**Unit 3: Quadratics Study Guide** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Math 3

**Goal 1: Quadratic Functions**

*Directions: Describe how the following functions were translated from the function*

*Directions: Graph each function and identity the following.*

1.
2. Direction of opening:
3. Vertex:
4. Axis Of Symmetry:
5. Domain:
6. Range:
7. Int. Increase:
8. Int. Decrease:
9. Write the equation in standard form:
10. Direction of opening:
11. Vertex:
12. Axis Of Symmetry:
13. Domain:
14. Range:
15. Int. Increase:
16. Int. Decrease:
17. Write the equation in vertex form:
18. Write the equation of the parabola in vertex form if the vertex is (-3,6) and it contains the point (1,-2).
19. What is the equation of a parabola with a vertex at (0, 0) and a focus at (3, 0)?
20. What is the equation of a parabola with a vertex at (0, 0) and a focus at (0, -7)?

**Goal 2: Solving Quadratic Equations and Inequalities**

*Directions:**Solve the following quadratic equations by factoring.*

*Directions: Solve each quadratic equation by completing the square.*

1. What value for *k* completes the square?
2. Find all the solutions to

*Directions: Solve each equation using the Quadratic Formula.*

*Directions: Evaluate the discriminant for each equation and determine the number and types of roots.*

**Goal 3: Word Problems**

1. The table below shows the stopping distance of a car at various speeds.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Speed (mph)** | 25 | 35 | 45 | 55 | 65 |
| **Stopping Distance (feet)** | 59 | 106 | 158 | 228 | 305.7 |

1. Find the quadratic equation that best models this data.
2. Predict the stopping distance of the car if it is traveling 80 mph.
3. What would the speed of the car have been if it took 200 feet to stop?
4. There are three consecutive integers such that the product of the smaller two is three less than three times the largest number. What is the largest number?