Lesson: *Age Guess: Are you a "Good Guesser?"*

Common Core Learning Standard(s):

8.SP.2 Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.

8.SP.3 Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept.

Learning Objective: Students will use the data collected to construct a scatter plot and generate a line of best fit. Using the data the students will make sense of the slope and y-intercept

Aspect of Rigor Targeted:

Conceptual Understanding **Procedural Skill & Fluency** **Application**

Previously taught:

8.SP.1 Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association

Lesson Launch: *Exactly how will you use the first five-ten minutes of the lesson?*

Time:

- Questions:
  a) Do you consider yourself a good guesser? How about guessing age?
  b) What types of guesses could you have when guessing age? *Right on? Close? Too much? Too little?*
  c) What type of associations can two sets of data have?
  d) We are going to be constructing a graph on our age guessing data. What two sets of data will we be collecting?
  e) What do you think your graph will look like?
  f) Throughout the lesson you will ask yourself "Are you a "good" guesser?
  g) At the end of the activity as a group and class you will justify your guesses as good or bad and pick a person in the group and class as the "BEST" guesser.

Lesson Tasks, Problems, and Activities (attach resource sheets): *What specific activities, investigations, problems, questions, or tasks will students be working on during the lesson.*

- Pass out activity packet with guessing table and questions.
- Complete part 1 with the "age guess" powerpoint
- Students will complete part 2 graphing data and generating a linear model
- Questions/comments:
  a) Label your x/y axis
  b) Is your graph linear? No, the points are scattered (if a student says yes prompt them to remember that linear means points that generate a straight line)
  c) Is there a correlation/association?
  d) Could you generate a linear model that "fits" your data?
- The students will generate a linear model of their guesses. What do you look for when drawing a line of best fit?
- Choose two points on your linear model and find the slope. How did you choose the points?
- Making sure you extend your linear model find the y-intercept. How can you find the y-intercept?
- Generate an equation that represents your data y= mx +b

How can you tell by looking at a graph that a person is a good guesser?

How can you tell by looking at the equation that a person is a good guesser?

- Part 3 in groups students will begin to analyze the slope and y-intercept of their linear model
- What does the slope of the line tell you about the rate of change when comparing your guessed age to actual age? The slope will let you know how consistent you were with your over and under guessing. The slope of less than 1 will let you know you were more of an under guesser and the slope of greater than 1 will let you know you were more of an over guesser. Misconception: The closer to a slope of 1 better your guesses
- What does the y-intercept tell you about your guesses? The y – intercept that is closer to zero will tell you that your guesses were consistently over and under the perfect guesser.

Perfect Guesser	y = x
Under Guesser	Slope of less than 1 and negative y-intercept

Over Guesser	Slope of greater than 1 and a positive y-intercept
Good Guesser	Slope close to 1 and a y-intercept close to 0
Bad Guesser	No correlation/association

- What linear model represented the perfect guesser?
- What would you category guesser would you put yourself into? Under or over? Good or bad?
- List what you would be looking for to consider a "good" guesser
  On a graph: *Slope close to 1 and a y-intercept close to 0 the points very close to the line of best fit y=x*

  In an equation: *Slope close to 1 and a y-intercept close to 0*

Can a bad guesser have a Slope close to 1 and a y-intercept close to 0? Explain. *Yes if their guesses were the consistently the same over and under estimations but the points would be farther away from the line of best fit.*

Lesson Closure: *Exactly what summary activity, questions, and discussion will close the lesson and provide a foreshadowing of tomorrow? List the questions.*

Ask groups to present their results from the Guessing activity to the class. They could compare graphs and discuss how they are the same and how they are different. Finally, the class can determine which student had the was the "BEST" overall guesser for this activity.