Name: _____

Functions, Statistics, and Trigonometry Summer Work

→ Be sure to show all your work neatly and box your final answer! ←

→ This packet will be collected on the first day of school! ←

→ You will have an assessment within the first week of school on your summer work! ←

Congratulations!! You are currently enrolled in Functions, Statistics, and Trigonometry (FST)! This packet contains a review of material you will use frequently in this class. While we review this material as it is encountered throughout the year, we will not have time to spend a large quantity of class time re-teaching this material. If you feel you need extra practice with these topics, you will be expected to see the teacher outside of class.

Your assignment is to do all of the problems in the packet. All work must be shown. You may use a calculator on your summer work. **Show all of your work and highlight or box your answers.** Photocopy your work for your own review. Your original work will be turned in on the first day of school (No exceptions). This assignment will count! The number of points earned will be based on your effort, neatness, and accuracy. Questions will be addressed the first few days of school. An assessment of these prerequisite skills for FST will be given on, or soon after, the day school starts.

Directions: Each question should be on a separate page and must include all work necessary to solve the problem including all equations, computations, diagrams (if necessary), and analysis.

1) The lines $l: x - y = -5$ and $m: y = 2x + 4$ intersect at $point\ A$. The lines $p: x + 3y = -15$ and $r: 3x - y = -5$ intersect at $point\ B$. Find the <u>distance</u> between points A and B.

2) Tennis balls cost $0.90 each at Jerzy's Club, which has an annual $25 membership fee. At Rick and Tom's sporting-goods store, the price is $1.35 per ball for the same brand. Where you buy your tennis balls depends on how many you wish to buy. Explain, and illustrate your reasoning with a graph.

3) You are trying to dunk a basketball. You need to jump 2.5 feet in the air to dunk the ball. The height that your feet are above the ground is given by the function $h(t) = -16t^2 + 12t$. What is the maximum height your feet will be above the ground? Will you be able to dunk the basketball?

4) The line drawn tangent to the circle $x^2 + y^2 = 100$ at $(6, 8)$ meets the y-axis at what value?
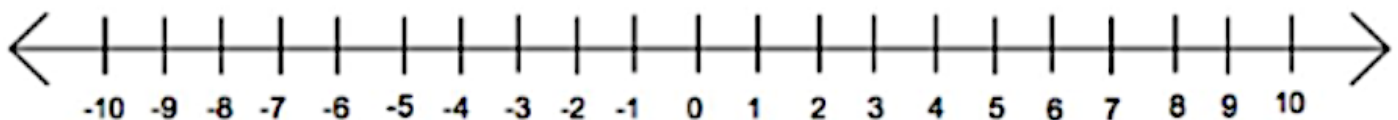
5) Mark a random number x between 1 and 2 (at a spot that only you will think of) on the number line given. Plot the **OPPOSITE** of each of the following, labeling them with the letters.

a) x b) $x + 5$ c) $x - 4$ d) $6 - x$

6) On a recent episode of Who Wants to Be a Billionaire, a contestant was asked to arrange the following five numbers in **increasing** order. How would you answer? **YOU HAVE NO CALCULATOR!!**

a) $\frac{2}{3}$ b) 0.6666   c) $\frac{3}{5}$ d) 0.666   e) 0.67

7) Solve each of the following linear equations.

a) $\frac{5-2x}{3} = 7$

b) $\frac{x-6}{2} = \frac{4x+1}{-3}$
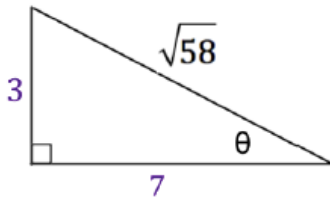
c) $4 - 2(2a - 5) = 9 - 4a$

8) Solve each of the following quadratic equations by factoring.

a) $x^2 + 15x + 36 = 0$

b) $2x^2 - x = 21$

c) $4x^2 + 50 = -150$

9) Evaluate the $\sin\theta, \cos\theta, \tan\theta, \csc\theta, \sec\theta, \cot\theta$ given the figure below.
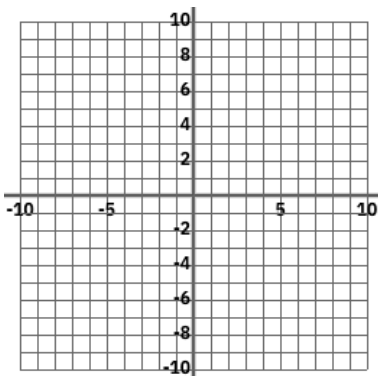

10) The heights (in inches) of eight tomato plants are: $36, 45, 52, 40, 38, 41, 50, and\ 48$.

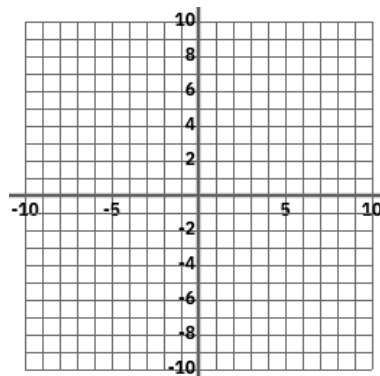   a) What is the range of the tomato plant heights?

    b) Find the mean, median, and mode(s) of the tomato plant heights.

11) Sketch a graph of each of the following functions. State the transformations of each of the functions from the original graph.
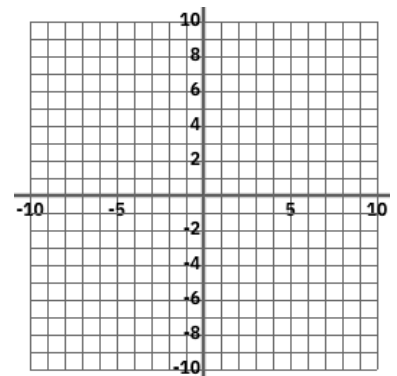
Original graph: $f(x) = x^2 - 2$	Graph 1: $f(x) = (x-4)^2 + 1$	Graph 2: $f(x) = 2x^2 + 5$
	Transformations:	Transformations: