These questions are suitable for Higher Tier students
Questions 1, 4, 12, 14 and 15 should be done without a calculator
All other questions can be done with a calculator
3 It takes one person 3 hours to wallpaper a wall which has an area of 25m$^2$.

Obtain an estimate for how long will it take this person to wall-paper a wall which has an area of 19m$^2$. Give your answer to the nearest minute.

(Total for Question 3 is 3 marks)

4 The interior angles of a quadrilateral are in the ratio 3 : 5 : 7 : 9.

What is the difference in size between the largest and smallest interior angle?

(Total for Question 4 is 3 marks)

5 It takes 6 men 3 days to lay the foundations of a building of size 30m$^2$.
On one site they have to lay the foundations of a building of size 50m$^2$ and it needs to be completed in 2 days.

How many men will they need?

(Total for Question 5 is 3 marks)
Ratio and Proportion (Edexcel Higher)

These questions are suitable for Higher Tier students. Questions 1, 4, 12, 14 and 15 should be done without a calculator. All other questions can be done with a calculator.

Model Answers
3. It takes one person 3 hours to wallpaper a wall which has an area of 25m$^2$.

Obtain an estimate for how long will it take this person to wall-paper a wall which has an area of 19m$^2$. Give your answer to the nearest minute.

\[
\begin{align*}
25 \text{ m}^2 & \Rightarrow 3 \text{ hours} \\
1 \text{ m}^2 & \Rightarrow \frac{3}{25} \text{ hours} \\
19 \text{ m}^2 & \Rightarrow \frac{3}{25} \times 19 = 2.28 \text{ hours} \\
0.28 \times 60 & = 16.8 \approx 17 \text{ minutes} \\
2 \text{ hours} & 17 \text{ minutes}
\end{align*}
\]

(Total for Question 3 is 3 marks)

4. The interior angles of a quadrilateral are in the ratio 3 : 5 : 7 : 9.

What is the difference in size between the largest and smallest interior angle?

\[
\begin{align*}
3 : 5 : 7 : 9 & \Rightarrow 24 \text{ parts} \\
45^\circ : 75^\circ : 105^\circ : 135^\circ & \Rightarrow 360^\circ \\
135^\circ - 45^\circ & = 90^\circ
\end{align*}
\]

Alternate Method:

\[
\begin{align*}
3x : 5x : 7x : 9x & \Rightarrow 360^\circ \\
3x + 5x + 7x + 9x & = 360 \\
24x & = 360 \\
x & = 15 \\
9x & = 135^\circ \\
3x & = 45^\circ \\
135^\circ - 45^\circ & = 90^\circ
\end{align*}
\]

(Total for Question 4 is 3 marks)

5. It takes 6 men 3 days to lay the foundations of a building of size 30m$^2$.
On one site they have to lay the foundations of a building of size 50m$^2$ and it needs to be completed in 2 days.

How many men will they need?

<table>
<thead>
<tr>
<th>Men</th>
<th>Days</th>
<th>M$^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>3</td>
<td>$\frac{30}{3}$</td>
</tr>
<tr>
<td>6</td>
<td>5</td>
<td>$\frac{50}{3}$</td>
</tr>
<tr>
<td>15</td>
<td>2</td>
<td>$\frac{50}{3}$</td>
</tr>
</tbody>
</table>

Alternative Method

\[
M = K_1 \times A
\]

\[
6 = K_1 \times 30 
\Rightarrow K_1 = \frac{1}{5}
\]

\[
M = \frac{1}{5} \times A
\]

\[
M = \frac{1}{5} \times 50 = 10 \text{ men}
\]

\[
M = \frac{K_2}{D}
\]

\[
10 = \frac{K_2}{3} 
\Rightarrow K_2 = 30
\]

\[
M = \frac{30}{2} = 15 \text{ men}
\]

(Total for Question 5 is 3 marks)