Unit 2: Quadratic Functions

Final Review Assignment

(2) 1. The graph of a quadratic function has x-intercepts at $x = 3$ and $x = -5$. It passes through the point $(1, -12)$. Determine the equaiton of the quadratic function.

(2) 2. a. Sketch the graph of $y = (x - 2)(x - s)$ for $s = -4$.

(2) b. Describe how the graph sketch on the previous page would be different if

i. $s = 3$

ii. $s = 0$

3. The graph of the function $g(x)$ has the same shape and direction of opening as the graph of $f(x) = 3(x-2)^2 + 9$. The graph of $g(x)$ has a vertex that is 2 units to the right and 5 units down from the vertex of the graph of $f(x)$.

(3) a. Determine an equation of the function $g(x)$.

(2) b. State the domain and range of $g(x)$.

Domain:
Range:

(1) c. Write another function $h(x)$ with the same vertex and shape, but whose graph opens in the opposite direction.

(3) 4. The safe stopping distance, d, in metres, of a Harold Dobson motorcycle on wet pavement is given by the function $d(s) = 0.02(3s^2 + 20s)$, where s is the speed of the motocycle in metres per second. Find the speed at which the safe stopping distance is 50 metres.

5. An object on earth falls with an acceleration of $a = 9.81$ m/s^2. A function exists between the height from which the object falls, the initial velocity of the object, and the time the object spends in the air.

$h(t) = V_o t + at^2$
V_o = initial velocity
t = time
a = acceleration due to gravity

Lucy and Kim determine the height of a building by dropping a brick from its roof. The initial velocity will be 0 m/s because Lucy will simply let go of the brick. Kim times the fall of the brick to be 3.5 seconds.

(1) a. What is the height of the building?

(3) b. Determine the amount of time the brick is in the air if Lucy throws the brick downward with an initial velocity of 5 m/s. Round to the nearest hundredth of a second.

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Unit 2: Quadratic Functions

Use the *Check Point* to check and reflect before completing the *Big Game!* quiz for *Unit 2: Quadratic Functions*.

I understand how to:

Unit 2 Concepts	Place a checkmark in the appropriate column		
	Yes	**No**	**Maybe**
Determine the coordinates of the vertex of the graph of a quadratic function, with and without technology.			
Determine the equation of the axis of symmetry, given the *x*-intercepts of the graph of a quadratic function.			
Determine the *y*-coordinate of the vertex of the graph of a quadratic function given its equation and the equation of the axis of symmetry, and state whether or not it is a maximum or minimum value.			
Determine the domain and range of a quadratic function.			
Sketch the graph of a quadratic function.			
Solve a contextual problem involving some or all of the characteristics of a quadratic function.			
Determine the intercepts of the graph of a quadratic function, with and without technology.			
Determine the roots of a quadratic equation and verify by substitution.			
Determine the roots of a quadratic equation by factoring, using the quadratic formula and using technology.			
State the relationships between the roots of an equation, the zeros of the related function, and the *x*-intercepts of the graph of that function.			
Determine the nature of the roots of a quadratic function (how many, real or non-real).			
Express a quadratic function in factored form given the *x*-intercepts of its graph or the zeros of the function.			
Solve a contextual problem by modelling a situation with a quadratic function.			

If you have any concerns from the *Check Point*, please refer to *Strengthening and Conditioning* in the *Module* for designated practice questions and their solutions, to help you improve your skills.

Contact your teacher for assistance and clarification as needed.

You have completed the *Lessons* and *Workbooks* for *Unit 2: Quadratic Functions*. Please review all work in *Workbook 2B* to ensure it is your best work. Submit *Workbook 2B* for marking at this time and continue your training with the next unit, *Unit 3: Logic and Reasoning*.

Complete the *Big Game!* quiz when you have reviewed the feedback provided by your marker for *Workbooks 2A and 2B*.

End Of Workbook 2B