Topic: Area Under Graph and Gradient of Curve

Topic/Skill	Definition/Tips	Example
1. Area Under a Curve	To find the area under a curve, split it up into simpler shapes – such as rectangles, triangles and trapeziums – that approximate the area.	50 40 40 40 40 40 40 40 40 40 4
2. Tangent to a Curve	A straight line that touches a curve at exactly one point.	Tangent line
3. Gradient of a Curve	The gradient of a curve at a point is the same as the gradient of the tangent at that point. 1. Draw a tangent carefully at the point. 2. Make a right-angled triangle. 3. Use the measurements on the axes to calculate the rise and run (change in y and change in x) 4. Calculate the gradient.	Gradient = $\frac{Change in y}{Change in x}$ $= \frac{16}{2} = 8$

4 D-4£	T1	70
4. Rate of	The rate of change at a particular instant in	60
Change	time is represented by the gradient of the	50
	tangent to the curve at that point.	<u>E</u> 40
		(u) 40 log 30 Positive rate
		of change
		10 Of change
		0 2 4 6 8
		Time (s)
		70
		Negative rate
		of change
		1 30 S S S S S S S S S S S S S S S S S S
		20
		0
		0 2 4 6 8
		Time (s)
5. Distance-	You can find the speed from the gradient	P. 4
Time Graphs	of the line (Distance ÷ Time)	Distance (Km) 3
	The steeper the line, the quicker the speed.	2
	A horizontal line means the object is not	
	moving (stationary).	
		Time (Hours)
6. Velocity-	You can find the acceleration from the	4
Time Graphs	gradient of the line (Change in Velocity ÷	Velocity (m/s) 3
•	Time)	(m/s) 2
	The steeper the line, the quicker the	
	acceleration.	'/
	A horizontal line represents no	0 7 8 9 10
	acceleration, meaning a constant velocity.	Time (Seconds)
	The area under the graph is the distance .	