Year 10 Higher Unit One Knowledge Organiser – Graphs – The Basics, Real Life Graphs, Linear Graphs and Co-ordinate Geometry, Quadratic, Cubic and Other Graphs, Area, Perimeter and Circles

Gra	phs: The Basics and	Real Life Graphs		
1	Axis	The 'x' and 'y' lines that cross at right angles.		
2	Co-ordinate	A pair of numbers that show an exact position. $(x, y)$		
3	x co – ordinate	Describes the movement left or right from (0,0).		
		- moves left, + moves right		
4	y co – ordinate	Describes the movement u		
		- moves down, + moves up	)	
5	Quadrant	The 4 areas made when w	e divide up a plane by an x	
		and y axis.		
6	Midpoint	The middle of a line or line s	segment.	
7	Line Segment	Part of a line that connects	two points.	
8	Distant-time graphs	Travel graph representing d	istance on y axis against	
		time on x axis.		
9	Speed	The rate at which	^	
		something moves.		
		- Distance	ST	
		$Speed = \frac{Distance}{Time}$		
10	Velocity	The speed something is moving with its direction.		
	•	Travel graph representing speed on y axis against time		
	velocity time graph	on x axis.		
12	Rate of change		changes over a specific period	
		of time.		
Linea	ar Graphs			
1	Sketch	A drawing to show the general shape of a graph.		
2	Straight line	y = mx + c	m = gradient	
	graphs		c = y intercept	
3	Y intercept (c)	Where the line crosses the y axis.		
4	Gradient	The steepness of a line.	Change in y	
			Change in x	
			Ŭ	
			$v_2 - v_4$	
			$=\frac{y_2-y_1}{x_2-x_1}$	
			$\lambda_2 - \lambda_1$	
1		1		

5	Parallel lin	es	Lines with the same gradient.	
6	Linear Function		Where the graph of the equation forms a straight line.	
7	Rearrange		To change the subject of a formula.	
8	Subject of a formula		The letter on its own one side of the equal's sign.	
Lin	ear Graphs	and Co-	ordinate Geometry	
1	Plot		To draw a graph.	
2	Linear Fun	ction	Where the graph of the equation forms a straight line.	
3	Common straight	y = a	A horizontal line that cuts through the y axis at point <i>a</i> .	
	line	x = a	A vertical line that cuts through the x axis at point <i>a</i> .	
	graphs	y = x	A diagonal line that crosses through the origin where the values of x and y are the same.	
		y = -x	A diagonal line that crosses through the origin where the x co-ordinate is multiplied by -1 to get the y co-ordinate.	
4			Lines with the same gradient.	
5	Perpendicu Lines	ılar	Two lines that meet at 90°.	
6	Gradient of The perpendicular Lines		The gradient of perpendicular lines multiply to make -1.	
Qu	Quadratic, Cubic and Other Graphs			
1			raight-line graph.	
	Pos		mx + c	
			itive mx	
			gative mx	
2			curved graph.	
	Graph		$y = ax^2 + bx + c$	
			itive $ax^2$ ' U' shape	
			gative $ax^2$ ' $\cap$ ' shape	

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3	Cubic Graph	A curved graph.		Positive ax <sup>3</sup>	
		$y = ax^3 + bx^2 + c$	xx + d	Negative $ax^3$	
4	Reciprocal Graph	A graph that creates a		$y = \frac{k}{r}$	$y = \frac{-k}{x}$
	Старн	hyperbola. It has a vertical and horizontal asymptote.			
5	Asymptote	A line that a curve approac		nes, as it head	ls towards infinity.
6	Circle graph	A circle graph. $x^2 + y^2 = r^2$			
7	Exponential Graph	A graph that increases rapidly in the y direction and will never fall below the x-axis. A graph in the form y = k <sup>x</sup> .			

8Solution to a Quadratic GraphWhere the graph cuts through the x axis/ y = 0.9Roots of a Quadratic EquationWere the graph cuts the x axis/ y = 010Y - interceptThe point in which the graph crosses the y axis. (c)11Maximum Turning PointWhere the gradients of a graph changes from positive to negative.12Minimum Turning PointWhere the gradients of a graph changes from negative to positive.12Minimum Turning PointWhere the gradients of a graph changes from negative to positive.2Area of a Triangle $\frac{base \times height}{2}$ 3PerpendicularTwo lines that meet at 90°.4Area of a Trapezium $\frac{1}{2}(a+b)h$ Where a and b are the two parallel sides.5Area of a Parallelogram $b \times h$ Base x perpendicular height1Pi ( $\pi$ )A Greek letter used to represent the ratio of a circle's circumference to its diameter.2Radius (r)From a point on the circumference to the centre.3Diameter (d)From a point on the circumference to another point on the	-				
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4	Area of a Circle	πr <sup>2</sup>	
5	Circumference	πd	The perimeter of a circle.
6	Segment	A region that is created by the arc and a chord of a circle.	
7	Chord	A line segment joining to points on a circle's	
		circumference.	
8	Arc	Part of a circumference of a circle.	
9	Sector	The area between two radiuses and the connecting arc.	
10	Arc length	$\frac{\theta}{360}$ x $2\pi r$	
11	Area of a sector	$\frac{\theta}{360}$ x $\pi r^2$	