Subject	Year	Month	
Mathematics	11	December	**Balcarras** From strength to strength

Topic:

Gradient of and area under graphs + **Graph transformations**	5 lessons

Content (Intent)

Prior Learning	**Future Learning**
Year 10 Straight line graphs February Year 10 Compound measures June	**Year 12** Pure Chapter 4 Graphs and transformations Mech Chapter 9 Constant acceleration **Year 13** Pure Chapter 9 Differentiation Pure Chapter 11 Integration

Objectives

- Interpret and analyse transformations of graphs of functions and write the functions algebraically, e.g. write the equation of f(x) + a, or f(x – a):
  - apply to the graph of y = f(x) the transformations y = –f(x), y = f(–x), y = –f(–x) for linear, quadratic, cubic and trigonometric functions
  - apply to the graph of y = f(x) the transformations y = f(x) + a and y = f(x + a), for linear, quadratic, cubic and trig functions
- Estimate area under a quadratic graph by dividing it into trapezia;
- Interpret the gradient of linear or non-linear graphs, and estimate the gradient of a quadratic or non-linear graph at a given point by sketching the tangent and finding its gradient;
- Interpret the gradient of non-linear graph in curved distance–time and velocity–time graphs:
- for a non-linear distance–time graph, estimate the speed at one point in time, from the tangent, and the average speed over several seconds by finding the gradient of the chord;
- for a non-linear velocity–time graph, estimate the acceleration at one point in time, from the tangent, and the average acceleration over several seconds by finding the gradient of the chord;
- Interpret the gradient of a linear or non-linear graph in financial contexts;
- Interpret the rate of change of graphs of containers filling and emptying;
- Interpret the rate of change of unit price in price graphs.

Pedagogical notes (implementation)	**How will understanding be assessed & recorded (Impact)**
Financial contexts could include percentage or growth rate. When interpreting rates of change with graphs of containers filling and emptying, a steeper gradient means a faster rate of change. When interpreting rates of change of unit price in price graphs, a steeper graph means larger unit price.	**End of half term** no **End of Year** 2nd mocks in Feb & March
	How can parents help at home?
	MathsWatch clips (Qualification GCSE) 97, 159b 196a, 196b 143 216a, 216b

Further reading/discussion			
Reading / Enrichment http://passyworldofmathematics.com/exponential-population-growth/	Literacy	Numeracy Links	**Careers Links** Engineer Business Analyst Data Analyst