**SAMPLES OF STANDARDS STUDENTS ARE LEARNING THIS NINE WEEKS:**

8th Grade Comp Math

STANDARDS: SP.1, SP.2, SP.3, SP.4, A.APR.1, A.REI.4, A.SS.E.3, F.IF.4, N-RN.3, S-ID.6b

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.

Which information is *not* true based on the scatter plot?
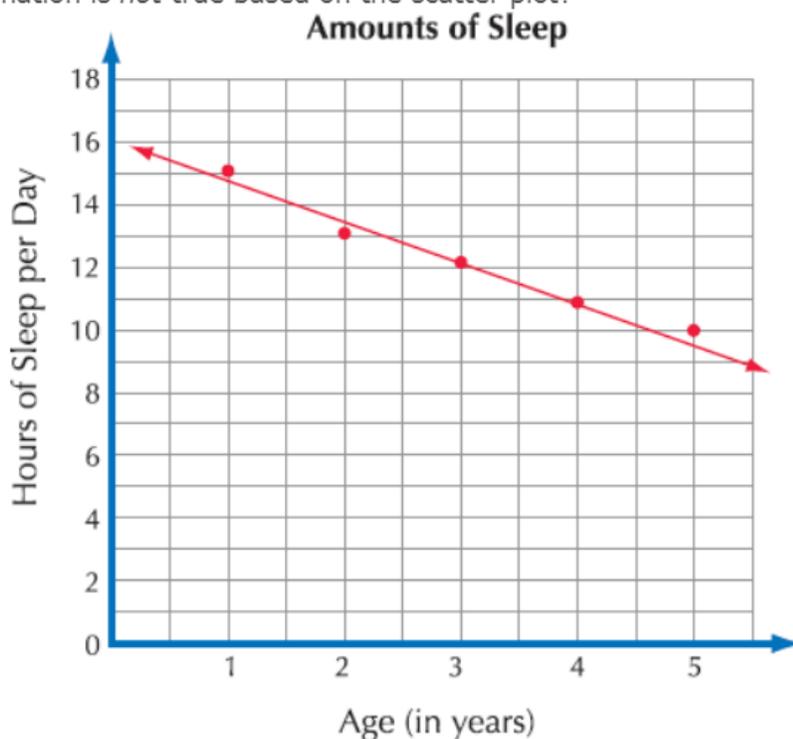
Amounts of Sleep

- There is a negative relationship between age and the amount of sleep.
- A one-year-old sleeps about 15 hours a day.
- A two-and-a-half-year-old probably sleeps between 11 and 12 hours a day.
- A six-year-old will probably sleep less than a two-year-old.

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.

The graph below shows the relationship between engine capacity in liters and the miles traveled per gallon of fuel for some cars.

Efficiency of Cars
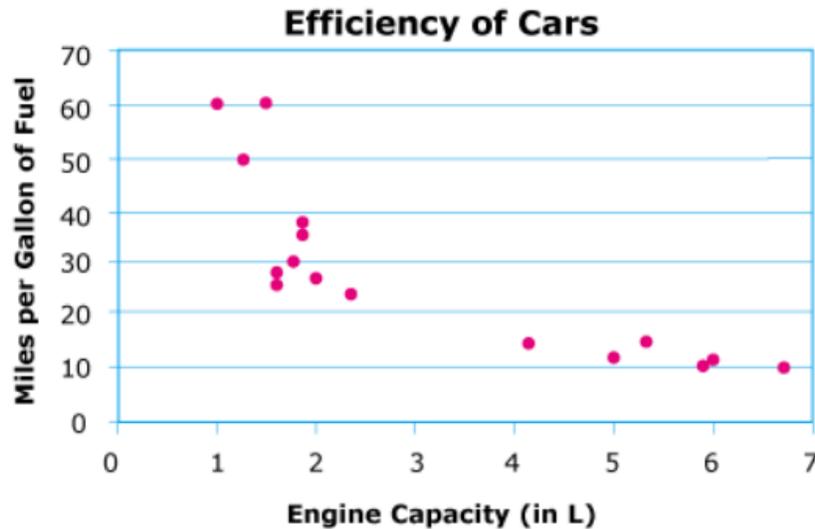
Which of the following correctly describes the trend in the data?

○ The miles per gallon of fuel increases with an increase in engine capacity.

○ The miles per gallon of fuel increases with a decrease in engine capacity.

○ The miles per gallon of fuel decreases with a decrease in engine capacity.

○ The miles per gallon of fuel remains constant with an increase in engine capacity.

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. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height.

Tilda kept track of how long it took her to assemble various puzzles based on the total number of puzzle pieces. She determined that the linear model $y = 5 + 0.5x$ can be used to estimate y, the total time, in minutes, it will take her to assemble a complete puzzle based on x, the total number of puzzle pieces. What does the slope in Tilda's equation represent?

○ The initial $\frac{1}{2}$ hour needed to sort the puzzle pieces before assembling the puzzle.

○ The rate of $\frac{1}{2}$ minute per puzzle piece while assembling the puzzle.

○ The initial 5 minutes necessary to sort the puzzle pieces before assembling the puzzle.

○ The rate of 5 minutes per puzzle piece while assembling the puzzle.

8.SP.4: Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?

A survey was given to students at a high school to determine how they get to school most of the time. The results are shown in the table.

	Boy	Girls
Drive Themselves	88	90
Take the bus	17	18
Ride with Parents	54	58
Walk	56	58
Other	10	51
Total	225	275

Which statement is **not** true according to the results of this survey?

○ A higher percentage of girls than boys walk to school.

○ A higher percentage of boys than girls drive to school.

○ A lower percentage of girls than boys take the bus to school.

○ A lower percentage of girls than boys ride with their parent to school.

A-APR.1: Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

If $p(x) = x^2 + 2x - 5$ and $q(x) = x - 3$, what is $p(x) - q(x)$?

- ○ $2x^2 - 2$
- ○ $2x^2 - 8$
- ○ $\boxed{x^2 + x - 2}$
- ○ $x^2 + x - 8$

A-REI.4: Solve quadratic equations in one variable. a. 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. b. Solve quadratic equations by inspection (e.g., for x2 = 49), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions.

Jacob must solve the equation, $x^2 - 12x = -20$, by completing the square method.

After rewriting the equation into the form $(x - p)^2 = q$, what are the values of p and q?

- ○ p = 144, q = 124
- ○ p = -144, q = 124
- ○ $\boxed{\text{p = 6, q = 16}}$
- ○ p = -6, q = 16

A.SS.E.3: Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.

Amy used the method of completing the square to find the minimum value of the function $y = x^2 - 8x - 20$.

What is the minimum value?

- ⊙ -36
- ⊙ -20
- ⊙ 16
- ⊙ 20

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 relationship. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity.

An object is launched from 180 feet above the ground. The function that models the height, in feet, of the object after t seconds is given by $f(t) = -16t^2 + 96t + 180$. Which statement is true?

- ⊙ The object will obtain a maximum height of 180 feet.
- ⊙ The object will obtain a maximum height of 324 feet.
- ⊙ The object will obtain a maximum height after 6 seconds.
- ⊙ The object will obtain a maximum height after 7.5 seconds.

N-RN.3: Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

Which of these, when simplified, represents an irrational number?

○ $(0.8\overline{3})\left(\dfrac{5}{3}\right)$, because the product of two rational numbers is irrational

○ $(2\sqrt{36})(2\sqrt{121})$, because the product of two irrational numbers is irrational

○ $(0.4\overline{3})(\sqrt{169})$, because the product of a rational and an irrational number is irrational

○ $(3\sqrt{8})\left(\dfrac{11}{3}\right)$, because the product of an irrational and a rational number is irrational

S-ID.6b : Informally assess the fit of a function by plotting and analyzing residuals.

Leonard is studying the relationship between the fuel efficiency in miles per gallon (mpg), y, and the speed in miles per hour (mph), x, of his car. He collected data for 8 different speeds and found a linear model that best fit his data: $y = 18.46 + 0.16x$. To analyze the fit of his function, he found the residuals and created the following residual plot.
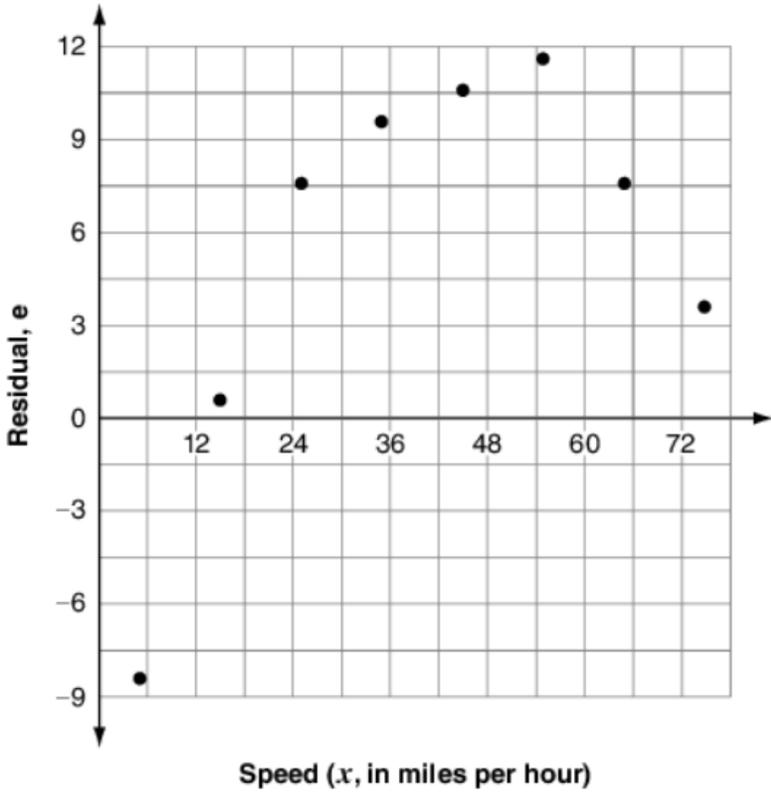
Using the residual plot, what conclusion can he make about the linear model he found?

○ There is a negative linear relationship between the speed and fuel efficiency.
○ There is a positive linear relationship between the speed and fuel efficiency.
○ There is a quadratic relationship between the speed and fuel efficiency.
○ There is a nonlinear relationship between the speed and fuel efficiency.