Give some examples of **functions**:

These are functions you've seen before:
- Exponential
- Quadratic
- Linear

These might be new but we'll study them in Alg 2:
- Radical
- Rational
- Logarithmic

1. What is true about a function?

for every input you get only one output.

2. Do all functions behave in the same way?

Not all functions behave the same but they may have some things in common besides the fact that they are functions. For example, Linear and Exponential functions either increase or decrease throught their entire domain but if it's Linear the graph is straight and if it's Exponential the graph is a curve.

Some Key Characteristics of Linear, Exponential, and Quadratic Functions:

Linear	Exponential	Quadratic
• Line	• Curve: inc or dec throughout	• Parabola
• largest exp = 1	• exp is X	• largest exp. = 2
• $y = mx + b$ $\downarrow$ parent linear $y = x$	• $y = a \cdot b^X$ $\downarrow$ parent Exponential $y = 2^X$	• $y = ax^2 + bx + c$ $\downarrow$ parent Quadratic $y = x^2$

Answer Questions 2 and 3 on Page 1 of SAS1

Function: Below are some ways to think of what a function is:

- **A function is a special relationship where each input produces a single output**.

- In a function, one quantity depends on another in a consistent, and therefore predictable, way

- Give examples of two quantities that can be related to each other in a consistent, predictable way.

Students were shown the Animation on pg 1 of the Agile Mind website for Topic 1.

1. How can a function help you understand the basketball shot?

The graph of each function has its own shape. The graph of a Quadratic Function is a parabola which appears to be the shape the path of the basketball takes on its way to the basket. Therefore, a Quadratic Function can model the location and path of a basketball shot.

2. How can a function be used to make predictions?

When you substitute values for the independent variable a function "predicts" what is going to happen (what the output is).

3. How can a function by used to answer questions?

In the case of the basketball, if the function predicts the height as a function of how far away the ball is from the shooter you can answer questions such as, "How high will the basketball be when it's 8 feet away from the shooter".

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Answer question #4 on Page 1 of SAS 1