AQA

Practice Paper 1

Please write clearly in block capitals.

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

Surname _____

Forename(s) _____

Candidate signature Answers.

GCSE Mathematics

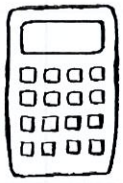
F

Foundation Paper 2 Calculator

Summer 2019 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	
24 – 25	
26 – 27	
TOTAL	

Teacher	Class

8300/MissB/2F

Practice Paper Overview

Q	Topic	Mark	Total
1	Negative Numbers		1
2	Algebraic Expressions		1
3	Units of Measure		1
4	Rotational Symmetry		1
5	Using a Calculator		2
6	Pictogram		2
7	Function Machines		3
8	Number Problem		3
9	Nets, Plans and Elevations		2
10	Sequences		3
11	Percentage and Money Problem		5
12	Ratio Problem		3
13	Parts of a circle		1
14	Percentage Problem		4
15	Simplify and Solve		4
16	Speed Distance Time		2
17	Pie Chart Problem		4
18	Right Angled Trigonometry		2
19	Product of Prime Factors		3
20	Frequency Tree		3
21	Form and Solve Equations		5
22	Inequalities		1
23	Parallel Lines		1
24	Combinations		2
25	Error Interval		2
26	Mean from a table		4
27	Direct Proportion		3
28	Angles in Polygons		2
29	Probability Problem		5
30	Compound Interest		5
	Total		**80**

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

Do not write outside the box

1 Circle the lowest of these temperatures.

[1 mark]

-2.6^oC 6.2^oC -6^oC 0^oC 0.3^oC

2 Circle the expression that is five times smaller than n.

[1 mark]

$n-5$ $5n$ $n+5$ $\frac{n}{5}$ n^5

3 Which unit is most suitable for measuring the length of a football pitch?

Circle your answer.

[1 mark]

millimetres centimetres metres kilometres

3

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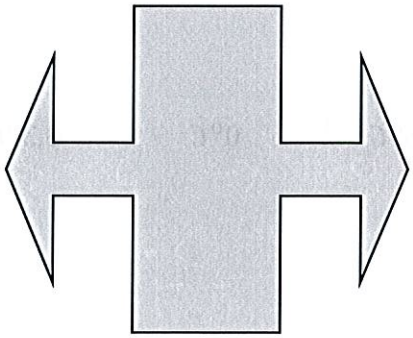
4 Circle the order of rotational symmetry of this drawing.



[1 mark]

0 1 2 3 4

5 Work out the value of $\sqrt{5678} - 2^7$

[2 marks]

$\sqrt{5678} - 128$

Answer $-52.647495\dot{0}6$

3

6 The pictogram shows the number of bags sold by a shop on Thursday, Friday and Saturday of one week. **[1 mark]**

Do not write outside the box

Key:  represents 8 ✓ people

Thursday	 $1\frac{1}{2}$
Friday	 3
Saturday	 $3\frac{1}{4}$

12 people buy a bag on Thursday.

6 (a) Complete the key. **[1 mark]**

$1\frac{1}{2}b = 12$

$1b = 8$

6 (b) How many people buy a bag on Saturday. **[1 mark]**

$8 \times 3.25 = 26$

Answer 26 ✓

2

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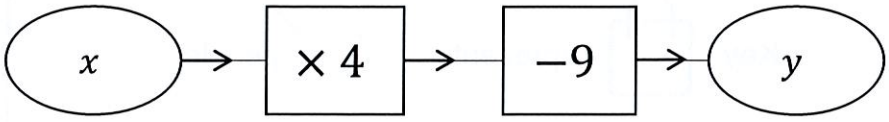
7 Here is a number machine.



7 → ×4 → −9 → 19

← ÷4 ← +9 ← 3

2x → ×4 → −9 → 8x − 9

7 (a) Work out the output when the input is 7

[1 mark]

Answer 19 ✓

7 (b) Work out the input when the output is 3

[1 mark]

Answer 3 ✓

7 (c) Work out the output when the input is $2x$

[1 mark]

Answer 8x − 9 ✓

3

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8 In this magic square each row, column and diagonal sum to make 21.

6	5	10
11	7	3
4	9	8

✓✓✓3 marks all 5
✓✓2 marks 3 or 4 correct
✓1 mark 2 correct

Fill in the missing numbers.

[3 marks]

$6 + 11 = 17$

$21 - 17 = 4$

$10 + 8 = 18$

$21 - 8 = 3$

$4 + 9 = 13$

$21 - 13 = 8$

$10 + 6 = 16$

$21 - 16 = 5$

$4 + 10 = 14$

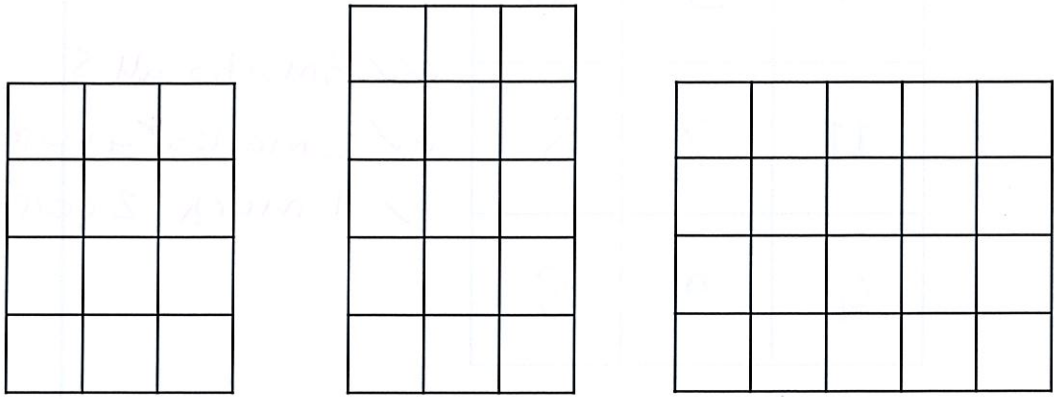
$21 - 14 = 7$

3

Do not write outside the box

9 A solid cuboid is made from centimetre cubes.

The plan view, front elevation and side elevation are shown.



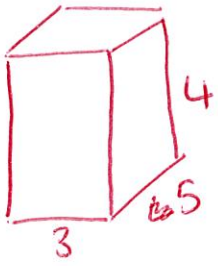
Plan view | Front elevation | Side elevation

How many centimetre cubes were used to make the cuboid?

[2 marks]

3 x 5 x 4 ✓

Answer 60 ✓ cubes



2

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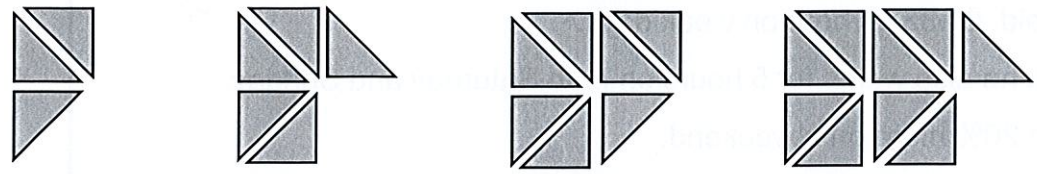
10 The diagram shows a sequence of patterns.



Pattern 1 Pattern 2 Pattern 3 Pattern 4

3 +2 5 +2 7 +2 9

10 (a) Work out the number of triangles in pattern 7

[1 mark]

Pattern	5	6	7
Triangles	11	13	15

Answer 15 ✓

10 (b) Complete the rule below.

[1 mark]

Number of triangles = Pattern number × [2] + [1] ✓

10 (c) Which pattern number has 35 triangles

[1 mark]

$2n + 1 = 35$

$2n = 34$

$n = 17$

Answer 17 ✓

3

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11 Liam works Tuesday, Wednesday and Thursday. 3days
He starts work at 5.00 pm and finishes at 9.30 pm. 4½ hours ✓
Liam is paid £4.35 an hour on week days.
One week he also works for 5 hours on both Saturday and Sunday.
He is paid 20% more on a weekend.
How much does Liam earn altogether this week?

[5 marks]

4½ hours per day x 3 days = 13.5 hours.
£4.35 x 13.5 = £58.725 ✓

5 hours x 2 days 10 hours.

£4.35 x 1.2 = £5.22 weekend pay ✓

Weekend 10 x 5.22 = £52.20 ✓

Total pay = £58.725 + £52.20
= £110.925

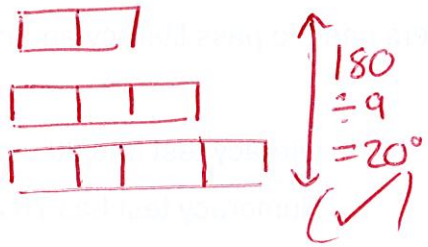
Answer £110.93 ✓

5

Do not write outside the box

12 The angles in a triangle are in the ratio 2 : 3 : 4 .

180°



Lewis says

"This is a right-angled triangle".

Is Lewis correct?

☐ Yes ☑ No

Show your reasoning. **[3 marks]**

20° x 2 = 40°

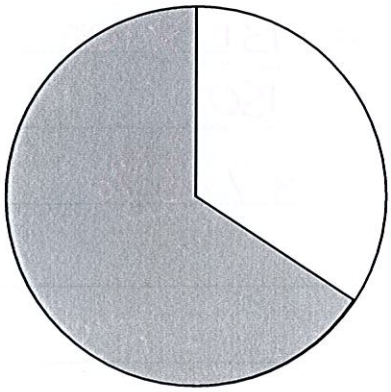
20° x 3 = 60°

20° x 4 = 80°

As no angle is a right angle.

Answer _____

13 Here is a circle



Circle the word that describes the shaded part.

[1 mark]

radius sector chord Segment

4

Do not write outside the box

14 Teachers need to pass literacy and numeracy tests before they can qualify.

The,

Literacy test has 80 marks

Numeracy test has 70 marks.

A trainee teacher scores

85% on the Literacy test OF 80

90% on the Numeracy test OF 70

To pass and become a teacher you need to score 87% of the **total** marks.

Does the trainee teacher pass?

You must show your working out.

[4 marks]

85% of 80 $0.85 \times 80 = 68$ ✓

90% of 70 $0.9 \times 70 = 63$ ✓

$\frac{68+63}{150} \times 100 = \frac{131}{150} \times 100$

$= 87.\dot{3}\%$ ✓

Answer Yes the trainee teacher passes by $0.\dot{3}\%$. ✓

4

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15 (a) Simplify

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

[2 marks]

$6 \div 9 = 2/3$

$x^2 \div x = x$ ✓ (Two correct)

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

Answer $\frac{2}{3}xy^{-1}$ ✓ or $\frac{2xy^{-1}}{3}$

15 (b) Solve

$$\frac{x-10}{4} = 6$$

or $\frac{2x}{3y}$

[2 marks]

$x - 10 = 24$ ✓

$x = 34$

Answer $x = 34$ ✓

16

This table shows information about journeys X and Y.

	Distance travelled	Time taken	Average speed
X	126miles ✓	2 hour 15 minutes	56 mph
Y	~~28~~ 33 miles	30mins ✓	66 mph

Complete the table. **[2 marks]**

$2.25 \times 56 = 126$ miles

time x Speed = distance.

Time = $\frac{\text{distance}}{\text{Speed}} = \frac{33}{66} = \frac{1}{2}$ hour.

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6

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17 The pie chart shows some information about the medals the United States received at the Rio Olympics in 2016.

G 111° 24° 246°
S 111°

246 ÷ 24
= 222°
÷2 = 111°
246°

The angle for gold would be 24^o more than the angle for Silver.

There were 120 medals in total.

Work out the number of silver medals.

[4 marks]

360 / 120 = 3° per medal ✓

Bronze = 114° ÷ 3 = 38 medals.

(✓ for 111°)

360 − 114 = 246°

Silver = 111° ÷ 3 ✓ = 37 medals

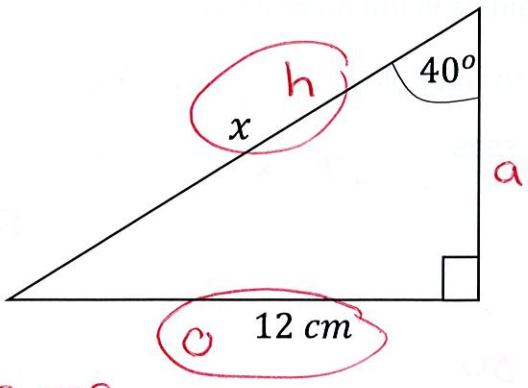
Bronze = 1365 ÷ 3 = 45 medals

Answer 37 medals ✓

4

18 Work out the length x.

Not drawn accurately



[2 marks]

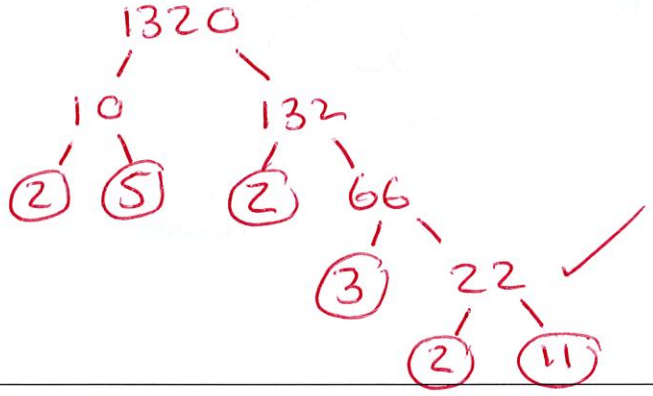
SOH CAH TOA

$\sin(40) = \frac{12}{x}$ ✓

$x = \frac{12}{\sin(40)}$

Answer 18.7 ✓ cm

19 Express 1320 as a product of its prime factors in index form. **[3 mark]**



✓

$2 \times 2 \times 2 \times 3 \times 5 \times 11$ ✓

Answer $2^3 \times 3 \times 5 \times 11$ ✓

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5

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20 80 adults visited the opticians.

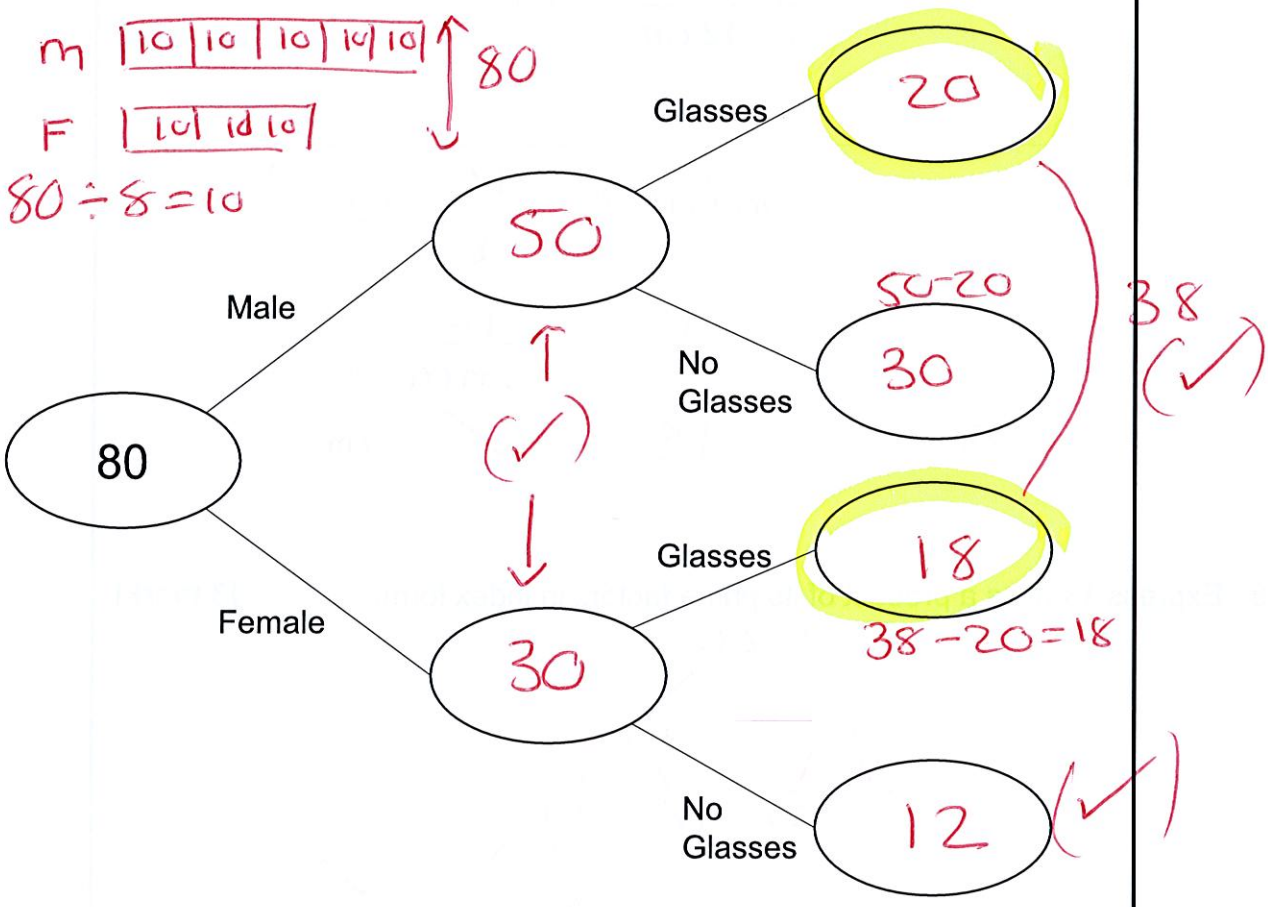
The customers were male and female in the ratio of 5:3.

$\frac{2}{5}$ of the male customers needed to wear glasses. $\frac{2}{5}$ OF 50 $50 \div 5 = 10$ $10 \times 2 = 20$

47.5% of the customers need glasses. $0.475 \times 80 = 38$

Complete the frequency tree.

[3 marks]



3

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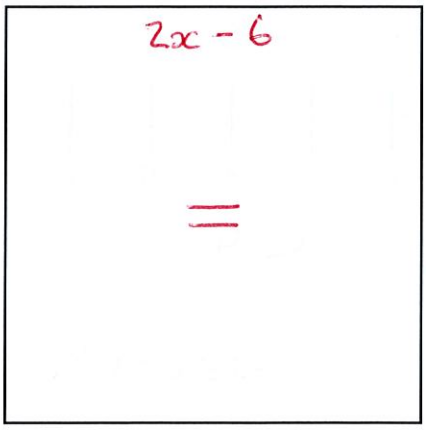
21 This is a square.



$7(4.2)-27$
$=2.4\text{cm}$ ✓

Work out the perimeter of the square.

[5 marks]

$7x-27=2x-6$ ✓

$5x-27=-6$

$+27 \quad +27$

$5x=21$

$x=\frac{21}{5}=4.2$ ✓

$P=2.4+2.4+2.4+2.4$ ✓

$=9.6$

Answer 9.6 cm ✓

5

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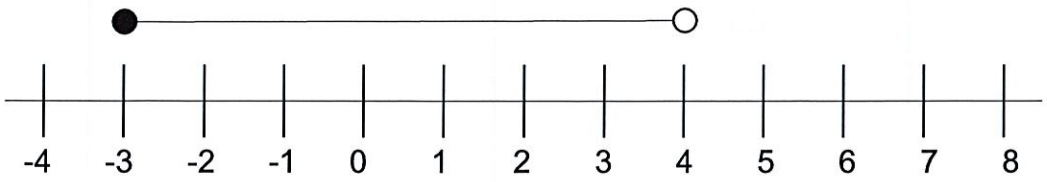
22 Circle the inequality that represents the solution set on the number line.



$-3 \leq$ < 4

[1 mark]

$-3 < x < 4$ $\quad$ $-3 \leq x < 4$

$-3 < x \leq 4$ $\quad$ $-3 \leq x \leq 4$

23 Circle the equation of a line that is parallel to $y = 4x - 3$

Same gradient

$m = 4$

$m = 4$

$y = 3x - 4$ $\quad$ $y - 4x = 3$ $\quad$ $y = \frac{x}{3} + 4$

$m = 3$ $\quad$ $y = 3 + 4x$ $\quad$ $m = \frac{1}{3}$

$y = -4x + 3$ $\quad$ $y = 3 - \frac{1}{4}x$

[1 mark]

$m = -4$ $\quad$ $m = -\frac{1}{4}$

2

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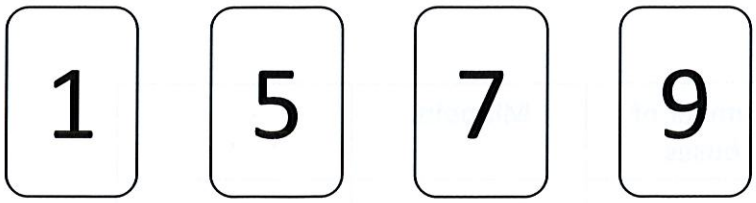
24 Yasin uses four cards to make 4-digit numbers.



How many different 4-digit numbers can he make that are less than 3000?

[2 marks]

1 ? ? ?

3! = 6

5 7 9

5 9 7 ✓

7 5 9

7 9 5

9 5 7

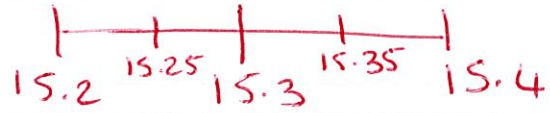
9 7 5

Answer 6 ✓

25 The length of a cut piece of rope, l, is 15.3 cm correct to one decimal place.

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

[2 marks]



✓ ✓

15.25 ≤ l < 15.35

4

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26 Here is some information about 40 buses arriving back at the bus depot.

Number of minutes late, t	Number of buses	Midpoint	fx
$0 \leq t < 5$	8	2.5	20
$5 \leq t < 15$	11	10	110
$15 \leq t < 20$	15	17.5	262.5
$20 \leq t < 30$	6	25	150
~~$t \geq 30$~~	~~0~~		
	40		542.5

✓(one value) ✓(Total fx)

26 (a) Work out an estimate of the mean number of minutes late.

[3 marks]

$\frac{542.5}{40} = 13.5625$

Answer 13.6 ✓

3

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26 (b) The depot manager scrutinises the information in more detail.

Number of minutes late, t	Number of buses
$0 \leq t < 5$	8
$5 \leq t < 10$	0
$10 \leq t < 15$	11
$15 \leq t < 20$	15
$20 \leq t < 25$	1
$25 \leq t < 30$	5
$t \geq 30$	0

5 to 15 11 people. mp 10
here midpoint is 12.5 for 11 people.

20 to 30 6 people mp 25
Here most of 6 mp is 27.5.

She works out an estimate of the mean using this information.

How does her estimate compare with the answer to part (a)?

Tick **one** box.

[1 mark]

- [ ] Lower than part (a)
- [ ] Same as part (a)
- [✓] Higher than part (a)
- [ ] Not possible to tell

1

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27 y is directly proportional to the square of x.

x	2	3	b
y	a	36	100

Work out the value of a and b.

[3 marks]

$y = kx^2$

$36 = k \times (3)^2$

$36 = 9k$

$\frac{36}{9} = k$

$k = 4$ ✓

$y = 4x^2$

$y = 4 \times (2)^2$

$y = 16$ (a)

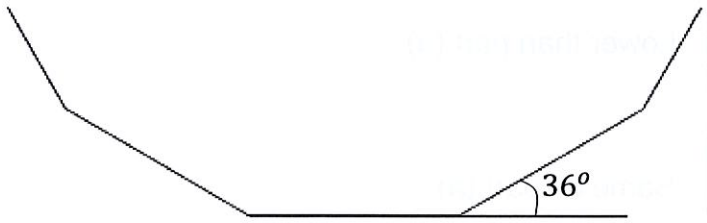
$\frac{100}{4} = \frac{4x^2}{4}$

$25 = x^2$

$5 = \sqrt{25} = x$ (b)

$a =$ 16 ✓ $b =$ 5 ✓

28 A shape has an exterior angle of 36^o.



Not drawn accurately

[2 marks]

How many sides does the shape have?

$n = \frac{360}{36} = 10$ ✓

Answer 10 sides ✓ decagon

5

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

Counter	Purple	Yellow	Blue	White
Probability	22 +	$2x$ +	$x+5$ +	$3x+7$ $= 100$

A counter is chosen at random.

The probability the counter is purple is $\frac{11}{50}$. $= \frac{22}{100}$ ✓ (×2)

Work out the probability it is white.

[5 marks]

$6x + 34 = 100$ ✓ (×2)

$6x = 66$

$x = 11$ ✓

white $= 3x + 7$

$= 3(11) + 7$

$= 33 + 7$

$= 40$ ✓

Answer $40/100 = 4/10 = 2/5$ ✓

5

Do not write outside the box

30 The value of a house £V is given by

$$V = 154\,000 \times 1.005^t$$

30 (a) Write down the value of the house when $t = 0$

[1 mark]

154000×1.005^0

154000×1

Answer £154000 ✓

30 (b) What is the value of the house after 4 years?

[1 mark]

154000×1.005^4

Answer £157103.18 ✓

30 (c) After how many years will the house's value be above £160 000

[3 marks]

5 years £157,888.69

6 years £158,678.14

7 years £159,471.53 ✓

8 years £160,268.88 ✓

9 years

10 years

Answer 8 years ✓

End of Questions

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