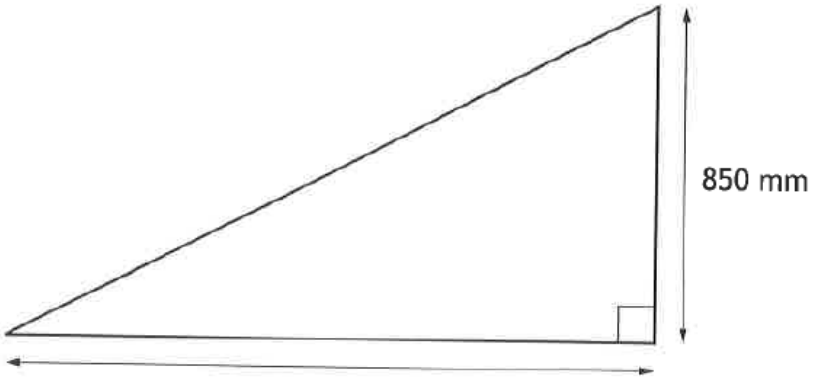
SQA Past paper questions

2024 - Paper 1 - Question 4

Stephen has built a new ramp.



Calculate the gradient of the ramp.

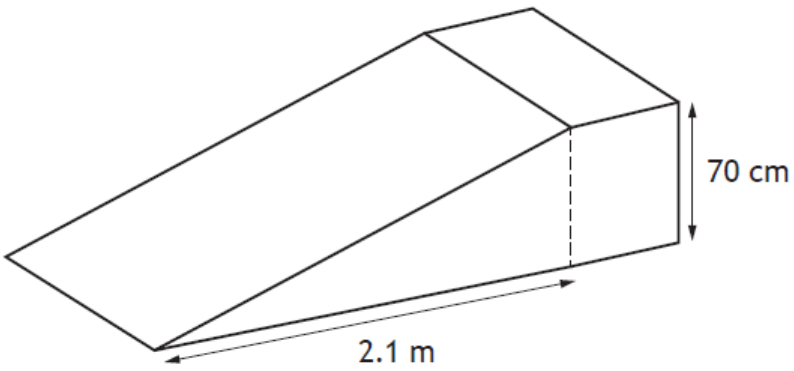
Give your answer as a fraction **in its simplest form.** 2

Click here for video solution.

2023 - Paper 1 - Question 9

A design for a skatepark ramp is shown.

The height of the ramp is 70 cm.



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

Click here for video solution.

2022 - Paper 1 - Question 7

Tracy decides to walk to the top of Dumyat Hill from Blairlogie car park.

- The horizontal distance between these two places is 3 kilometres.
- Blairlogie car park is 21 metres above sea level.
- The top of Dumyat Hill is 420 metres above sea level.

Calculate the average gradient between the Blairlogie car park and the top of Dumyat Hill. 3

Give your answer as a fraction **in its simplest form.**

Click here for video solution.

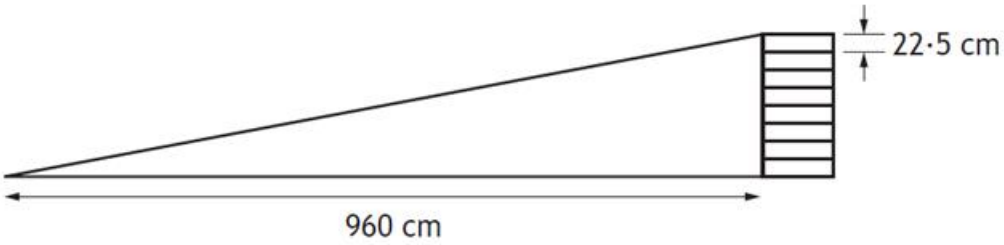
2021 - Paper 1 - Question 13

John has a slope in his back garden.

The slope is the height of 8 planks.

Each plank is 22·5 cm in height.

The planks are 960 cm away from the bottom of the slope.



(a) Calculate the gradient of the slope. **2**

His neighbour Helen also has a slope.

The gradient of her slope is 20%.

Helen thinks her slope is steeper than John's slope.

(b) Determine if she is correct. **2**

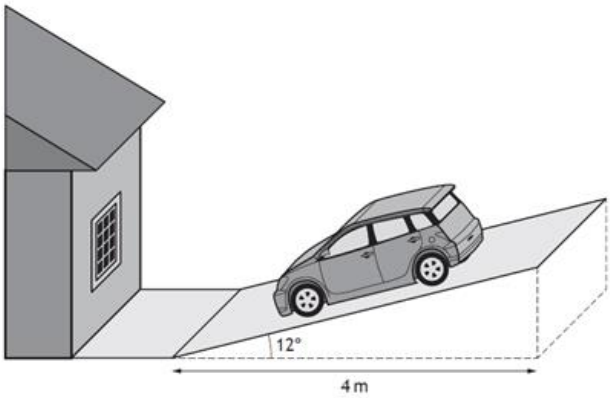
Click here for video solution.

2019 - Paper 1 - Question 8

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.



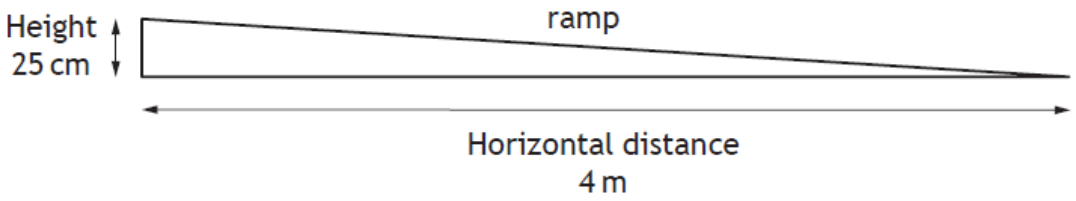
(a) Construct a scale drawing of the cross-section of the driveway.
Use a scale of 1 cm : 0·5 m. 2

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

Click here for video solution.

2018 - Paper 1 - Question 15

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 $\frac{1}{14}$.

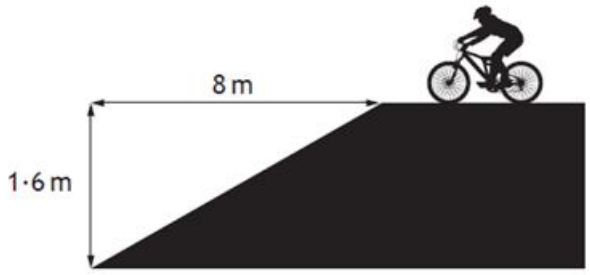
Does the gradient of this ramp meet the regulations?

Use your working to justify your answer. 3

Click here for video solution.

2017 - Paper 1 - Question 4

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.

Can this be classified as a blue trail?

Use your working to justify your answer. 3

Click here for video solution.

2016 - Paper 1 - Question 10

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.** 3

(b) One part of the road has gradient $\frac{2}{25}$.

Is this steeper than the average gradient?

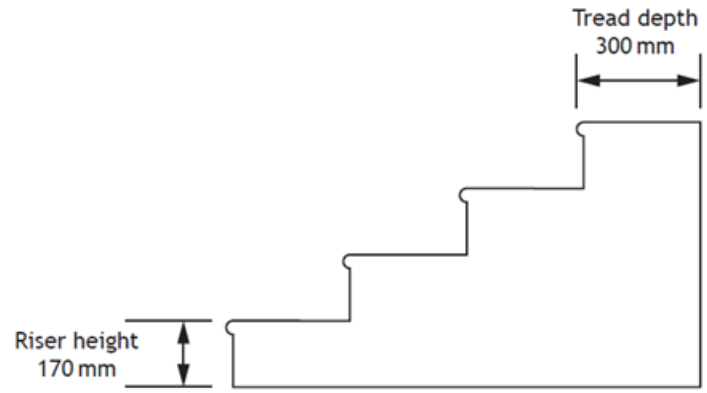
You must justify your answer. 2

Click here for video solution.

2015 - Paper 1 - Question 8

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

Click here for video solution.