# Math 115E Activity 12

Chapter 4 Section 5
Determining the Linear Function

**Definition.** *A linear function can be expressed by $f(x) = mx+b$, where $x$ is the input, $m$ is the slope, and $b$ is the $y$ intercept of $f(x)$. This is known as slope-intercept form*

**Helpful steps.** *There are two slightly different methods to find the linear function*

- *Use point-slope form $(y - y_0) = m(x - x_0)$: Plug in a point $(x_0, y_0)$ and $m$*
- *Use slope-intercept form $y = mx + b$: Plug in a point $(x, y)$ then solve for $b$*

## Section 1: Find the linear function

#1 Give me two numbers such that: they both multiply to 6 and yet both add to 1

#2 Give me two numbers such that: they both multiply to 20 and yet both add to -9

#3 Give me two numbers such that: they both multiply to 6 and yet both add to 7

#4 Give me two numbers such that: they both multiply to -80 and yet both add to -2

#5 Give me two numbers such that: they both multiply to -4 and yet both add to 0

#6 Give me two numbers such that: they both multiply to -6 and yet both add to 1

#7 Give me two numbers such that: they both multiply to -6 and yet both add to -1

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**Definition.** *An inequality looks just like an equation, except that in place of the equal sign, we have one of the symbols* $<, >, \leq, \geq$. *Giving us a range of values not just one Example:* $4x - 3 = 1 \rightarrow x = 1$ *compared to* $4x - 3 \geq 1 \rightarrow x \geq 1$

**Helpful steps.** *There are two slightly different methods to find the linear function*

- *To solve: Isolate* $x$ *terms to one side, then simplify both sides*
- *If you divide both sides by a negitive number, then switch the inequality signs Example: We start with leq and becomes* $\geq$ *and then* $>$ *becomes* $<$ *and vise versa*

## Section 2: Solve the Expressions

#1 $2x + 3 = 5$

#2 $4x - 3 \geq 9$

#3 $5x - 1 < x + 8$

#4 $\frac{5}{6}x - 12 = 4$

#5 $4(x - 5) + 2 \geq 2 + 2x$

#6 $4 - \frac{4}{5}x = 4$

#7 $\frac{3}{2}x - 6 \leq \frac{4}{5} + 8$

#8 $-(-x - 4) = \frac{1}{2}(x - 2)$

#9 $\frac{4}{3}x - \frac{1}{5} = \frac{5}{6}x$

#10 $5x + 1 = 5x - x + 1$

#11 $6x - 4 < 6x - 5$

#12 $5x - 2 > 5x - 2$