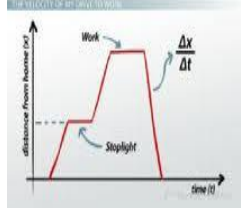


# Learning Brief

**SMM2: Sequences, exponentials and calculus.**

## Goals



This topic

- Exponential and logarithmic functions

This Week

- Rates of Change
- Limits

## Theoretical Components

## Practical Components

**Resources:**

PDF notes in GC: Rates of Change, Limits

Text book references:

Chap 8 8A, 8B, 8C, 8D, 8E In Google Classroom

Chap 9 9A, 9B In Google Classroom

YouTube Videos: links found in the pdf notes

**Knowledge Checklist:**

- what is a rate?
- constant rates
- variable rates
- average rates of change
- instantaneous rates of change
- interpret graphs that illustrate rates of change
- concept of a limit
- calculating limits

From the PDF file *Chap 8*

Ex 8A Q1 all, Q2 all, Q3 all, Q6 all, Q7 all

Ex 8B Q1 all, Q2 all, Q3 all, Q4, Q5, Q8, Q9, Q12

Ex 8C Q1 all, Q2 all, Q3, Q4

Ex 8D Q1 all, Q2 all, Q3, Q7 all, Q8, Q9

Ex 8E Q1 all, Q2 all, Q3 all, Q5

From the PDF file *Chap 9*

Ex 9A Q4, Q5 all, Q7, Q8 all, Q9 all, Q12 all

Ex 9B Q1 all, Q2 all, Q3 all, Q5 all, Q 7 all,  
Q10 a) b) g) k) l)

## Investigation

See next page

**QFO**  
Quiz/Forum/Other

None

## SMM2 Wk 9/10 Investigation

You are to write a 'story' using both words and a graph. Your story is about rates of change. Start with a graph (along the lines of page 1 of this week's notes).

The graph should include constant rate of change, zero rate of change and non-constant rate of change.

- a) Calculate the gradient for an interval of constant rate of change. Show the interval on the graph.
- b) Calculate the average rate of change for a section of the non-constant rate of change section. Again show this on your graph.
- c) Calculate the instantaneous rate of change for a point on your non-constant rate of change section. Show the tangent and how you calculated the gradient.
- d) Explain your graph in words. Use words such as 'constant speed', 'stopped', 'acceleration', and deceleration'.

You will be marked on

- Accuracy and neatness of the graph
- Coherence of the story
- Accuracy of calculations