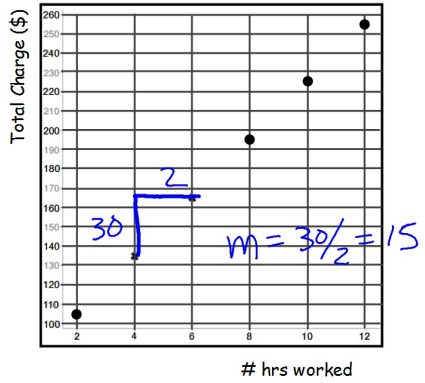
Below is a scatter plot of data collected showing the number of hours worked by a plumber and the total charge incurred.



1. What kind of function models this data?

Linear

2. Explain two different ways how you know that this type of function models this data.

- Constant rate of change
- Forms a line
- Constant 1st diff in y

3. What is the parent function for the rule that would model this data?

$y = x$

4. Do you need to transform the parent function to model this data?

If so, how must you transform it?

- rotation
- Translation

5. Write the actual function rule that models this data.

$m = \$15/hr$ plumbers hourly wage

$b = \$75$ initial charge

$y = 15x + 75$

$y = 15x + b$ using the 1st point $(2, 105)$

$105 = 15(2) + b$

$105 = 30 + b$

$b = 75$

Transformations of Functions begin with the

PARENT FUNCTION

Parent Function: Simplest form of a function

Parent Linear Function: $y = x$

Parent Quadratic Function: $y = x^2$

Parent Square Root Function: $y = \sqrt{x}$

Parent Absolute Value Function: $y = |x|$

Family of Exponential Functions: $y = b^x$

there is no single easily identifiable parent exponential function so we'll refer to this as the Family of Exponential Functions.

Agile Mind Workbooks

Students were given a workbook containing all of the Student Activity Sheets.

This is their book to keep which means that they can take notes and annotate directly on the pages.
Som homework assignments will come directly from this workbook.
Students need to make sure that they have this workbook with them every day in class.
If a student doesn't need to take the workbook home on a given night there will be a place in class that they can leave it.

Read and answer questions 1&2 from SAS1 - Topic 3

Agilemind - Topic 3 - Overview-page 1

Volunteers to move sliders to match line to scatter plot.

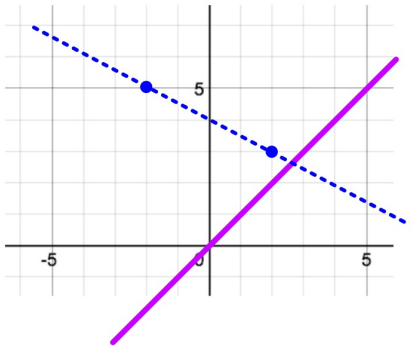
What transformations are needed?

SAS1 - Topic 3

Answer question #3

What transformations of the Parent Function y=x are necessary to create the line described?

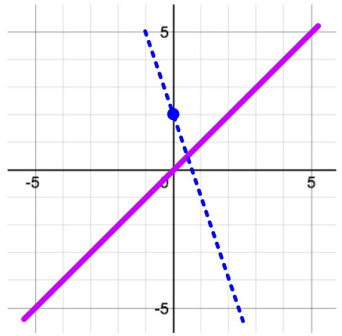
a. passes through (-2,5) and (2,3)



Slide y=x up and rotate clockwise. You could also rotate counterclockwise but it would probably require more of a rotation.

What transformations of the Parent Function y=x are necessary to create the line described?

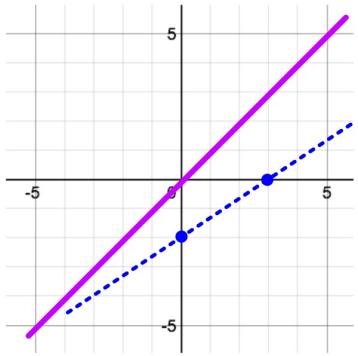
b. a slope of -3 and a **y**-intercept of 2



Slide y=x up and rotate counterclockwise

What transformations of the Parent Function y=x are necessary to create the line described?

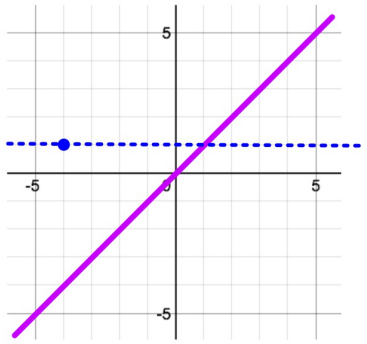
c. **x**-intercept of 3 and a **y**-intercept of -2



Slide y=x down and rotate clockwise

What transformations of the Parent Function y=x are necessary to create the line described?

d. passes through the point (-3,1) and never intersects the **x**-axis



Rotate y=x clockwise and slide it up.

It should end up parallel to the x-axis.

Besides Linear Functions, what other functions did you study in Algebra 1?

- Quadratic
- Exponential
- Square Root
- Absolute Value

SAS1 - Topic 3
Answer questions 5 & 6

5. $y = b^x$

6. $y = x^2$

SAS1 - Topic 3

Answer questions 7

Characteristics of Functions

Linear	Exponential	Quadratic

Possible question 7 answer

Characteristics of Functions

Linear	Exponential	Quadratic
Constant Addition. When x increases by a constant amount, y increases by a constant amount too. After a transformation the rate of change will still be a constant but may change to a different value.	Constant Mulitplication. When x increases by a constant amount, the first difference in y is exponential. After a transformation, the first difference will still be exponential but may change to a different value.	When x increases by a constant amount, the second difference in y is constant. After a transformation, the second difference will still be constant but may be a different value.

Hwk #12

SAS1 - Topic 3

Questions 4, 9, 10

Use a sheet of graph paper for #9

for #10: Remember, to graph a function you aren't familiar with you can create a table of values by picking X-values and substituting into the given function rule to get the corresponding Y-values.