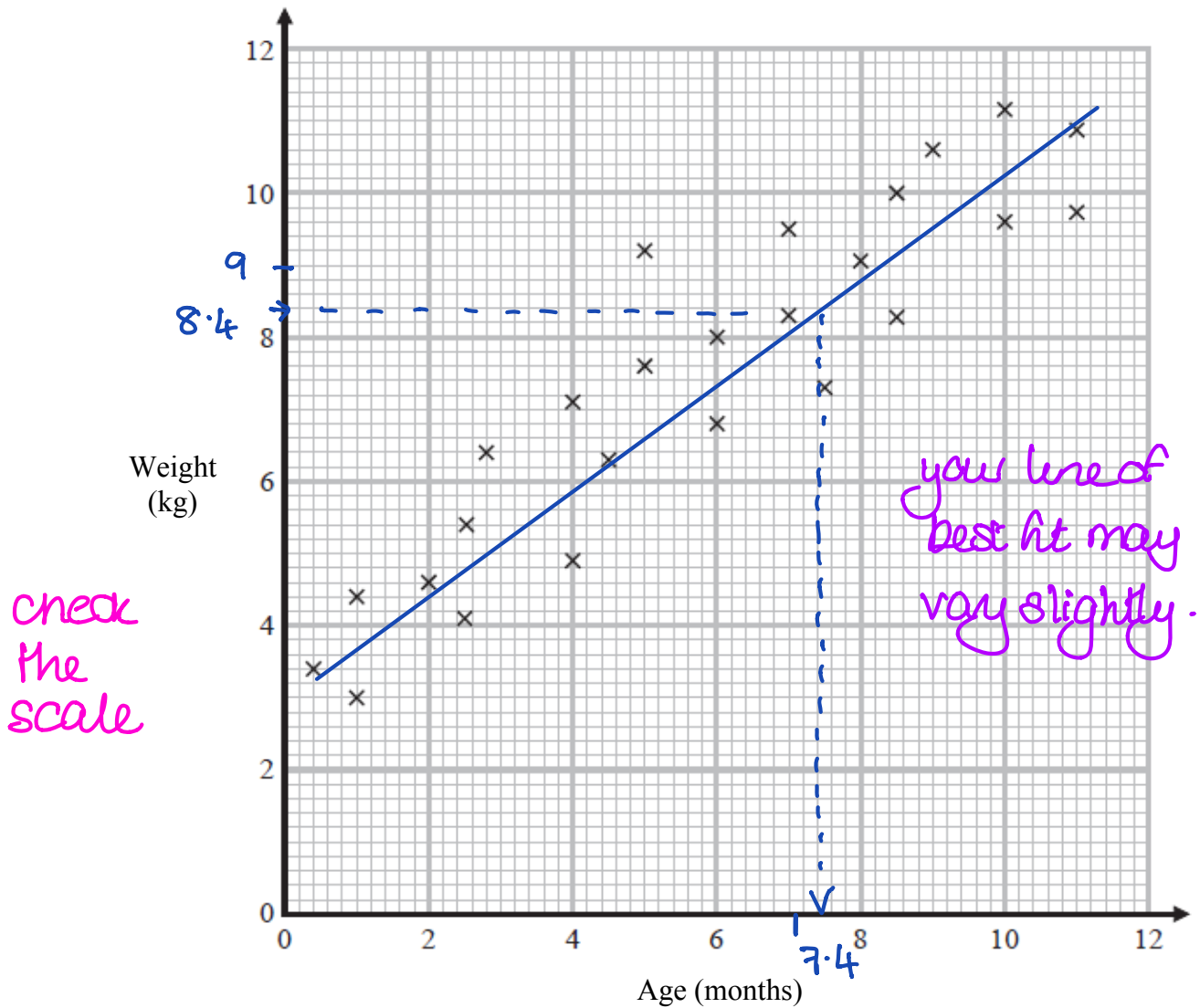
(b) Find the probability that this number is in the set A' NOT A

$$\frac{5}{10}$$

(2)

(Total for Question 24 is 5 marks)

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



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

There is a positive correlation, in that the weight increases as the monkeys get older.

(1)

Another monkey has a weight of 8.4 kg

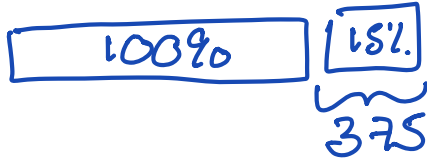
(b) Using the scatter graph, find an estimate for the age of this monkey.

..... 7.4 months

(your answer may vary based on your LOBF) (2)
 (accepted range 7 to 9) (Total for Question 25 is 3 marks)

- 26 The price of a computer increases by 15%
This 15% increase adds £375 to the price of the computer.

Work out the price of the computer before the increase.

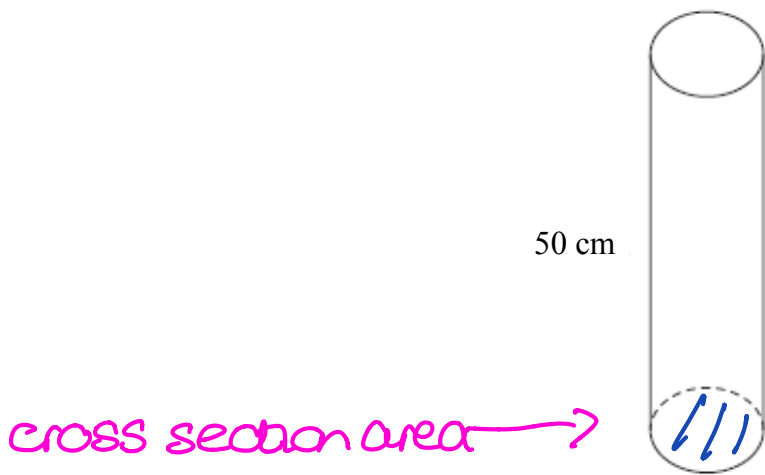


$$\begin{array}{l} 15\% = 375 \\ \div 3 \downarrow \quad \quad \quad \downarrow \div 3 \\ 5\% = 125 \\ \times 2 \downarrow \quad \quad \quad \downarrow \times 2 \\ 10\% = 250 \\ \times 10 \downarrow \quad \quad \quad \downarrow \times 10 \\ 100\% = 2500 \end{array}$$

£.....2500.....

(Total for Question 26 is 2 marks)

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



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

Volume =
cross section area x
length

1500 = area x 50
area = $\frac{1500}{50} = 30$

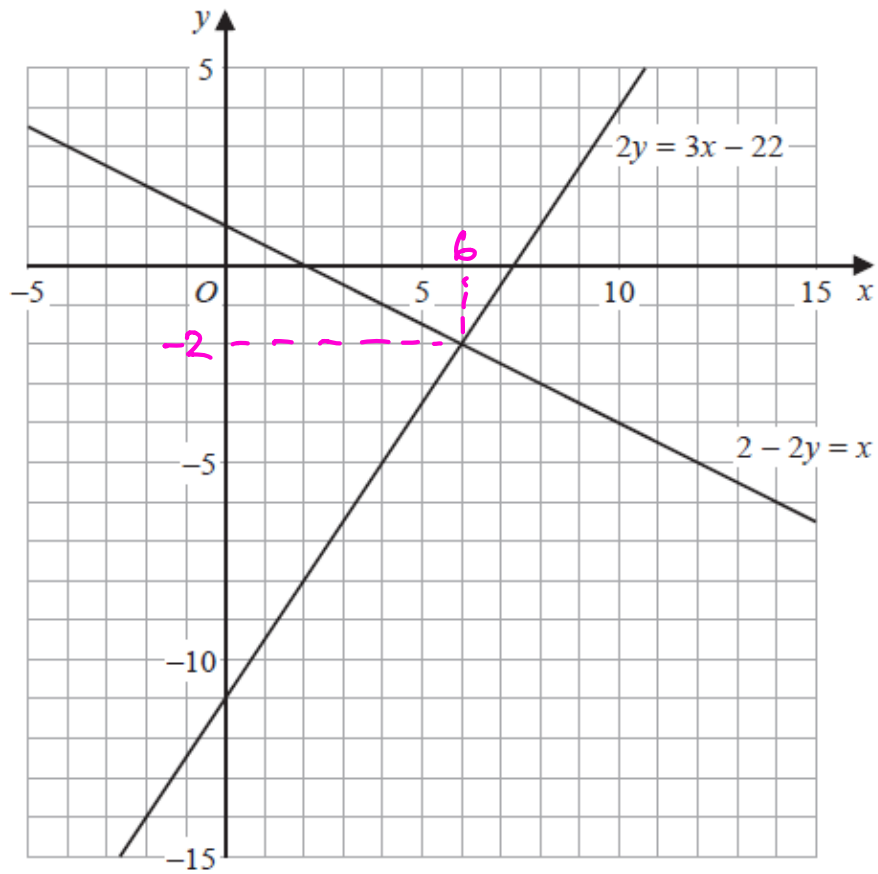
The cylinder has a
volume of 1500 cm³
height of 50 cm.

The cylinder exerts a force of 120 newtons on the floor.
Work out the pressure on the floor due to the cylinder.

Pressure = $\frac{120}{30}$
= 4

..... 4 newtons/cm²

(Total for Question 27 is 3 marks)



Use these graphs to solve the simultaneous equations

$$2y = 3x - 22$$

$$2 - 2y = x$$

$$x = \dots\dots\dots 6 \dots\dots\dots$$

$$y = \dots\dots\dots -2 \dots\dots\dots$$

(Total for Question 28 is 1 mark)

29 Work out the value of $\frac{5^{-3} \times 5^6}{5}$

$$5^{-3} \times 5^6 = 5^{-3+6} = 5^3$$

$$\text{so } \frac{5^3}{5^1} = 5^{3-1} = 5^2$$

$$5^2 = 25$$

25

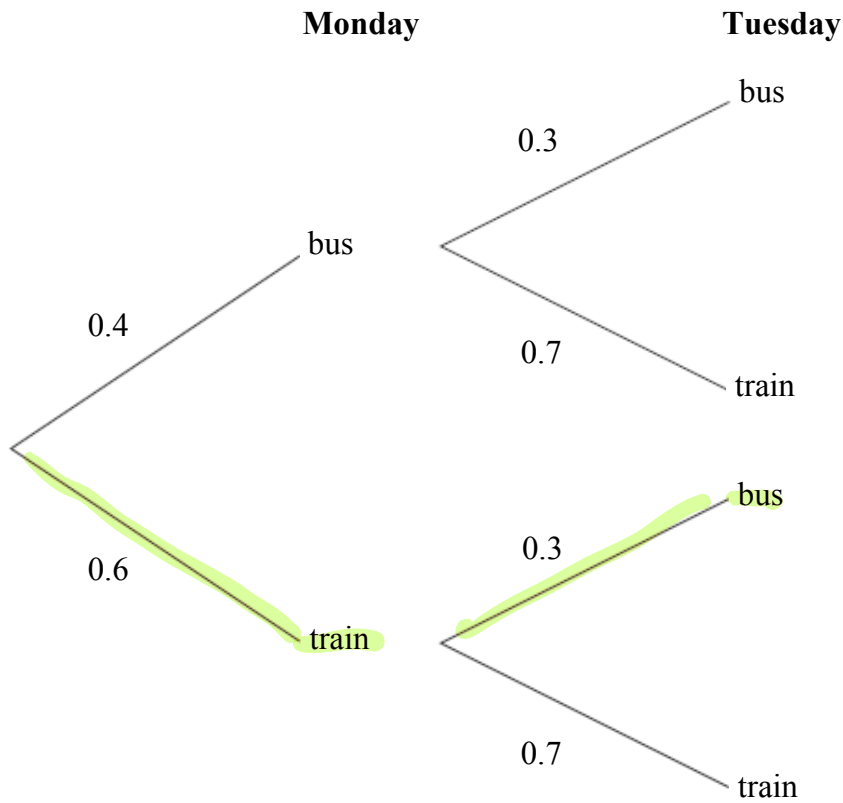
.....
(Total for Question 29 is 2 marks)

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

$\frac{\sqrt{3}}{2}$

.....
(Total for Question 30 is 1 mark)

- 31 The probability tree diagram shows the probabilities that Simon will take the bus or train to work on two days next week.



Work out the probability that Simon will take the train on Monday and take the bus on Tuesday.

$$P(\text{train, bus}) = 0.6 \times 0.3 = 0.18$$

0.18

(Total for Question 31 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS