**Unpacking a Standard**

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| **Standard:**  |
| What do students have to know and be able to do? | How will they do it? | What specific guidelines or parameters will they follow? | What representations will be used? | What vocabulary will be new to students? |
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| What are students’ common misconceptions? |

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| **SOL A.6c (Graphing Linear Equations)****A.6 The student will** **a) determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line:****b) write the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line; and****c) graph linear equations in two variables.** |
| **What do students have to know and be able to do?** | **How will they do it?** | **What specific guidelines or parameters will they follow?** | **What representations will be used?** | **What vocabulary will be new to students?** |
| * Graph a linear equation in two variables, including those that arise from a variety of practical situations.
 | * Plotting points
* Using whiteboard graphs
* Graphing lines
* Translating verbal form to symbolic - algebraic equation
* Use graphing calculator to model equations
 | * Includes vertical lines
* Equations may be written in various forms, including standard form, slope-intercept form, or point-slope form.
 | * 5*x* + *y* = 4
* $y=-5x+4$
* y + 6 = -5(x – 2)
 | * What is linear?
* Solving for *y*
* What are intercepts?
* Standard form
* Slope-intercept form
* Point-slope form
* What is slope?
* Write equation from given “situation”
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| * Use the parent function *y = x* and describe transformations defined by changes in slope or *y*-intercept.
 | * Introduce f(x) and changes in slope and y-intercept
* Calculator Investigation *y = x*
* (comparing to second line making changes to m and b)
* Transform App (*y* = Ax + B)
* Desmos modeling
* Graph paper
* White boards
* Graphing calculators
* Manipulatives: wiki sticks
 | * Transformations can be described using words, a graph, or an equation.
* Function notation may be used
 | * Given the parent function

f(*x*) = *x*, which equation(s) represent f(*x*) + 3?f(*x*) = *x* + 3f(*x*) = 3*x* f(*x*)= *x* – 3f(*x*)= 3*x* + 3* Given a graph of f(*x*) – 2, plot 2 points found on the parent function f(*x*)
* (graph of *y*=-*x*+2)
 | * Parent function (*y = x*)
* Up/down of y-intercept
* How slope changes with integers and fractions
* Slope
* Parent function
* Transformation
* Translation
* Reflection
* Dilation
 |
| What are students’ common misconceptions? Solving for y; Plotting points (*x, y*) or (*y, x*); Using different scales for graph; Which is *x*? Which is *y*?; When using slope to find additional points that don’t fit on a graph, knowing you could go in opposite direction as well; Translation up, down, left or right only affects y-intercept; Meaning of slope in a context; Meaning of y-intercept in a context; Translating from a practical situation to an algebraic representation |