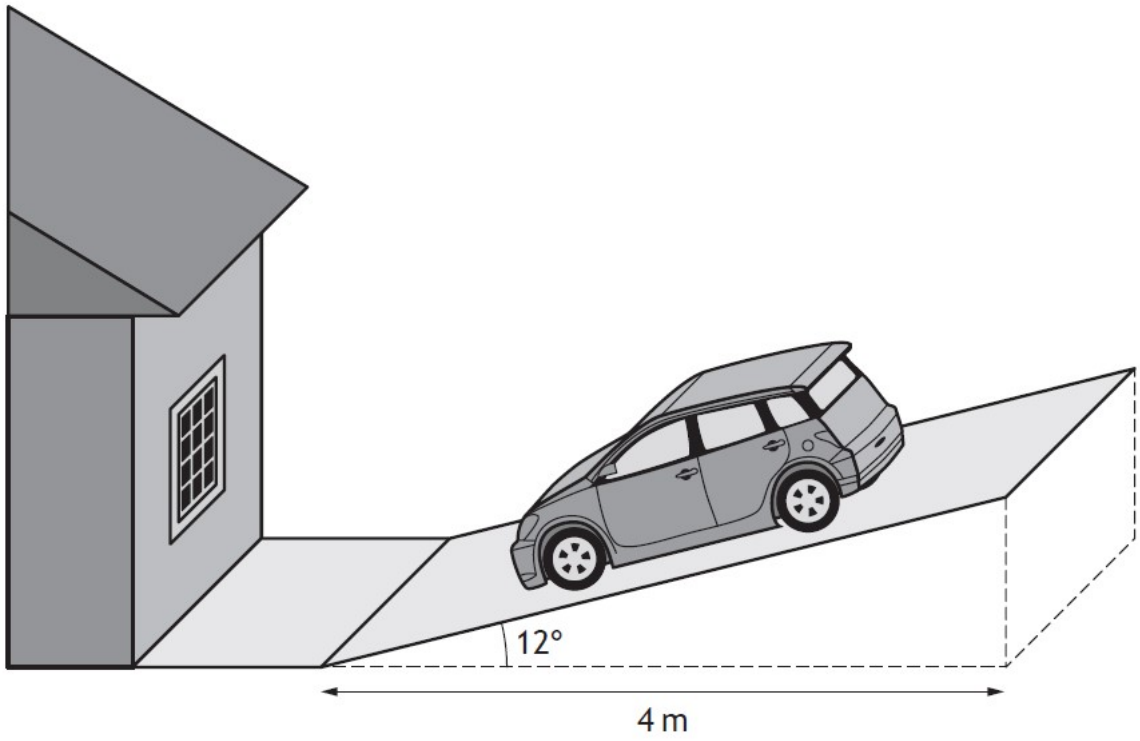
2019 P1 Q8 (b)

Sarah's driveway is sloped as shown in the diagram below.

The cross-section of the driveway is in the shape of a right-angled triangle.

The base is 4 metres long and makes an angle of 12° with the driveway as shown in the diagram below.



(a) Construct a scale drawing of the cross-section of the driveway. 2

Use a scale of 1 cm : 0·5 m.

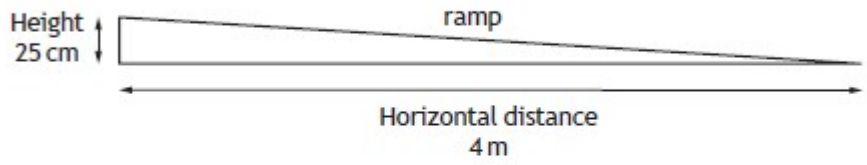
(b) Use your scale drawing to calculate the gradient of the driveway. 2

Ans.

0·2125 or $\frac{17}{80}$

2018 P1 Q15

A ramp to allow wheelchair access to a school has the dimensions shown below.



The maximum gradient allowed for a ramp with a horizontal distance of 4 m is $\frac{1}{14}$.

Does the gradient of this ramp meet the regulations?

Use your working to justify your answer.

3

Ans

Simplify $\frac{25}{400}$ to $\frac{1}{16}$

Yes, $\frac{1}{16} < \frac{1}{14}$

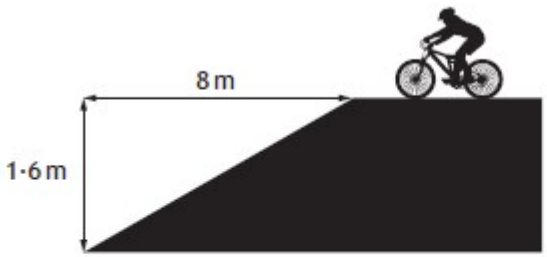
2017 P1 Q4

When classifying mountain bike trails, the gradient of the steepest section is taken into account.

Colour Grade (Difficulty)	Maximum Gradient
Green (Easy)	$\frac{1}{10}$
Blue (Intermediate)	$\frac{3}{20}$
Red (Advanced)	$\frac{1}{4}$
Black (Severe)	$\frac{1}{2}$

A new trail has been built at a mountain bike centre.

The steepest section of the new trail is shown below.



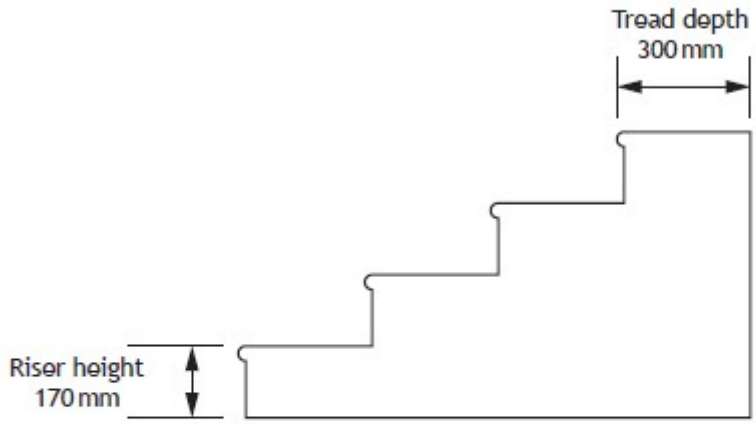
Can this be classified as a blue trail?

Use your working to justify your answer.

3

Ans

No, supported by working

2016 P1 Q10(a)	Bradley decides to cycle from Kilsyth to the highest point of Tak-Ma-Doon Road. • The horizontal distance between these two places is 4·5 kilometres. • Kilsyth is 70 metres above sea level. • The highest point of Tak-Ma-Doon Road is 320 metres above sea level. (a) Calculate the average gradient between Kilsyth and the highest point of Tak-Ma-Doon Road. Give your answer as a fraction in its simplest form. (b) One part of the road has gradient $\frac{2}{25}$. Is this steeper than the average gradient? You must justify your answer.	3 2
Ans	(a) 1/18 (b) Yes, 2/25 > 2/36	
2015 P1 Q8	The diagram below shows a staircase Mark intends to install in his home. The dimensions of the riser and tread of each step are shown.  For safety reasons, these rules must be applied. • Twice the riser height plus the tread depth should be 625 mm ±15 mm. • The gradient of each step should be less than ½. Mark thinks that this staircase will meet both of these rules. Is Mark correct? Use your working to justify your answer.	5
Ans	Rule 1: Yes as 640 is upper limit of tolerance Rule 2: No as 17/30>½ so fails because of rule 2	