Grade 12 Math SL – QUADRATIC WORKSHEET

NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ DATE: \_\_\_\_\_\_\_\_\_

1. Consider the quadratic funtion $y =-2\left(x+2\right)\left(x-1\right)$
	1. State the x intercept [2]
	2. State the equation of the axis of symmetry [2]
	3. Find the y intercept [1]
	4. Find the vertex [1]
2. $\frac{2}{3x+1}+\frac{3}{1-x}=\frac{1}{2}$ [3]
3. For what values of k does the graph $f(x) = -2x^{2} +5x-k$ not cut the x –axis. [3]
4. Find, in the form $y=ax^{2}+bx+c$, the equation of the quadratic whose graph:
5. Touches the x axis at 4 and passes through (2,12) [3]
6. Consider the quadratic function $y = 2x^{2}+6x -3 .$ Convert to vertex form by completeing the square. [4]
7. If AB has the same length as CD. BC is 2cm shorter than AB, and BE is 7cm in length, find the length of AB. [4]



1. An open square container is made by cutting $4cm$ square pieces out of a piece of tinplate. If the capacity is $120cm^{3}$, find the size of the original piece of tinplate. [3]
2. The perimeter of a rectangle is 34cm. Given that the diagonal is of length 13 cm and that the width is x cm. Find the demensions of the rectangle. [4]
3. 600 m fencing is used to construct 6 rectangular animal pens as shown.



* 1. Show that $y=\frac{600-8x}{9}$ [2]
	2. Find the area A of each pen in terms of x. [1]
	3. Find the dimensions of each pen if each pen is to have maximun area. [3]
	4. What is the maximum area of each pen? [2]
1. AB is the longest vertical support of a bridge which contains a parabolic arch. The vertical supports are 10m apart. The arch meets the vertical end supports 6m above the road.



1. If axes are drawn on the diagram of the bridge, with x axis the road and the y axis AB, find the equation of the parabolic arch. [4]
2. Hence, determine the lengths of all other vertical supports. [2]
3. A manufacturer of barbeques knows that if x of them are made each week then each one will cost $(60+\frac{100}{x})$ pounds and the total receipts per week will be $(100x-3x^{2})$ pounds. How many barbeques should be made per week to maximize profits? [6]