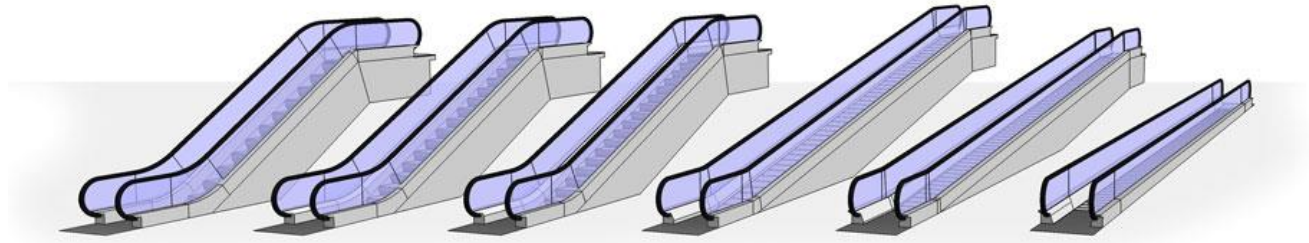


## Engineering Unit 1 (BTEC Level 3 Engineering) Summer Homework

Hand this work to Mr Heller in your first lesson in September

The questions are set in the context of installation and repair of moving walkway travellers.

Attempt each question and show your working clearly. You may need to use extra sheets of paper.

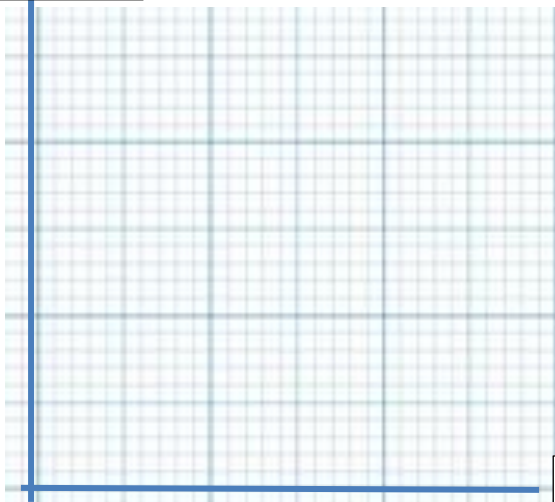


**Question 1:** The table below shows the height of a traveller hand rail at different points along its length.

Distance (m)	0	2	5	7	10
Height (m)	0.3	0.7	1.3	1.7	2.3

Use the information to plot a graph of Distance (Horizontal axis) and Height (vertical axis).

Height (m)



- What is the height when the distance is 4m?
- What is the gradient of the graph?
- What is the intercept of the graph?
- What is the equation that links Height and Distance?

$$\text{Height} = \text{_____} \times \text{Distance} + \text{_____}$$

**Question 2:**

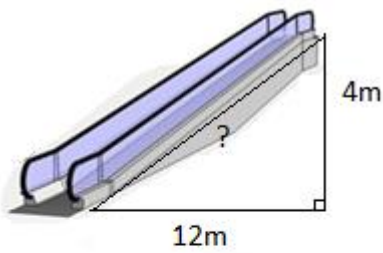
One traveller (going up a slope) has an equation of  $h = 0.5 + 0.2d$

Another traveller (going down a slope) has an equation of  $h = 4 - 0.3d$

- **At what distance will the travellers have the same height?**
- **At what height will they cross?**

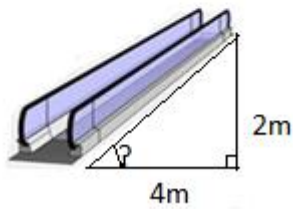
Explain clearly how you found your answers

**Question 3:**



- Calculate the missing length marked with ?

Show clearly how you found your answer.



- Calculate the missing angle marked with ?

Show clearly how you found your answer.

**Question 4:**

The speed of a traveller after it has been switched on is given by the function

$$s = 3(1 - 0.7^t) \quad (\text{when the time is greater than zero})$$

Where  $s$ =speed in m/s and  $t$ =time in seconds after the traveller is switched on.

Complete the table using the function above

Time (s)	0	1	2	3	4	5	6	7	8
Speed (m/s)			1.53				2.647		

Plot a graph of time (horizontal axis) against speed (vertical axis) - you will need to draw your own axes!

Describe what happens to the speed.

