Candidate 1

Question 1

1. Josh earns £9 per hour and works 30 hours a week.

   His weekly outgoings are £220 a week.

   Josh saves all his remaining money.

   He books a holiday costing £566.

   He will take £800 spending money with him.

   Calculate the minimum number of weeks it will take him to save the total amount.   **2**

$$566 + 800 = 1356 \qquad \begin{array}{r} 30 \\ \times 9 \\ \hline 270 \end{array} \qquad \begin{array}{l} 270 - 220 \\ = £50 \end{array}$$

$$50 \overline{\smash{\big)}\,1356.0} \qquad \rightarrow \underline{28 \text{ weeks}}$$

Candidate 2

Question 1

1. Josh earns £9 per hour and works 30 hours a week.

    His weekly outgoings are £220 a week.

    Josh saves all his remaining money.

    He books a holiday costing £566.

    He will take £800 spending money with him.

    Calculate the minimum number of weeks it will take him to save the total amount.   **2**

$$9 \times 30 = 270$$

£50 a week

$$\begin{array}{r} 27.16 \\ 50 \overline{\smash{)}1366} \\ 36 \end{array}$$

28 weeks

Candidate 3

Question 2

2. A lorry's speedometer is shown.
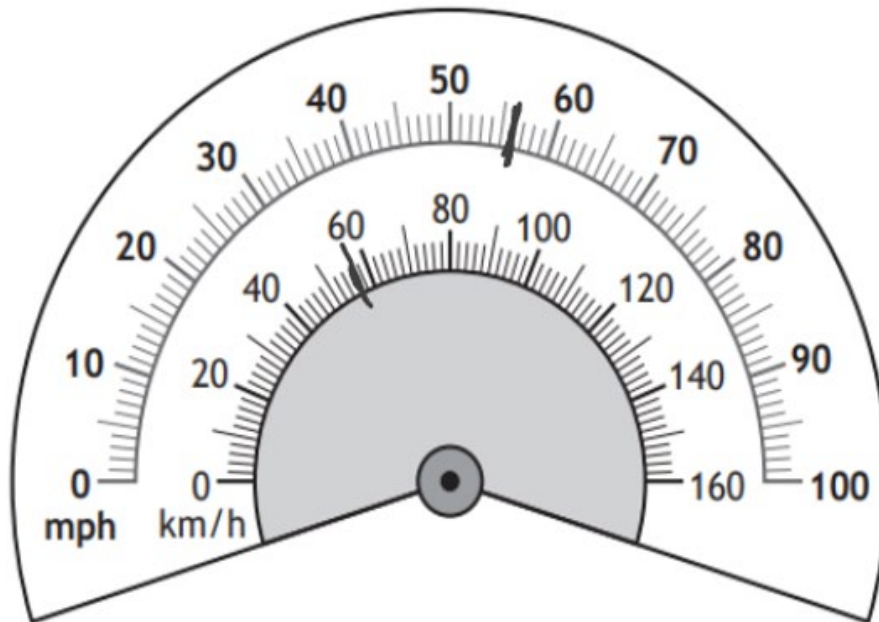
The lorry's speed is restricted to a maximum of 56 mph.

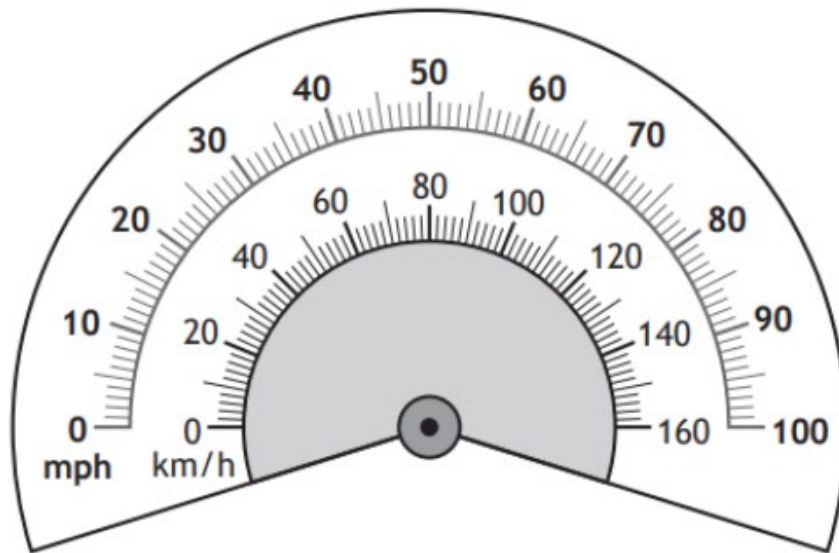Use the speedometer to determine this speed in km/h.   2

(An additional diagram, if required, can be found on *page 17*.)

Candidate 4

Question 2

2. A lorry's speedometer is shown.

The lorry's speed is restricted to a maximum of 56 mph.

Use the speedometer to determine this speed in km/h.   **2**

(An additional diagram, if required, can be found on *page 17*.)

$$50 = 80$$
$$5 = 8$$
$$56 \div 8 = 7 \times 5 = \underline{35}$$

Candidate 5

Question 3

3. The crowd at a rugby match was made up of home supporters, away supporters and people who were neutral.

- $\frac{3}{7}$ were home supporters.

- $\frac{2}{5}$ were away supporters.

- The remaining people were neutral.

Calculate the fraction of the crowd that were neutral.   **3**

$$\frac{3}{7} + \frac{2}{5} \qquad \frac{15}{35} + \frac{14}{35}$$

$$= \frac{29}{35}$$

$$\frac{6}{35} = \frac{1}{6} \text{ neutral}$$

Candidate 6

Question 3

3. The crowd at a rugby match was made up of home supporters, away supporters and people who were neutral.

   - $\frac{3}{7}$ were home supporters.

   - $\frac{2}{5}$ were away supporters.

   - The remaining people were neutral.

   Calculate the fraction of the crowd that were neutral.   **3**

$3 \div 7 = 0.37$ 0.37
$2 \div 5 = 0.25$ - 0.25
                       ———
                       0.62

38% remaining

Candidate 7

Question 4

4. Geoffrey shared his savings between his three children, Sophie, Ed and Lucy.

    The money was shared in the ratio 7:2:6.

    Sophie received £3304.

    Calculate how much money Geoffrey gave his three children in total.   **3**

$$
\begin{array}{r}
0\ 5\ 5\ 8 \\
7\overline{)3\,3\,0\,4}
\end{array}
$$

$$
\begin{array}{r}
5\,5\,8 \\
\times\ 2 \\
\hline
1\,1\,1\,6
\end{array}
$$

$$
\begin{array}{r}
5\,5\,8 \\
\times\ 6 \\
\hline
3\,0\,4\,2
\end{array}
$$

$$
\begin{array}{r}
3\,3\,0\,4 \\
+\ 1\,1\,1\,6 \\
+\ 3\,0\,4\,2 \\
\hline
£7\,4\,6\,2
\end{array}
$$

Candidate 8

Question 4

4. Geoffrey shared his savings between his three children, Sophie, Ed and Lucy.

   The money was shared in the ratio $7:2:6$.

   Sophie received £3304.

   Calculate how much money Geoffrey gave his three children in total.   **3**

$$7 + 2 + 6 = 15$$

$$
\begin{array}{r}
0220.4 \\
15\overline{\smash{)}3304} \\
33 \\
\end{array}
$$

$$
\begin{array}{r}
220.4 \\
\times\ 7 \\
\hline
£1542.80 \\
\hline
\end{array}
$$

Candidate 9

Question 5

5. Eddie runs a stall at the school fundraiser.

   His game requires two spinners to be spun and allowed to come to rest.

   The spinners are shown.
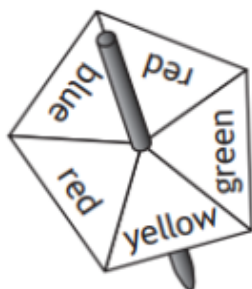
   A prize is won if one spinner lands on blue or green **and** the other spinner lands on an even number.

   Calculate the probability of NOT winning a prize.   3

	1	2	3	4	5
red	✗	✗	✗	✗	✗
blue	✗	✓	✗	✓	✗
green	✗	✓	✗	✓	✗
yellow	✗	✗	✗	✗	✗

$$\frac{4}{20}$$

Candidate 10

Question 5

5. Eddie runs a stall at the school fundraiser.

   His game requires two spinners to be spun and allowed to come to rest.

   The spinners are shown.

   A prize is won if one spinner lands on blue or green **and** the other spinner lands on an even number.

   Calculate the probability of NOT winning a prize.   **3**

$$\frac{2}{5} + \frac{2}{5} = \frac{4}{5}$$

$\frac{1}{5}$ chance of not winning

Candidate 11

Question 6

6. Kenny buys a new fridge.

   The original price of the fridge was £650.

   A shop is having a sale with 20% off the price of all fridges.

   When Kenny goes to the shop, he finds there is an additional 2.5% off the **sale** price.

   Calculate the price Kenny pays for the fridge.   **3**

$$£650 \div 10 = £65 \times 2 = £130$$

$$£650 - £130 = £520$$

$$10\% = £13$$
$$5\% = £6.50$$
$$2.5\% = £3.25$$
$$£520 - £3.25 = £516.75$$

Candidate 12

Question 6

6. Kenny buys a new fridge.

   The original price of the fridge was £650.

   A shop is having a sale with 20% off the price of all fridges.

   When Kenny goes to the shop, he finds there is an additional 2.5% off the **sale** price.

   Calculate the price Kenny pays for the fridge.   3

$$5\overline{)6,50} = 130$$

$$£650 - £130 = £520$$

$$1\% \text{ of } 520 = £52$$
$$2\% = £104$$
$$0.5\% = £26 \;+$$
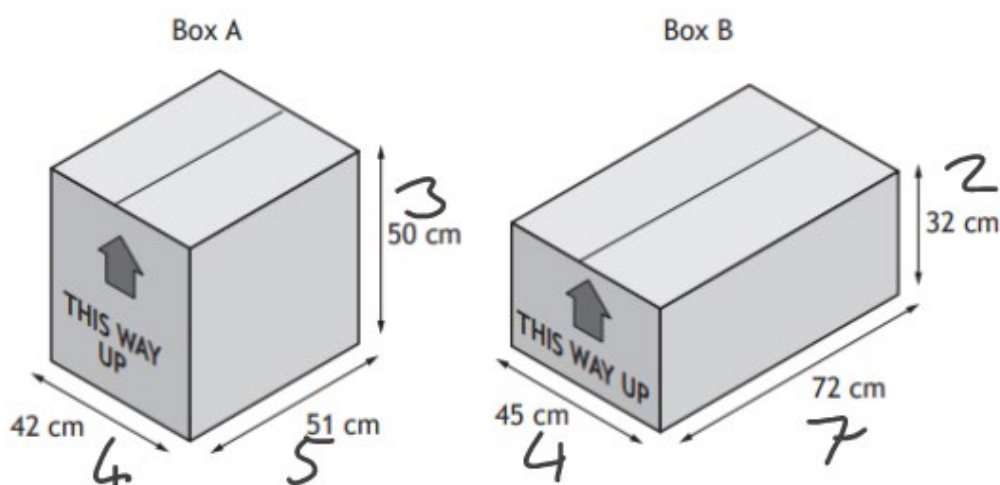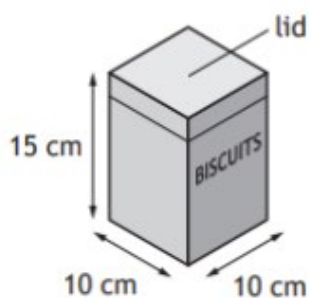$$\overline{£130}$$

$$£520 - £130 = 390$$

Candidate 13

Question 7

7. Biscuits are sold in tins in the shape of a cuboid as shown.

   The tins need to be packed into boxes with the **lid facing upwards**.

   There are two types of box available with internal measurements as shown.

   lid

   15 cm

   BISCUITS

   10 cm   10 cm

   Box A   Box B

   3
   50 cm   *2*
   32 cm

   THIS WAY UP   THIS WAY UP

   72 cm
   7

   42 cm   51 cm   45 cm
   4   *5*   *4*

   Determine the maximum number of tins which can be packed.

   Use your working to justify your answer.   **2**

$$4 + 5 + 3 = 12 \qquad 4 + 2 + 2 = 13$$

$$13 \text{ boxes}$$

Candidate 14

Question 7

7. Biscuits are sold in tins in the shape of a cuboid as shown.

   The tins need to be packed into boxes with the **lid facing upwards**.

   There are two types of box available with internal measurements as shown.

   lid

   15 cm

   BISCUITS

   10 cm   10 cm

   Box A   Box B

   50 cm   32 cm

   THIS WAY UP   THIS WAY UP   72 cm

   42 cm   51 cm   45 cm

   Determine the maximum number of tins which can be packed.

   Use your working to justify your answer.   **2**

$$42 \div 10 = 5 \qquad 45 \div 10 = 5$$
$$51 \div 10 = 6 \qquad 72 \div 10 = 8$$
$$50 \div 15 = 4 \qquad 32 \div 15 = 3$$
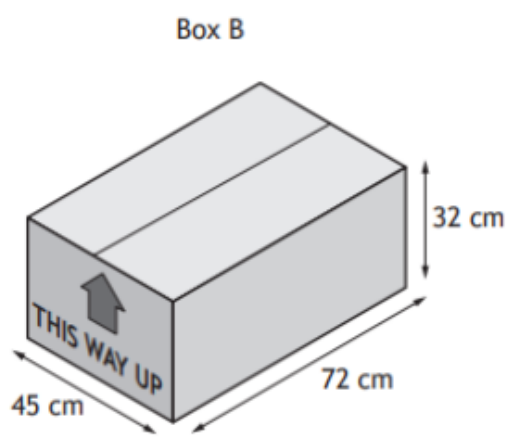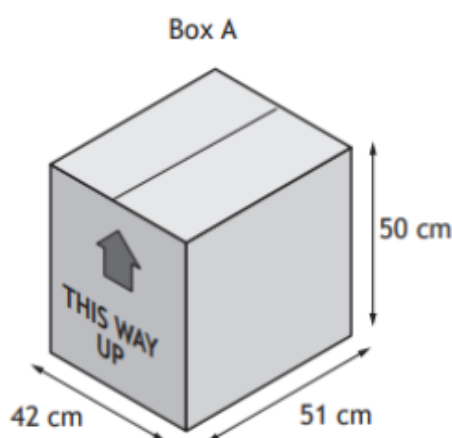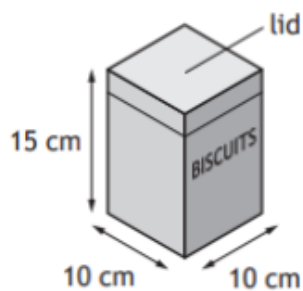
$$5 \times 6 \times 4 = \underline{120} \qquad 5 \times 8 \times 3 = \underline{120}$$

Candidate 15

Question 8

8. Janet travelled by car from her home to a meeting.

   She arrived at the meeting at 10:15 am.

   She travelled 136 miles at an average speed of 40 mph.

   During the journey she stopped for 50 minutes for breakfast.

   Determine the time Janet left home.   **3**

$$\begin{array}{r} 003.4 \\ 40\overline{)1\,3\,6.0} \end{array}$$

$3.4\,hrs = 3.24$

$3.24 + 50\,mins = 4.14$

$\boxed{6.01}$

Candidate 16

Question 8

8. Janet travelled by car from her home to a meeting.
   She arrived at the meeting at 10:15 am.
   She travelled 136 miles at an average speed of 40 mph.
   During the journey she stopped for 50 minutes for breakfast.
   Determine the time Janet left home.   3

$$136 \div 40 = 3.16$$

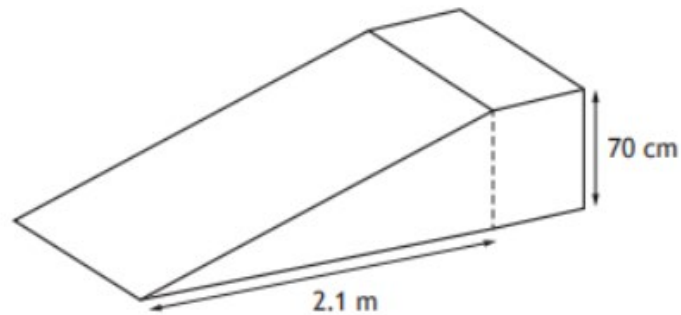3 hrs 16 mins + 50 mins
$$= 4 \text{ hrs } 6 \text{ mins}$$

10:15 am + 4 hrs 6 mins
$$= 2:21 \text{ pm}$$

Candidate 17

Question 9

9. A design for a skatepark ramp is shown.

   The height of the ramp is 70 cm.

   70 cm

   2.1 m

   To be suitable the ramp must have a gradient of 0.35 ± 0.01.

   Determine whether the ramp is suitable.

   Use your working to justify your answer. $0.34 - 0.36$ **3**
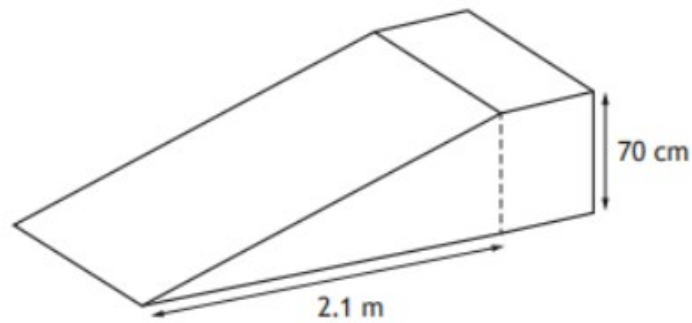
   $$\frac{0.7}{2.1} = 0.3$$

   No as $0.3 < 0.34$

Candidate 18

Question 9

9. A design for a skatepark ramp is shown.

   The height of the ramp is 70 cm.

   70 cm

   2.1 m

   To be suitable the ramp must have a gradient of 0.35 ± 0.01.

   Determine whether the ramp is suitable.

   Use your working to justify your answer.   **3**

$$\frac{70}{21} = 3.333$$

no as $3.33 > 0.36$

Candidate 19

Question 10(a) and (b)

10. John owns a bike shop and has a team of mechanics who build each new bicycle.

The table lists the tasks that need to be completed and the time required for each task.

Task	Detail	Preceding task	Time (minutes)
A	attach bicycle to bicycle clamp stand	F	1
B	grease pedals	A	1
C	attach wheels	A	7
D	put bike on display	G, H, I, J	2
E	grease saddle post	F	1
F	remove bicycle frame and parts from box	none	2
G	insert saddle post into frame and tighten	E	1
H	install headset	A	5
I	inflate the tyres	C	4
J	attach pedals	B	3

(a) Complete the diagram below by writing these tasks and times in the boxes.   2

(An additional diagram, if required, can be found on *page 17*.)
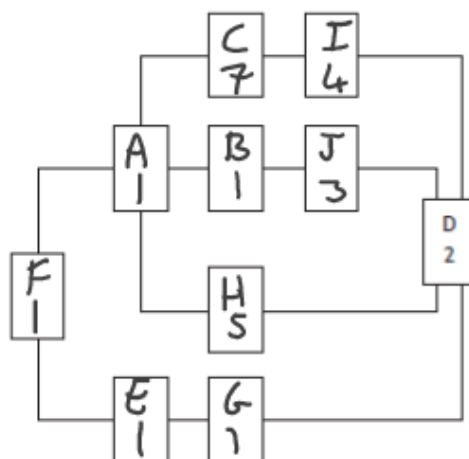
John thinks that the team of mechanics will have the bike ready within 15 minutes.

(b) Determine if John is correct.
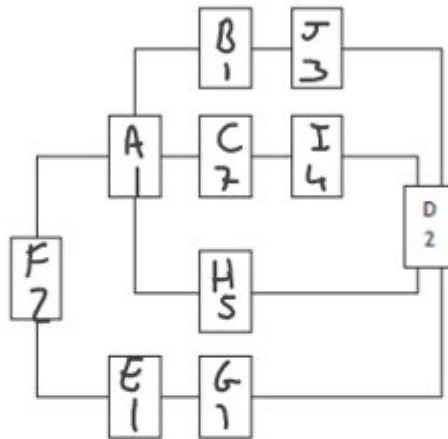
Use your working to justify your answer.   2

$$1 + 1 + 7 + 4 + 2 = 15$$

John is correct

Candidate 20

Question 10(a) and (b)

(a) Complete the diagram below by writing these tasks and times in the boxes.   2

    (An additional diagram, if required, can be found on *page 17*.)

Box	Task	Time
	B	1
	J	3
	A	1
	C	7
	I	4
	D	2
	F	2
	H	5
	E	1
	G	1

John thinks that the team of mechanics will have the bike ready within 15 minutes.

(b) Determine if John is correct.

    Use your working to justify your answer.   2

$$2 + 1 + 1 + 2 = 6 \text{ minutes}$$

Yes

Candidate 21

Question 11

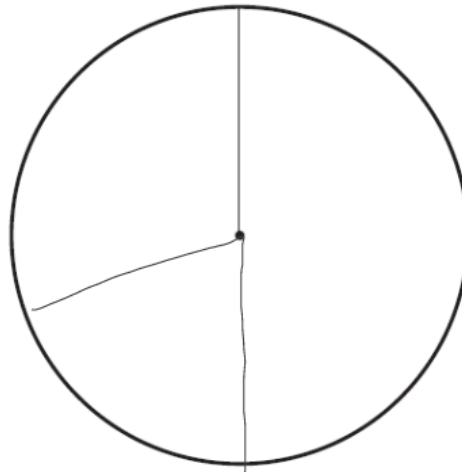11. A survey was conducted into favourite pie fillings.

    The results were:

    - 80 people for apple $180°$
    - 40 people for cherry $80°$
    - 60 people for lemon. $120°$

                $\overline{180}$

    Construct a pie chart to illustrate this information.   **3**

    (An additional diagram, if required, can be found on *page 18*.)

Favourite pie fillings

Candidate 22

Question 11

11. A survey was conducted into favourite pie fillings.

   The results were:

   - 80 people for apple

   - 40 people for cherry

   - 60 people for lemon.

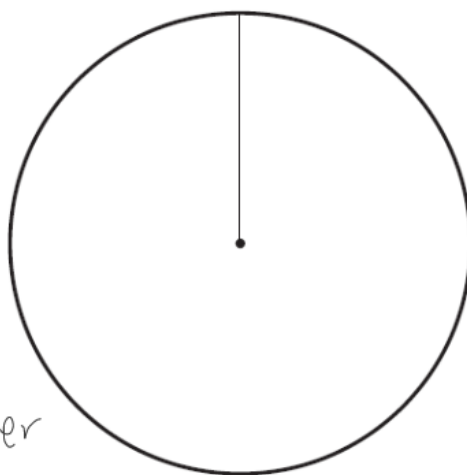   Construct a pie chart to illustrate this information.   3

   (An additional diagram, if required, can be found on *page 18*.)

Favourite pie fillings

80
40
60
80

Can't
remember

Candidate 23

Question 12

12. Laura makes and sells fruit smoothies.

   She intends to buy kiwi fruit in bulk.

   She considers the following two options:

   - Option 1: 35 kiwi fruit for £5.95
   - Option 2: 45 kiwi fruit for £8.10

   Determine which option offers the best value for money.

   Use your working to justify your answer.   2

$$70 \text{ kiwi} \quad 5.95$$
$$\times 2$$
$$\overline{11.90}$$
$$\times 9$$
$$\overline{106.70}$$
$$7$$

$$90 \text{ kiwi} \quad 8.10$$
$$\times 2$$
$$\overline{16.20}$$
$$\times 7$$
$$\overline{113.40}$$

Option 1 is better value

Candidate 24

Question 12

12. Laura makes and sells fruit smoothies.

    She intends to buy kiwi fruit in bulk.

    She considers the following two options:

    - Option 1: 35 kiwi fruit for £5.95

    - Option 2: 45 kiwi fruit for £8.10

    Determine which option offers the best value for money.

    Use your working to justify your answer.   **2**

Option 1:
$$\begin{array}{r} 0.17 \\ 35\overline{)5.95} \end{array}$$

Option 2
$$\begin{array}{r} 0.14 \\ 45\overline{)8.10} \end{array}$$

35
70
105
140
175
210
245

81
- 45
36

45
90
180
360

Option 1 as

0.17 > 0.14

Candidate 25

Question 13

13. Senior students are preparing to sell scented candles at the school fair.

    Before ordering the candles, they carried out a survey to find out which scent people preferred.

    The results of the survey are shown below.

Preferred scent of candle	Linen	Vanilla	Rose	Cinnamon
Percentage of people	50%	35%	10%	5%

The students sell 180 candles in total.

They sold 65 vanilla scented candles.

Determine if this is more or less than expected.   **2**

$$25\% = 60$$
$$+ 10\% = 18$$
$$\overline{}$$
$$35\% \quad 78$$

less than expected

Candidate 26

Question 13

13. Senior students are preparing to sell scented candles at the school fair.

    Before ordering the candles, they carried out a survey to find out which scent people preferred.

    The results of the survey are shown below.

Preferred scent of candle	Linen	Vanilla	Rose	Cinnamon
Percentage of people	50%	35%	10%	5%

The students sell 180 candles in total.   18   9

They sold 65 vanilla scented candles.

Determine if this is more or less than expected.   2

$$65 \times 3 = 195 - 9$$
$$= 186$$

More than expected