## Lesson 10: Relating Linear Equations and their Graphs

* Let’s connect functions to features of their graphs.

### 10.1: Notice and Wonder: Features of Graphs

Here are graphs of $y=2x+5$ and $y=5⋅2^{x}$.

What do you notice? What do you wonder?





### 10.2: Making Connections

1. Here are some equations and graphs. Match each graph to one or more equations that it *could* represent. Be prepared to explain how you know.
* 
	+ $y=8$
	+ $y=3x−2$
	+ $x+y=6$
	+ $0.5x=-4$
	+ $y=x$
	+ $-\frac{2}{3}x=y$
	+ $12−4x=y$
	+ $x−y=12$
	+ $2x+4y=16$
	+ $3x=5y$
1. Choose either graph D or F. Let $x$ represent hours after noon on a given day and $y$ represent the temperature in degrees Celsius in a freezer.
	* In this situation, what does the $y$-intercept mean, if anything?
	* In this situation, what does the $x$-intercept mean, if anything?

### 10.3: Connecting Equations and Graphs



1. Without substituting any values for $x$ and $y$ or using technology, decide whether graph A could represent each equation, and explain how you know.
	1. $4x=y$
	2. $x−8=y$
	3. $-5x=10y$
	4. $3y−12=0$
2. Write a new equation that could be represented by:
	1. Graph D
	2. Graph F
3. On this graph, $x$ represents minutes since midnight and $y$ represents temperature in degrees Fahrenheit.
	1. Explain what the intercepts tell us about the situation.
	2. Write an equation that relates the two quantities.
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