Name _____

Analysis of Roller Coaster Components

The Slide

Draw a sketch of the K'nex model slide below:

1. Find the height and ground-length of the slide and record them on your sketch.

    a. Define slope:

    b. Write the slope of the slide:

2. Use the Pythagorean Theorem to calculate the length of the slide (hypotenuse).

    a. Write the Pythagorean Theorem:

    b. Label the sides of your triangle a, b, and c.

    c. Find the length of the hypotenuse. Show your work and record the length on your sketch.

3. Find the steepness of the roller coaster in degrees. Remember, when a bee stings your toe: soh-cah-toa: **S**ine is **O**pposite **O**ver **H**ypotenuse (SOH), **C**osine is **A**djacent over **H**ypotenuse (CAH), and **T**angent is **O**pposite over **A**djacent (TOA). Your calculator must be set for degrees not radians—check your MODE before starting.

4. Record the data gathered from the probeware:

Acceleration	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5

5. Analyzing the data. Show all work:
    a. Find the mean of the acceleration data:

    b. Find the median of the acceleration data:

   c.   Find the mode of the acceleration data:

   d. Find the range of the data:

The Loop
Draw a sketch of the K'nex model loop below:

1.   Find the diameter of the loop and label it on your sketch.

     a.   Define Circumference:

     b.   Write the formula for finding circumference:

     c.   Find the circumference of the loop:

2.   Record the data gathered from the probeware:

Acceleration	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5

3. Analyzing the data. Show all work:

    a.   Find the mean of the acceleration data:

    b.   Find the median of the acceleration data:

    c.   Find the mode of the acceleration data:

    d. Find the range of the data: