

Name: \_\_\_\_\_ Hour: \_\_\_\_\_

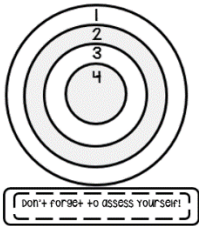
Standard: A-SSE.3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines. (Using Vertex Form)

/4

**Directions: Convert the following equations into vertex form, then identify the vertex by completing the square.**

1.)  $f(x) = x^2 - 9x + 3$

2.)  $f(x) = x^2 - 2x + 1$



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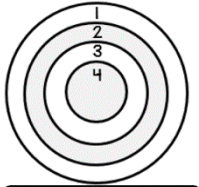
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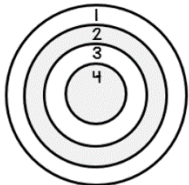
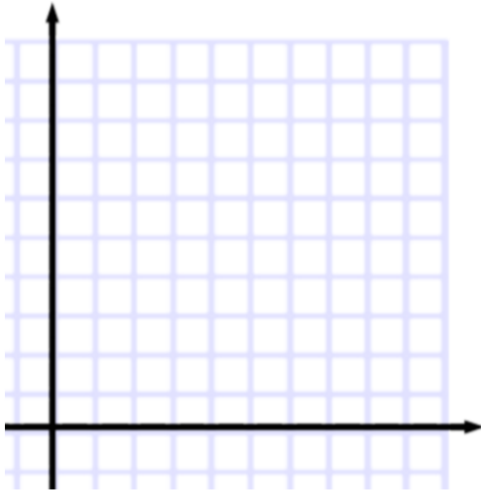
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Standard: F-IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationships.

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**Graph the function and be sure to label your graph.**

**The height,  $h$  (in feet), of a gold ball depends on the time,  $t$  (in seconds), it has been in the air. Sam hit a shot off the tee that has a height modeled by the velocity function  $h(t) = -12t^2 + 48t$ .**



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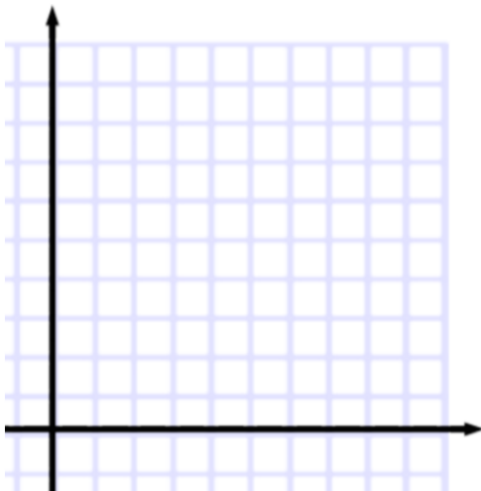
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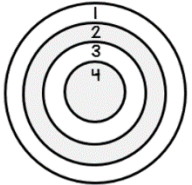
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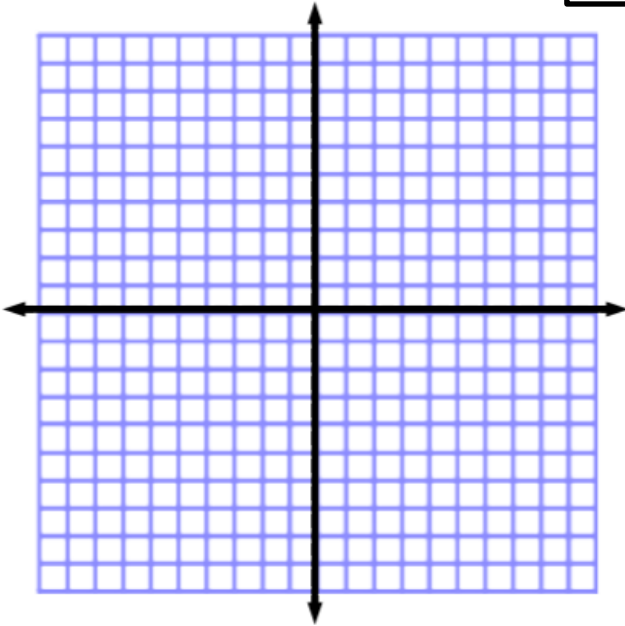




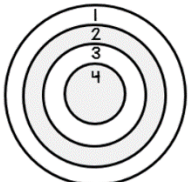
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Directions: Graph the function and answer the following questions.

$$f(x) = -x^2 + 8x - 5$$



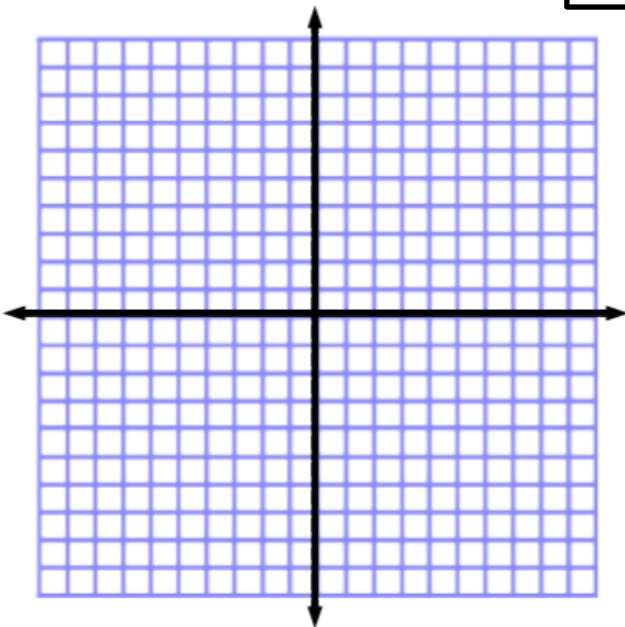
- 1.) Vertex:
- 2.) Is the vertex a maximum or minimum?
- 3.) Line of symmetry?
- 4.) x-intercept(s):
- 5.) y-intercept(s):



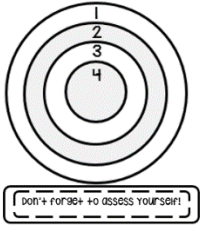
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Standard: A-REI.4b. Solve quadratic equations by inspection (e.g., for  $x^2 = 49$ ), taking square roots, completing the square, the quadratic formula, and factoring, as appropriate to the initial form of the equation.

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**Directions: Solve using the indicated method. Round to the nearest hundredth if necessary. If there is no solution, write "no solution".**

1.) Square Roots:  $4w^2 - 25 = 0$

2.) Factoring:  $x^2 - 12x = -36$

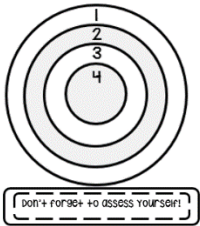
3.) Completing the Square:  $x^2 - 14x + 16 = 0$

4.) Quadratic Formula:  $7x^2 - 2x - 8 = 0$

**Directions: Use any method. Write your answer in complex number form.**

5.)  $2x^2 + 32 = 0$

6.)  $25x^2 - 6x + 1 = 0$



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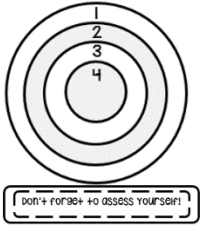
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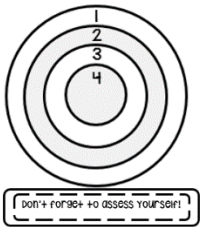
Standard: A-REI.4a. Use the method of completing the square to transform any quadratic equation in  $x$  into an equation of the form  $(x - p)^2 = q$  that has the same solutions. Derive the quadratic formula from this form.

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**Directions: Using the equation given, identify the correct solution set and explain why that one is correct.**

$$49 = (x + 2)^2$$

- a.) {5}
- b.) {-9}
- c.) {-5, 9}
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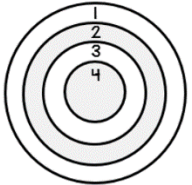
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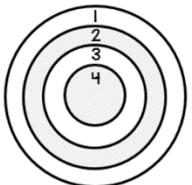
Standard: F-IF.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

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**Directions:** Find the zeroes of the quadratic function by the method indicated.

1.) Factoring:  $f(x) = x^2 - 9$

2.) Completing the square:  $x^2 + 5x - 50 = f(x)$



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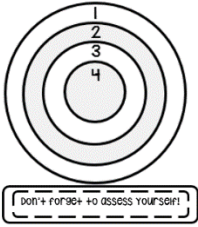
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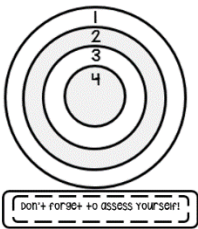
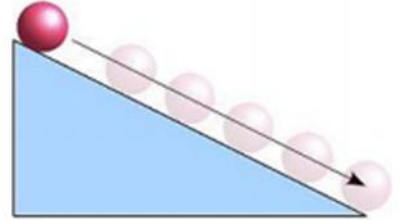
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Standard: A-CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

/4

A physics teacher put a ball at the top of a ramp and let it roll down toward the floor. The class determined that the height of the ball could be represented by an equation where the height,  $h$ , is measured in feet from the ground and time,  $t$ , in seconds. When they solved, they got  $t$  to equal 1 and -1.

Look at the two solutions for  $t$ . Which one is reasonable? Does the final answer make sense based on this context? Explain.



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