



**Langdon Park Maths
Foundation 2018 paper 3
Predicted paper A**

Name: _____

Class: _____

Date: _____

Time: **91 minutes**

Marks: **80 marks**

Comments:

Q1.

What is the value of the digit 7 in 3.72?

Circle your answer.

$$\frac{1}{70}$$

$$\frac{7}{10}$$

$$\frac{1}{7}$$

$$\frac{7}{100}$$

(Total 1 mark)

Q2.

The angles of a quadrilateral are 140° , 80° , 60° and 80°

What type of quadrilateral could it be?

Circle your answer.

Kite

Parallelogram

Rhombus

Trapezium

(Total 1 mark)

Q3.

Solve $12x = 3$

Circle your answer.

$$x = -9$$

$$x = \frac{1}{4}$$

$$x = 4$$

$$x = 36$$

(Total 1 mark)

Q4.

Here are some cards.

$$+8.3$$

$$+8.9$$

$$-8.9$$

$$-8.3$$

- (a) Choose a card so that the answer is as small as possible.
Work out the answer.

$$\boxed{-3.5} + \boxed{} = \underline{\hspace{2cm}}$$

(2)

- (b) Choose a card so that the answer is as small as possible.
Work out the answer.

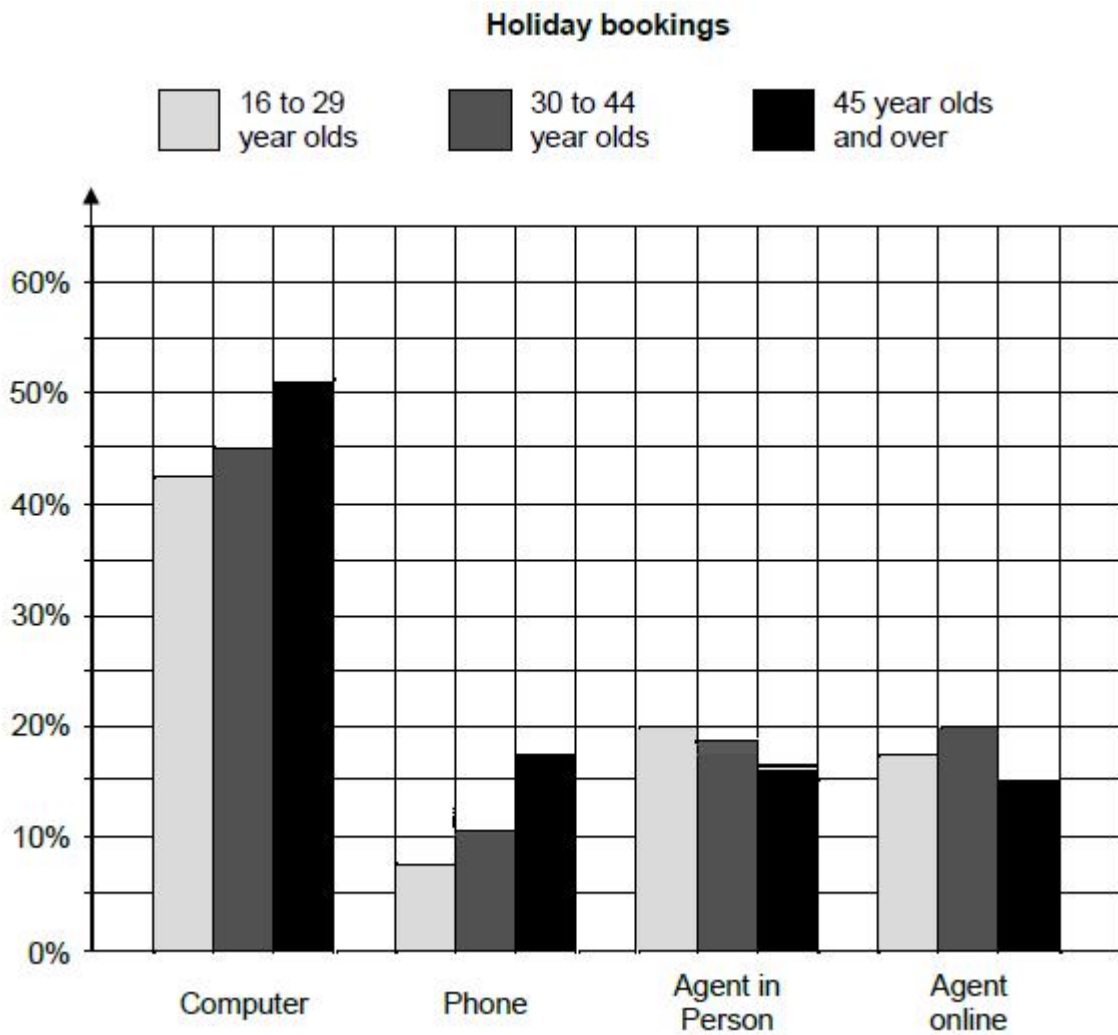
$$\boxed{-3.5} - \boxed{} = \underline{\hspace{2cm}}$$

(2)

(Total 4 marks)

Q5.

The bar chart shows how people in different age groups book their holidays.



(a) Which **two** ways of booking are most popular for 16 to 29 year olds?

Answer and

(2)

(b) In total, what percentage of 16 to 29 year olds booked with an agent?

Give your answer to the nearest 10%

Answer _____ %

(2)

(c) Compare the bookings for 30 to 44 year olds with the bookings for 45 year olds and over.

(2)

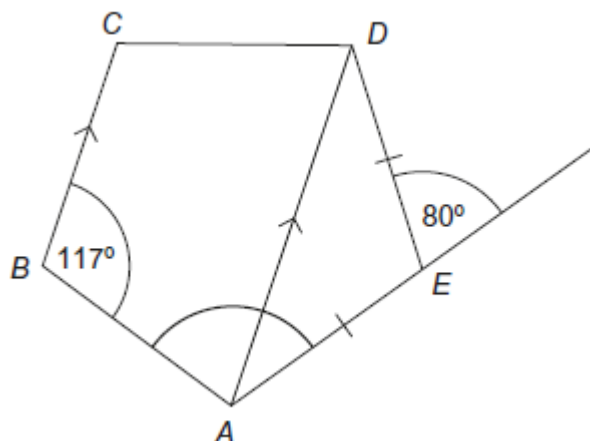
(Total 6 marks)

Q6.

AD is parallel to BC .

$AE = DE$

Not drawn accurately



Work out the size of angle BAE .

Answer _____ degrees
(Total 3 marks)

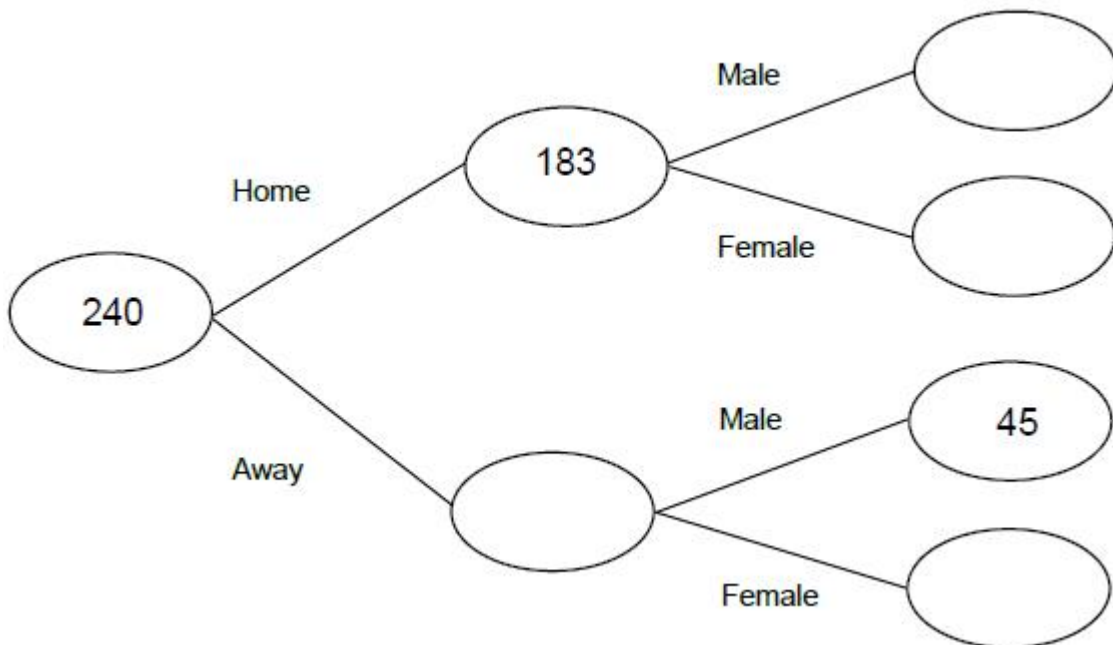
Q7.

240 people go to a rugby match.

183 of the people support the home team.
The other people support the away team.

162 of the supporters are male.
45 of the **away** supporters are male.

Complete the frequency tree.



(Total 4 marks)

Q8.

Here is a bank statement with three missing values.

Date	Description	Credit (£)	Debit (£)	Balance (£)
	Starting balance			37.60
13/04/2017	Salary		324.85
14/04/2017	Gas bill		50.00
17/04/2017	Council tax		61.84

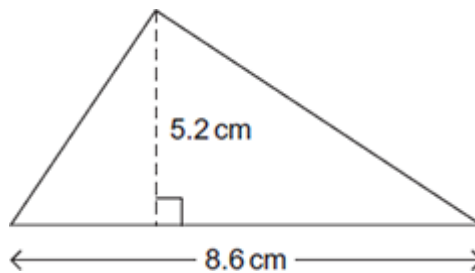
Complete the bank statement.

(Total 3 marks)

Q9.

Work out the area of the triangle.

Not drawn accurately



Give your answer to 1 decimal place.

Answer _____ cm²

(Total 3 marks)

Q10.

£800 is invested for 3 years at 2% **simple** interest per year.

Work out the total interest.

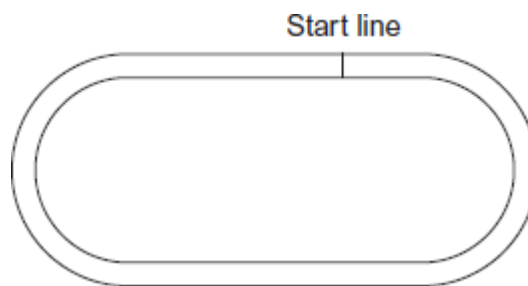
Answer £.....

(Total 3 marks)

Q11.

Chris and Becky cycle around a 200 metre track in the same direction.

Not drawn accurately



- (a) Chris cycles at a steady speed of 10 metres per second.

Show that he takes 20 seconds to go **once** around the track.

(1)

- (b) Becky also cycles at a steady speed.
It takes her 25 seconds to go **once** around the track.

She leaves the start line at the same time as Chris.

How far has Becky cycled when they are next at the start line together?

Answer _____ metres **(3)**

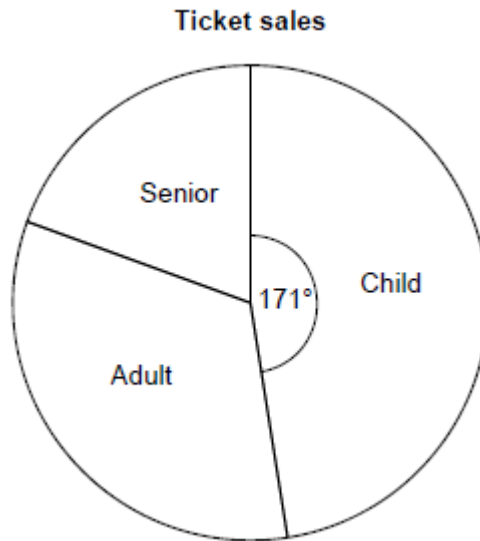
(Total 4 marks)

Q12.

The pie chart shows information about the sales of 800 tickets.

There were twice as many adult ticket sales as senior ticket sales.

Not drawn accurately

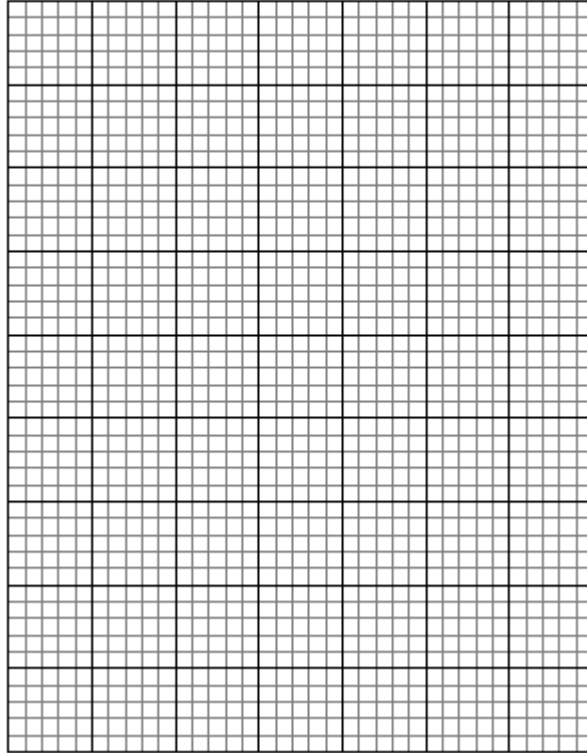


- (a) Show that there were 140 senior ticket sales.

(3)

- (b) Draw a bar chart on the grid to represent the child, adult and senior ticket sales.

Ticket sales



(4)
(Total 7 marks)

Q13.

- (a) Multiply out and simplify $(x - 6)(x - 5)$

Answer _____

(2)

- (b) Simplify fully $2a^2b^3 \times 4a^5b^6$

Answer _____

(2)
(Total 4 marks)

Q14.

- (a) Factorise fully $9a^2 - 6a$

Answer _____

(2)

- (b) Solve $x^2 - 12x + 20 = 0$

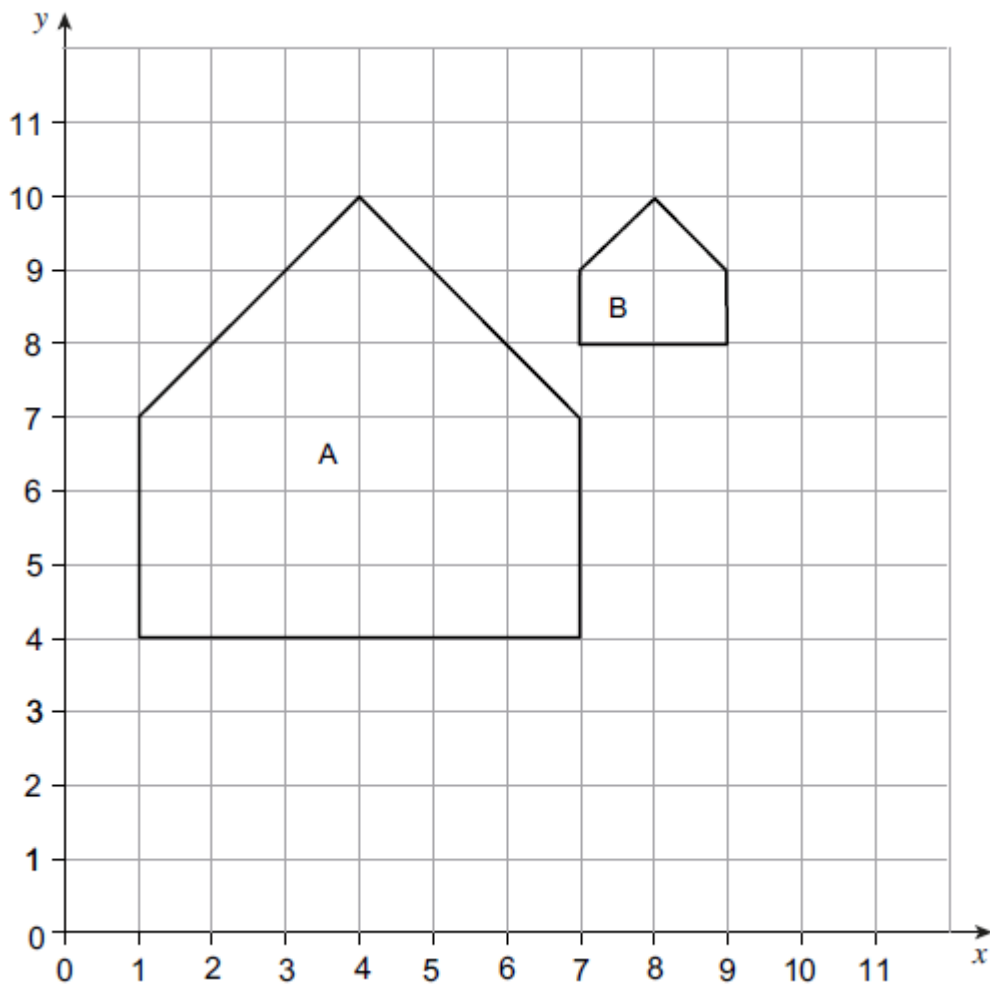
Answer _____

(3)

(Total 5 marks)

Q15.

Describe fully the **single** transformation that maps shape A to shape B.



(Total 3 marks)

Q16.

Here is some information about 50 houses.

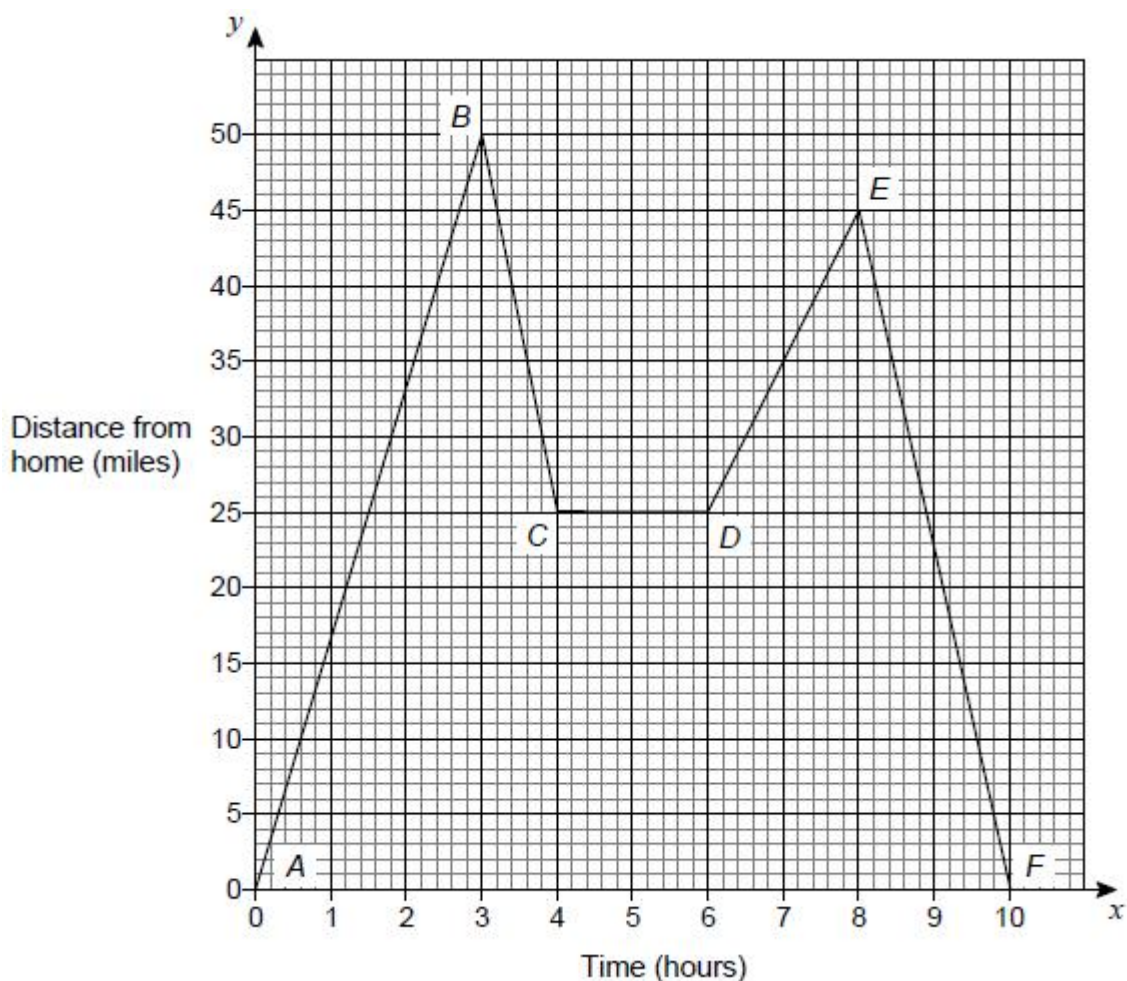
Number of bedrooms	Number of houses
1	6
2	10
3	22
4	9
5	3
Total = 50	

Show that the mean number of bedrooms is less than 3.

(Total 3 marks)

Q17.

Here is a distance-time graph.



(a) Match each statement to one section of the journey.

- Average speed = 25 miles per hour to
- Average speed = 10 miles per hour to
- Stationary to
- Fastest part of the journey to

(4)

(b) How far is the whole journey?

Answer _____ miles

(2)

(Total 6 marks)

Q18.

Use a ruler and a pair of compasses in this question.
Construct the perpendicular bisector of AB .

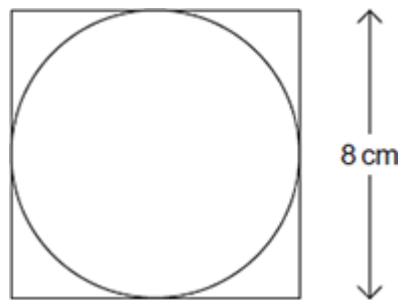


(Total 2 marks)

Q19.

The diagram shows a circle inside a square.

Not drawn accurately



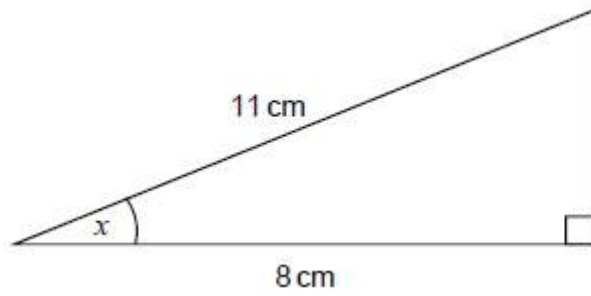
Work out the area of the circle.

Answer _____ cm^2

(Total 3 marks)

Q20.

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

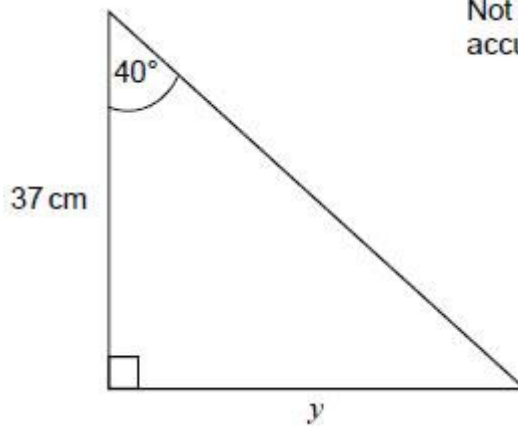


Not drawn accurately

Answer _____ degrees

(2)

- (b) Work out length y .



Not drawn accurately

Answer _____ cm

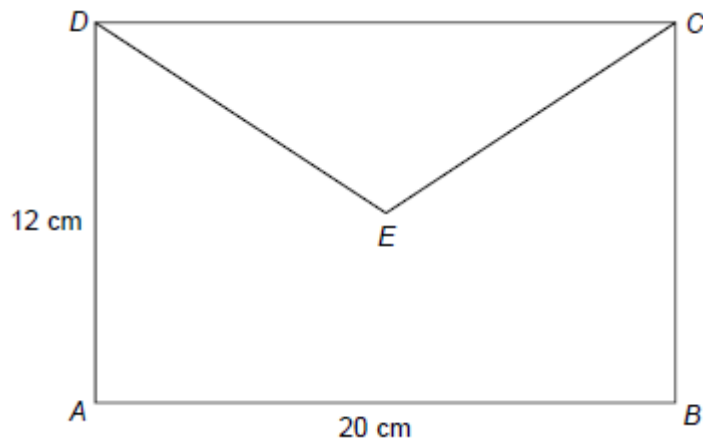
(2)

(Total 4 marks)

Q21.

E is the centre of rectangle $ABCD$.

Not drawn accurately



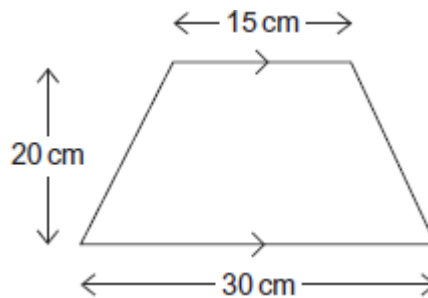
Work out the length DE .

Answer _____ cm
(Total 3 marks)

Q22.

The diagram shows a trapezium.

Not drawn accurately

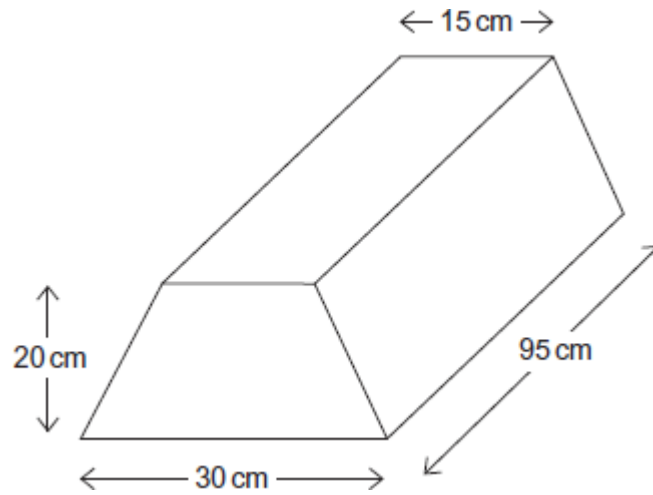


(a) Work out the area of the trapezium.

Answer _____ cm^2

(2)

(b) The trapezium is the cross-section of this prism.



Work out the volume of the prism.

Answer _____ cm^3

(2)

(Total 4 marks)

Q23.

Work out the area of a circle, radius 3.5 cm.
Give your answer to 1 decimal place.

Answer _____ cm^2

(Total 3 marks)

Mark schemes

Q1.

$$\frac{7}{10}$$

B1
[1]

Q2.

Kite

B1
[1]

Q3.

$$x = \frac{1}{4}$$

B1
[1]

Q4.

(a) -8.9

B1

-12.4

ft their chosen card

(+)8.3 → (+)4.8

(+)8.9 → (+)5.4

-8.3 → -11.8

B1ft

Additional Guidance

-12.4 must follow -8.9

B1B1

or a blank card

B0B1

(b) (+)8.9

B1

-12.4

ft their chosen card

(+)8.3 → -11.8

-8.9 → (+)5.4

-8.3 → (+)4.8

B1ft

Additional Guidance

-12.4 must follow (+)8.9

B1B1

or a blank card

Q5.

- (a) Computer

B1

Agent in person

Either order

B1

Additional Guidance

Agent (online)

B0

- (b) 20 + [15, 20] or [35, 40]
-
- or 20 + 20

M1

40

A1

- (c) Two different valid comparisons

*B1 for each valid comparison**eg**Higher percentage/proportion of 45 and over book on computer**Higher percentage/proportion of 45 and over book over the phone**Lower or similar percentage/proportion of 45 and over through an agent in person**Lower percentage/proportion of 45 through an agent online
SC1 for any 2 valid statements without comparing**eg More 45 and over in person than online and more 30 to 44 on computer than on phone**SC1 for 2 statements with no reference to percentage or proportion**eg More 45 and over book on computer and less 45 and over through an agent in person*

B2

Additional GuidanceTwo different valid comparisons – not just reversed
List of readings

B0

More/less can be implied by statement

[6]

Q6.*AED = 100 or E = 100
or ADE = 40 or D = 40
or DAE = 40 or A = 40**May be on diagram in the correct place*

B1

(BAD =) 180 – 117 or 63 seen or implied
oe
May be on diagram in the correct place

M1

103

A1

Additional Guidance

Beware of contradictions between diagram and working shown

BAD shown as 63 on diagram in correct position

M1

180 – 117 with nothing marked on diagram and no contradiction

M1

180 – 117 = 63, 63 only marked at C on diagram

M0

Condone assumption for symmetry of trapezium $(360 - 2 \times 117) \div 2$

M1

[3]

Q7.

57 in Away

B1

117 in Home Male

B1

66 in Home Female

ft 183 – their 117

B1ft

12 in Away Female

ft their 57 – 45

SC1 total of four Male and Female sections is 240

B1ft

[4]

Q8.

(£)287.25

B1

(£)274.85

B1

(£)213.01

ft their (£)274.85 – 61.84

B1ft

[3]

Q9.

$\frac{1}{2} \times 8.6 \times 5.2$

oe

M1

22.36

A1

22.4

ft from 2 d.p. or more

B1ft

[3]

Q10.

800 × 0.02 or 16

or

800 × 1.02 or 816

or

2(%) × 3 = 6(%)

oe

M1

800 × 0.02 × 3 or 16 × 3

or 800 × 0.06

or 848

oe

M1

48

A1

Additional Guidance

Answer of 848 with or without 48 seen in working

M1M1A0

Condone 800×1.02^3 or an answer of 49, 48.96, 48.97 or 48.9664 or 848.96, 848.9664 or 849 for the first mark

M1M0A0

[3]

Q11.

(a) $200 \div 10 (= 20)$

or

$20 \times 10 = 200$

or

$200 \div 20 = 10$

B1

(b) (Becky) (25 50 75) 100 **and**

(Chris) (20 40 60 80) 100

100 (or multiple of 100) as a common multiple

B1

4×200

ft 4 from their lowest common multiple

4 must be from Becky's multiples

M1

800

ft B0 M1
SC1 1000
SC1 Any multiple of 800

A1ft

Alternative 1

(Becky) (8 16 24 32) 40 **and**
(Chris) (10 20 30) 40

40 (or multiple of 40) as a common multiple

B1

4 × 200

ft 4 from their lowest common multiple
4 must be from Chris's multiples

M1

800

ft B0 M1
SC1 1000
SC1 Any multiple of 800

A1ft

Alternative 2

200 ÷ 2 (= 100)

2 is the difference in speeds

M1

their 100 × 8

M1

800

SC1 1000
SC1 Any multiple of 800

A1

[4]

Q12.

(a) **Alternative method 1**

360 – 171 or 189

M1

their 189 ÷ 3 or 63

M1dep

$\frac{63}{360} \times 800 (= 140)$

A1

Alternative method 2

$\frac{171}{360} \times 800$ or 380

M1

(800 – their 380) or 420

M1dep

420 ÷ 3 (= 140)

A1

Alternative method 3

140 + 280 or 420°

M1

$$\frac{\text{their 420}}{800} \times 360 \text{ or } 189$$

oe

M1

360 – 180 = 171

A1

(b) Bar heights 380, 280 and 140

*B1 for one correct bar height
or 280 seen or 380 seen*

B2

Three bars with equal widths, equal gaps
and
correctly labelled vertical axis and bars labelled

B1

Consistent scale, starting at zero with at least two numbers given
Must be using a scale of at least 1 cm per 100 sales

B1

[7]

Q13.

(a) $x^2 - 5x - 6x + 30$

*four terms, three correct with a term in x^2 or $x^2 - 11x + k$
with $k \neq 0$*

M1

$x^2 - 11x + 30$

A1

(b) $8a^7b^9$

*B1 two correct from 8, a^7 and b^9
B1 correct answer with multiplication sign(s)*

B2

[4]

Q14.

(a) $3a(3a - 2)$

B1 $a(9a - 6)$ or $3(3a^2 - 2a)$

B2

(b) $(x + a)(x + b)$

where $ab = 20$

$$\text{or } a + b = -12$$

M1

$$(x - 2)(x - 10)$$

A1

2 and 10

ft their pair of brackets

B1ft

[5]

Q15.

Enlarge(ment)

Allow poor spelling but do not accept any word that may imply a 'shrink' eg delargement

B1

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

Implied by word 'by' or 'of'

If decimal 0.33 minimum

Do not accept ratio, eg 3 : 1 or 1 : 3

B1

(centre) (10, 10) or 10, 10

Do not accept $\begin{pmatrix} 10 \\ 10 \end{pmatrix}$

If no centre given in script look on diagram for rays clearly showing centre at (10, 10)

B1

Additional Guidance

Any combined transform

B0

Enlarge factor 3 from (10, 10)

B2

Enlarged by $\frac{1}{3}$ from (1, 4)

Enlarge by scale factor -3 from (10, 10)

B2

Shrink of $\frac{1}{3}$ from (8, 10)

B1

Enlarged factor $\div 3$ from (4, 10)

B1

3 times smaller

B0

[3]

Q16.

Alternative Method 1

At least one product attempted or one correct value (not 6)

or

143

$$1 \times 6$$

$$2 \times 10 \text{ or } 20$$

$$3 \times 22 \text{ or } 66$$

$$4 \times 9 \text{ or } 36$$

$$5 \times 3 \text{ or } 15$$

M1

(their 6 + their 20 + their 66 + their 36 + their 15) \div 50

Must be adding products and dividing by 50

Condone missing brackets

or

143 \div 50

M1dep

2.86

A1

Alternative Method 2

At least one product attempted or one correct value (not 6)

or

143

$$1 \times 6$$

$$2 \times 10 \text{ or } 20$$

$$3 \times 22 \text{ or } 66$$

$$4 \times 9 \text{ or } 36$$

$$5 \times 3 \text{ or } 15$$

M1

their 6 + their 20 + their 66 + their 36 + their 15 or 143

Must be adding products and multiplying 3 by 50

and

3 \times 50 or 150

M1dep

143 and 150

A1

[3]

Q17.

(a) B to C

B1

D to E

B1

C to D

B1

B to C

B1

(b) 50 (+) 25 (+) 20 (+) 45
Allow one error

M1

140

A1

[6]

Q18.

A pair of intersecting arcs of equal radii from ends of line with two intersections
oe

M1

Perpendicular line drawn through points of intersection
1 mm tolerance

A1

[2]

Q19.

$8 \div 2 (= 4)$ oe

M1

$\pi \times$ their 4 \times their 4 oe
Allow 3.14 or better for π

M1dep

[50.2, 50.3] or 16π
Condone [13.7, 13.8] or $64 - 16\pi$ as fw

A1

[3]

Q20.

(a) $\cos x = \frac{8}{11}$
or $\sin x = \frac{\sqrt{11^2 - 8^2}}{11}$
or $\tan x = \frac{\sqrt{11^2 - 8^2}}{8}$
oe

M1

43(.3....)

A1

(b) $\tan 40 = \frac{y}{37}$ or $\tan 50 = \frac{37}{y}$

oe
 $x = 48.3 \dots$ and $37^2 + y^2 = 48.3^2$
 $48.3 \cos 50$ or $48.3 \sin 40$

M1

31. (...)

A1

[4]

Q21.

Alternative method 1

6 and 10 seen

M1

(their 6)² + (their 10)² or 136

M1dep

[11.66, 11.7] or $\sqrt{136}$ or $2\sqrt{34}$

A1

Alternative method 2

$12^2 + 20^2$ or 544

M1

$\sqrt{\text{their } 544}$ or $4\sqrt{34}$

or [23.32, 23.324]

M1dep

[11.66, 11.7] or $\frac{\sqrt{544}}{2}$ or $\sqrt{136}$

or $2\sqrt{34}$

A1

[3]

Q22.

(a) $\frac{15+30}{2} \times 20$
 oe

M1

450

A1

(b) their 450 × 95

M1

42750

ft their 450

A1ft

[4]

Q23.

$$\pi \times 3.5 \times 3.5 \text{ or } 3.14 \dots \times 3.5 \times 3.5 \text{ oe}$$

$$\text{or } \pi \times 3.5^2 \text{ or } 3.14 \dots \times 3.5^2$$

M1

$$38.4(8 \dots) \text{ or } 38.4(6\dots)$$

$$\frac{49}{4} \pi \text{ or } 12.25\pi \text{ or } 12.3\pi$$

A1

38.5

*ft their answer of 2 d.p. or more***B1 ft****[3]**