AQA

Please write clearly in block capitals.

Centre number | | | | | Candidate number | | | |

Surname _Answers_

Forename(s)

Candidate signature

GCSE
Mathematics

F

Foundation   Paper 2   Calculator
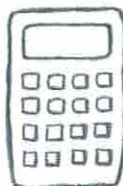
Summer 2018   Time allowed: 1 hour 30 minutes

Materials

For this paper you must have:
- a calculator
- mathematical instruments.

Instructions

- Use black ink or black ball-point pen. Draw diagrams in pencil.
- Answer **all** questions.
- You must answer the questions in the spaces provided. Do not write outside the box around each page or on blank pages.
- Do all rough work in this book. Cross through any work you do not want to be marked.

Information

- The marks for questions are shown in brackets.
- The maximum mark for this paper is 80.
- You may ask for more answer paper, graph paper and tracing paper. These must be tagged securely to the answer book.

Advice

- In all calculations, show clearly how you work out your answer.

For Examiner's Use	
Pages	Mark
3	
4 - 5	
6 – 7	
8 – 9	
10 – 11	
12 – 13	
14 – 15	
16 – 17	
18 – 19	
20 – 21	
22 – 23	
TOTAL	

Teacher	Class	8300/MissB/2F

Practice Paper Overview

Q	Topic	Mark	Total
1	Place Value		1
2	Solve One Step Equations		1
3	Factor and Multiples		1
4	Probability in Words		1
5	Using a Calculator		2
6	Money Problem		5
7	Bar Chart		3
8	Area and Perimeter Problem		3
9	Frequency Tree		5
10	Angles in a Triangle		3
11	Speed Distance and Time		2
12	Percentage Change		2
13	Construction		3
14	Best Buy Problem		6
15	Function Machines		4
16	Probability Algebra		4
17	Ratio Problem		3
18	Angles in Polygons		4
19	Compound Interest		3
20	Product of Prime Factors		3
21	Averages from a Table		6
22	Pythagoras' Theorem		3
23	Expand and Simplify		4
24	Right-Angled Trigonometry		2
25	Error Interval		2
26	Venn Diagram		4
	Total		**80**

Answer **all** questions in the spaces provided.

1 What is the value of the 5 in the answer to $51.03 \div 100$?

Circle your answer.

$= 0.5103$

[1 mark]

50   5   (0.5)   0.05   0.005

2 Solve $24x = 6$

Circle your answer.

$x = \dfrac{6}{24} = \dfrac{1}{4}$

[1 mark]

144   4   1 $\left(\dfrac{1}{4}\right)$

3 Circle the multiple of both 6 and 9

6 12 (18) 24 30 (36) 42
9 (18) 27 (36) 45 54 63

[1 mark]

3   24   (36)   81

4 What is the probability of throwing a **zero** on a fair ordinary dice?

Circle your answer. *There are no zero's on a dice .*

[1 mark]

(Impossible)   Even   Certain

Unlikely   Likely

5 (a) Use your calculator to work out $\sqrt{308}$ as a decimal.

Write down your full calculator display

[1 mark]

Answer 17.54992877

5 (b) Give your answer to part (a) to 1 decimal place.

[1 mark]

Answer 17.5

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6 Pets for life sell dog supplies.

Squeaky Toy
£3.59 each

Bones
£1.99 each

Danielle has two dogs Luna and Holly.

Luna gets 2 squeaky toys and 1 bone in a week.

Holly gets 1 squeaky toy and 3 bones a week.

How much does Danielle spend in a year on toys and bones?

[5 marks]

365days → 52 weeks

Per week

Luna = (2×3.59)+(1×1.99)
= 7.18 + 1.99
= £9.17 ✓

Per year.
£18.73 × 52 ✓
= £973.96

Holly = (1×3.59)+(3×1.99)
= £9.56 ✓

Total per week
9.17 + 9.56 ✓
= £18.73

Answer £973.96 ✓

8

7 The table shows the sale of hot and cold food in a shop for four days.

Day	Sales of hot food (£)	Sales of cold food (£)
Friday	14	16
Saturday	21	19
Sunday	3	17

Jack uses this information to draw a composite bar chart.
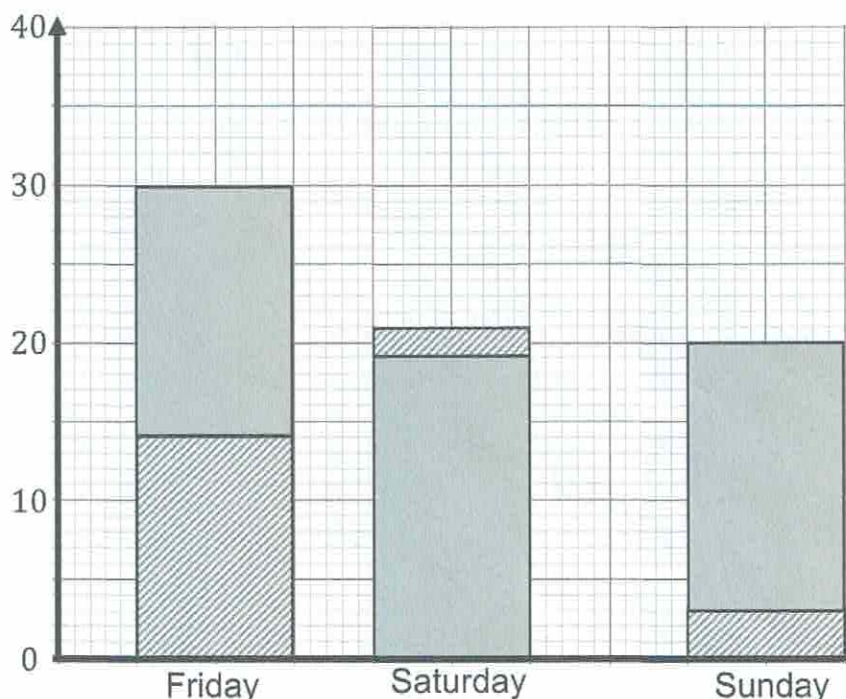
Write down three different mistakes that he has made.

✓✓✓ Any 3 out of 4 mistakes.
✓✓ 2/4 mistakes
✓ 1/4 mistakes.
[3 marks]

Mistake 1 The axis aren't labelled.
'Frequency' 'Days of the week'

Mistake 2 There is no key.

Mistake 3 Saturday is plotted incorrectly the 19 cold (grey) should be on top of the 21 hot (dashed) bar.
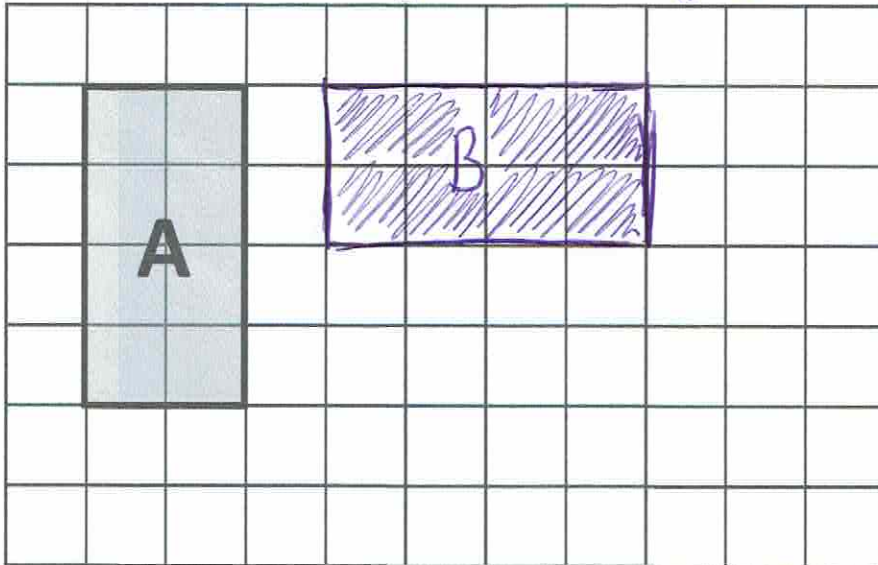mistake 4 → gaps between bars aren't equal.

8 (a) Draw a rectangle which is congruent to rectangle A.
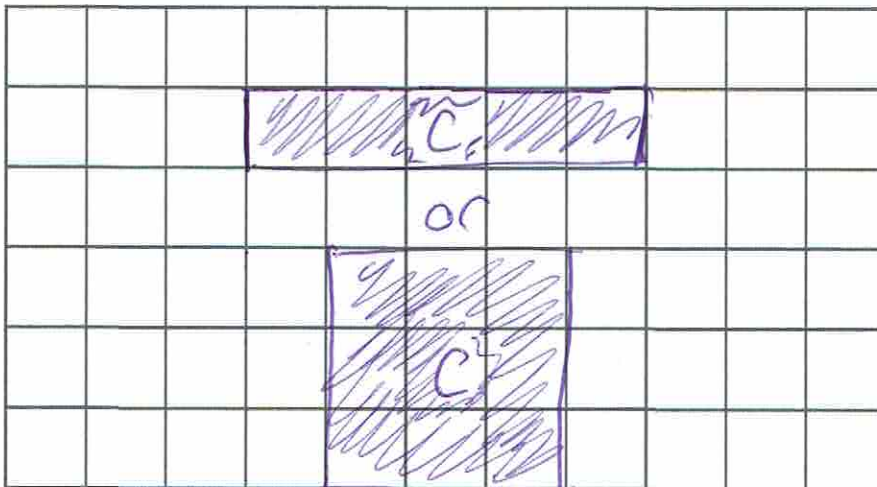
Label it B.

Anywhere on the grid.

[1 mark]

8(b) Draw a rectangle that has the same perimeter as rectangle A, but a different area. Label it C
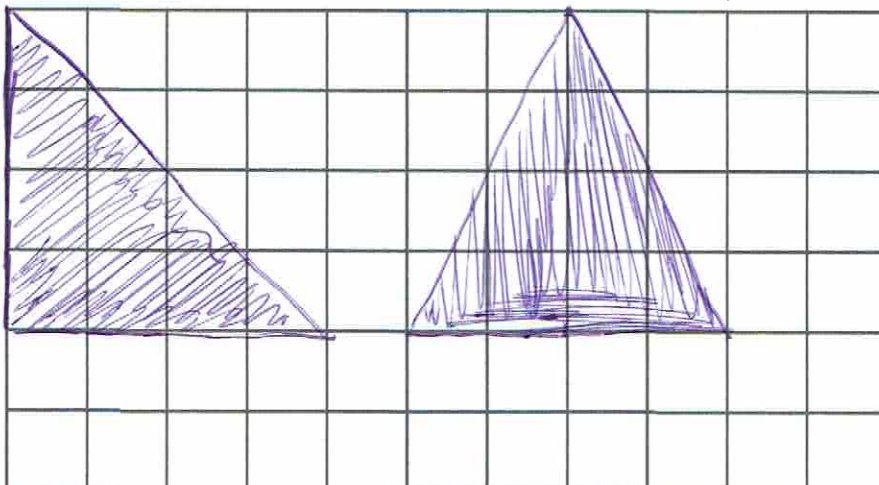
→ *Inside*

→ *edges p=12*

[1 mark]

1×5
3×3

→ *inside A= 8*

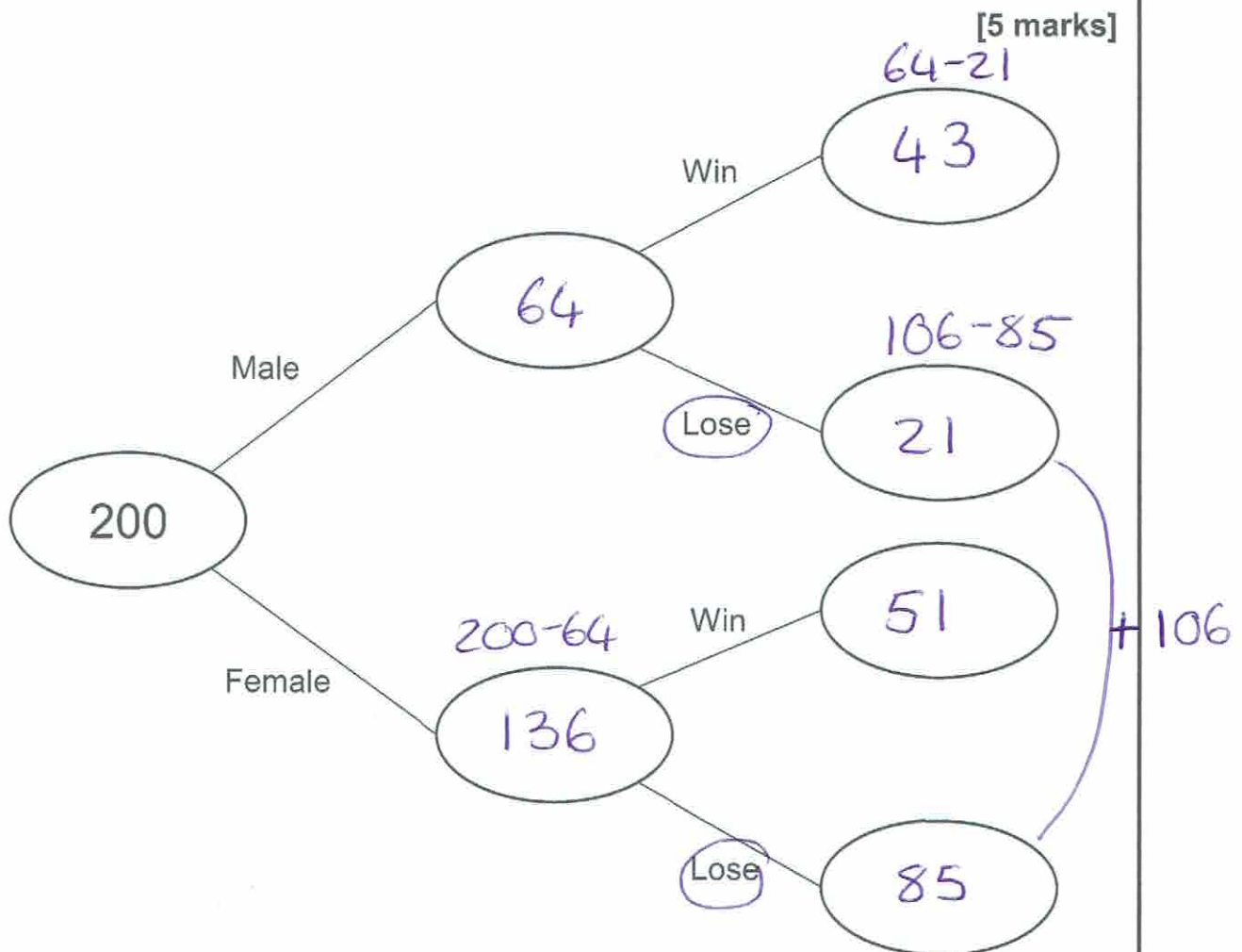**8 (c)** Draw a triangle that has the same area as rectangle A.

[1 mark]

6

9   200 adults are surveyed at random in at a bingo hall.

32% of the customers are male.

106 out of the 200 adults have never won.

The females claimed to have won and lost in the ratio of 3:5.

Complete the frequency tree.

[5 marks]

64-21

43

Win

64

Male

106-85

21

Lose

200

+106

200-64   Win   51

Female

136

Lose   85

$0.32 \times 200 = 64$ male $200 - 64 = 136$

Females.

| W | 17 | 17 | 17 | 51 |
| L | 17 | 17 | 17 | 17 | 17 |

136

$106 - 85 = 21$

85

$136 \div 8 = 17$

$64 - 21 = 43$

10 Calculate the size of angle x

Not drawn accurately

$138°$ x

$42°$

$42°$
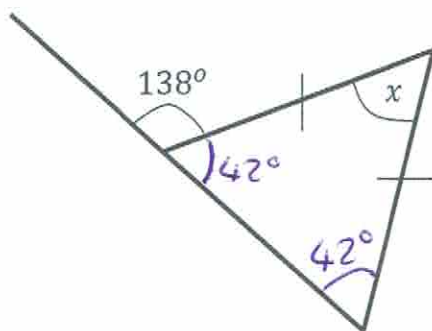
[3 marks]

Angles on straight line $180 - 138 = 42°$

Isosceles triangle $180 - (42 + 42)$
$= 180 - (84) = 96°$

Answer _____$x = 96°$_____

11 This table shows information about journeys X and Y.

$\dfrac{d}{S \times t}$

	Distance travelled	Time taken	Average speed
X	85 ✓	1 hour 15 minutes 1.25 hars	68 mph
Y	26 miles	30 minutes	52 mph

$S = \dfrac{miles}{hour}$

Complete the table. [2 marks]

distance = $S \times t$ Time = $di \div S$
        = 68×1.25 = $26 \div 52$
        = 85 miles   = ½ hour
                                        = 30 mins

12 A shop has recently seen an increase in sales of royal memorabilia.

In March they sold 680 royal memorabilia tea towels.

In April they sold 918 royal memorabilia tea towels.

Calculate the percentage increase in the sale of royal memorabilia tea towels.

[2 marks]

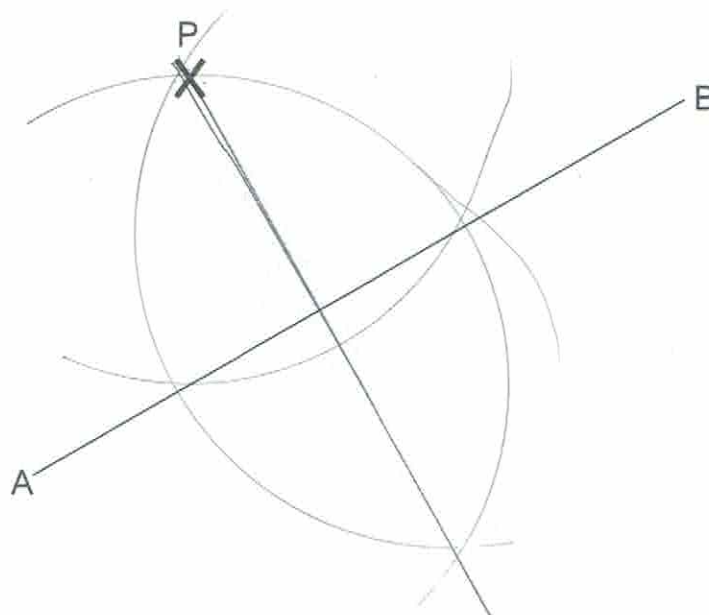$$\frac{change}{original} \times 100 = \frac{238}{680} \times 100 = 35\%$$

$$change = 918 - 680$$
$$= 238$$

Answer _____

13 Use a ruler and compasses to construct a perpendicular bisector to the line segment AB that passes through the point P.

You must show all construction lines.

✓ Arc crossing line AB in two places from point P.

[3 marks]

P

B

✓ Arg Bisecting arcs from two new points on AB

A

✓ perpendicular line

14 Three shops have different offers on the same bags of popcorn.

Shop 1	Shop 2	Shop 3
Buy 1 Get 1 FREE!	SPECIAL OFFER! 3 for 2	Buy 1 Get 1 Half Price
Each bag costs £2.50	Each bag costs £1.80	Each bag costs £1.64

Which shop should Rachel purchase popcorn from for her movie night?

You must show your working.

[6 marks]

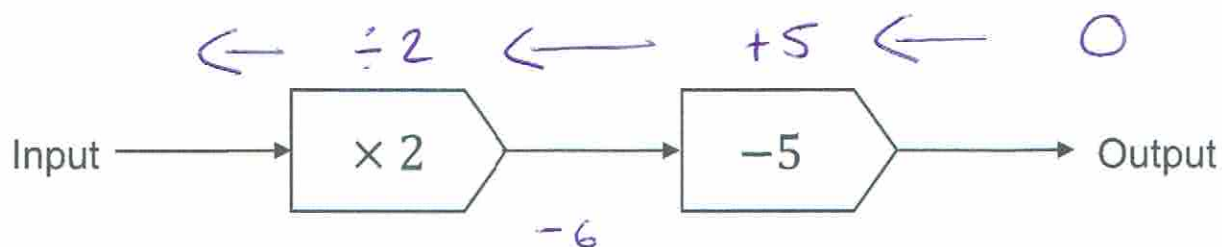Shop 1   Two bags = £2.50 + free
           1 bag = £1.25   ✓

Shop 2   3 bags = £1.80 + £1.80 + free ✓
                  = £3.60
           1 bag = £1.20   ✓

Shop 3   2 bags = £1.64 + £0.82 ✓
                  = £2.46
           1 bag = £1.23   ✓

Answer _Shop 2 is the cheapest._ ✓

Do not write outside the box

15 Here is a function machine.

$\leftarrow \quad \div 2 \quad \leftarrow \quad +5 \quad \leftarrow \quad \bigcirc$

Input $\longrightarrow$ $\boxed{\times 2}$ $\longrightarrow$ $\boxed{-5}$ $\longrightarrow$ Output

-6

15 (a) Calculate the **output** if the input is -3.

[1 mark]

$(-3) \times 2 = -6$

$-6 - 5 = -11$

Answer $\qquad -11 \quad \checkmark$

15 (b) Calculate the **input** if the output is 0.

[1 mark]

$0 + 5 = 5$

$5 \div 2 = 2.5$

Answer $\qquad 2.5 \text{ or } 2\frac{1}{2} \quad \checkmark$

15 (c) Write an expression for the output if the input is $3x + 1$.

[2 marks]

$(3x+1) \times 2 = 6x + 2 \quad \checkmark$

$6x + 2 - 5 = 6x - 3$

Answer $\qquad 6x - 3 \quad \checkmark$

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16 A bag contains counters that are purple, yellow, blue and white.

Counter	Purple	Yellow	Blue	White
Probability	17 +	2x +	x + 2+	x + 5	= 100

A counter is chosen at random.

The probability the counter is purple is $\frac{17}{\boxed{100}}$

Work out the probability it is blue. 100 in the bag

[4 mark]

$$17 + 2x + x + 2 + x + 5 = 100 ✓$$
$$4x + 24 = 100$$
$$4x = 76$$
$$x = 19 ✓$$

$$Blue = x + 2$$
$$= 19 + 2$$
$$= 21 ✓$$

Answer _____ $^{21}/100$ ✓

17 Olivia and Sophie share sweets in the ratio of 3:5

Olivia has 12 sweets less than Sophie.

Work out how many sweets there are all together.

[3 marks]

| O | 6 | 6 | 6 | ← 12 . | | 2 boxes = 12 ✓ |
| S | 6 | 6 | 6 | 6 | 6 | 1 box = 6 ✓ |

$6 \times 8 = 48$ sweets ✓

Answer _____ 48 _____

18 A shape has an exterior angle of 30°.

Not drawn accurately

30°

18 (a) How many sides does the shape have?

[2 marks]

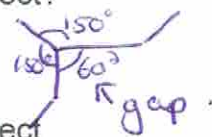$$n = \frac{360}{Ext} = \frac{360}{30} = 12 \text{ sides} ✓$$

Answer _____ 12 ✓ _____

18 (b) Maria says that the shape tessellates. Is she correct?

You must give a reason for your answer.

150°
180° 60°
gap.

☐ Correct   ☑ Incorrect

[2 marks]

A 12 sided shape doesn't tesselate as
the interior angle is $180° - 30° = 150°$.
$360 \div 150 = 2.4$ So 2.4 shapes fit around
a point. There would be a gap of 60° with two
12 sided shapes

19 Here are the interest rates for a bank account.

> **Banks R Us**
>
> Interest:
> 2.4% per year compound
> interest. $100\% + 2.4\% = 10$ 2.4% 1.024 ✓
>
> No withdrawals allowed until the end of three years.

Daniel has £20 000 he wants to invest.

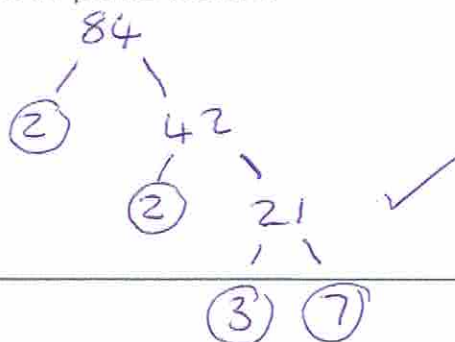Calculate how much money Daniel will have at the end of the 3 years.

[3 marks]

$$20000 \times 1.024^3 ✓$$
$$= 21474.83648$$

Answer £21474.84 ✓

20 Express 84 as a product of its prime factors. in index form.

[3 marks]

84
⟋ ⟍
② 42
⟋ ⟍
② 21 ✓
⟋ ⟍
③ ⑦

$2 \times 2 \times 3 \times 7$ ✓

Answer $2^2 \times 3 \times 7$ ✓

13

21 The weights of 40 new born babies were recorded.

Weight (w, pounds)	Number of babies	MP	Fx
$5 \leq w < 6$	8	5.5	44
$6 \leq w < 8$	13	7	91
$8 \leq w < 10$	11	9	99 ✓
$10 \leq w < 12$	8	11	88
$w \geq 12$	0	—	—
	40		3224

doesn't matter as Frequency is 0 →

21 (a) In which class interval is the median? $\frac{40+1}{2} = 20.5^{th}$.

Circle your answer.

[1 mark]

$5 \leq w < 6$ $\boxed{6 \leq w < 8}$ $8 \leq w < 10$

$10 \leq w < 12$ $w \geq 12$

21 (b) What is the modal class interval?

Circle your answer.

[1 mark]

$5 \leq w < 6$ $\boxed{6 \leq w < 8}$ $8 \leq w < 10$

$10 \leq w < 12$ $w \geq 12$

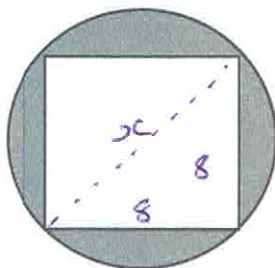**21 (c)** Calculate an estimate for the mean weight of a new born baby.

[4 marks]

$$\frac{322}{40} = 8.05$$ ✓

Answer ___8.05 pounds___ ✓

22

Not drawn accurately

Hidden pythagoras)

The square has a length of 8 cm.

The circle has a diameter of 11.5 *cm*.

Will the square fit inside the circle.

You must show your working.

[3 marks]

☐ Yes   ☐ No

$$x = \sqrt{8^2 + 8^2} \checkmark$$

$$= \sqrt{128} \checkmark$$

$$= 11.3 \text{ cm} \rightarrow \text{hypotenuse (longest length)}$$

As 11.3 is smaller than 11.5 the square
will fit inside the circle. → diameter longest length

23 (a) Simplify

$6 \div 9 = \frac{1}{3}$ ✓

$x^2 \div x = x$

$y^4 \div y^5 = y^{-1}$

$\frac{6x^2y^4}{9xy^5}$

[2 marks]

Answer $\frac{1}{3}xy^{-1}$ or $\frac{x}{3y}$ ✓

23 (b) Expand and simplify

$$(x - 2)(x + 8)$$
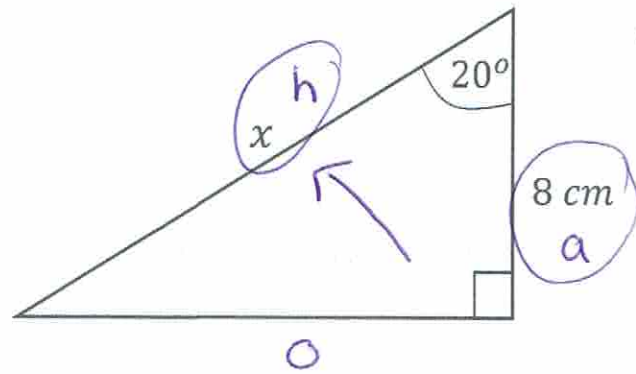
[2 marks]

$$x^2 + 8x - 2x - 16 \checkmark$$

Answer $x^2 + 6x - 16$ ✓

13

24 Work out the length x.

Not drawn accurately

$20°$

h

x

$8\ cm$

a

O

[2 marks]

$S\overset{o}{n}\ \overset{a}{C\overset{a}{h}}\ T\overset{o}{a}$ $\cos(20) = \dfrac{8}{x}$
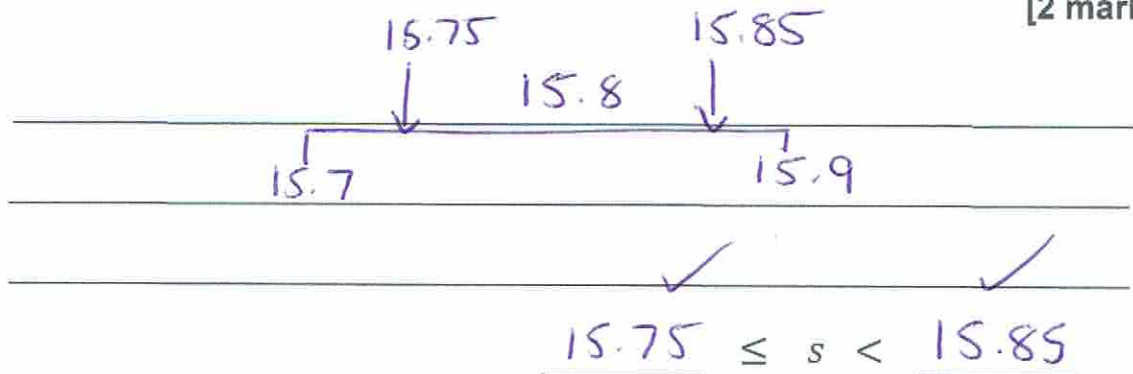
$x = \dfrac{8}{\cos(20)}$ ✓

Answer _____ 8.51 _____ cm

25 The length of a cut piece of string, s, is 15.8 cm correct to one decimal place.

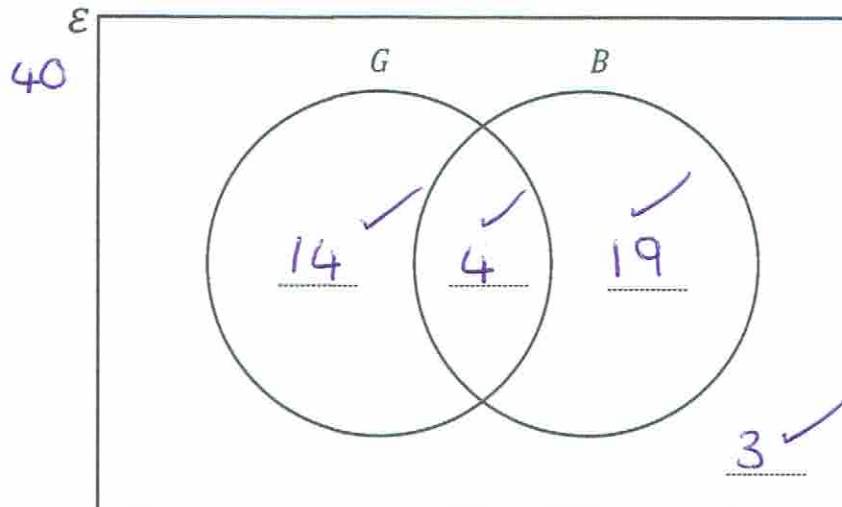Write down the error interval for the length of the piece of string.

[2 marks]

15.75 15.85

15.8

15.7 15.9

✓   ✓

$\underline{15.75} \leq s < \underline{15.85}$

26 Here is a Venn diagram

[4 marks]

ε

40

G   B

14 ✓   4 ✓   19 ✓

3 ✓

40 homeowners in London are asked if they have a garden or a balcony.

- 18 have a garden
- 23 have a balcony
- 14 have a garden but not a balcony.

Complete the Venn diagram.

G (18)   B (23)

$18 - 14 = 4$ $23 - 4 = 19$

$40 - (14 + 4 + 19)$

$= 40 - 37$

$= 3$

End of Questions

8

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ANSWER IN THE SPACES PROVIDED