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## Linear Equations Class Work

${ }^{5}$ Objective: You will be able to identify important aspects of and interpret the relationship modeled by linear functions.

## N Quick Review:

1. a. Determine the rate of change between the points $(9,3)$ and $(\sim 12, \sim 6)$.
b. What is another name for "rate of change?"
2. a. The temperature at 6:00 this morning was 53 degrees Fahrenheit. The temperature at 10:00 AM today was 73 degrees Fahrenheit. Assuming the temperature changed at a constant rate, what was the rate of change per hour?
b. Which variable is independent (temperature or time), and why?
c. What does the rate of change imply in this context?
3. What do you remember about the equations for lines?

Slope~Intercept Form
Point Slope Form
4. Identify the slope and $y$-intercept of each line.
a. $-\mathrm{y}=4 \mathrm{x}+5$
b. $y-7=3 / 4(x+2)$
c. $3 x+8 y=\sim 24$
d. $3 y-2 x=21$
e. $y+x=\sim 2.89$
f. $1.5 \mathrm{y}+9=\sim 3 \mathrm{x}$
g. $y=9$
h. $x=\sim 3$

## Linear Equations Class Work

Objective: You will be able to model relationships using linear functions, and use these functions to solve problems.

Your uncle gave you a certain amount of money for the holidays. You decided that you would like to put this gift towards your personal savings, and add a given amount to it every week. The amount you add each week will not change from week to week. After three weeks, you have a total of $\$ 47.00$ saved. After eight weeks, you have a total of $\$ 67.00$ saved.
$\partial_{0}$ Within your groups, answer the following questions.
A) How much money do you save per week?
B) How much money were you given to start?
C) Assuming you do not spend any of your savings, how much money will you have after 303 weeks?
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$\boldsymbol{\infty}$ Independent Variable:
$\infty$ Dependent Variable:
$\boldsymbol{\infty}$ We Know Two Points:
$\infty$ Rate of Change (slope):
$\boldsymbol{\infty}$ Writing the Equation:
$\infty$ Using the Equation:
$\qquad$ Date: $\qquad$

## Linear Equations Practice

1. A taxicab charges an initial base fee, as well as a consistent rate per mile. After driving for two miles, the meter in the taxicab reads $\$ 3.35$. After five miles, the meter reads $\$ 5.00$.
~ What is the initial fee the taxicab company charges?
~What is the rate a customer must pay per mile?
~ Write an equation to model the situation.
~ Jason needs to travel 11 miles to get to his friend's house. How much will he owe if he uses this taxicab company?
2. Frank donates to his favorite charity regularly. He donated a large initial amount this first time, and decided to donate consistently each month. The amount he donates per month does not change. After three months, Frank has donated $\$ 225$. After eight months, Frank has donated $\$ 350$.
~ Write an equation to model the situation.
~ Frank's goal is to donate at least $\$ 725$ over the course of two years. Will this happen if he maintains this consistent donation? Explain.
3. Determine the slope and $y$-intercept of the line passing through the points $(4,3)$ and $(\sim 2, \sim 1)$, through writing an equation for the line.
4. Determine the slope and $y$-intercept of the line passing through the points $(0,0)$ and $(\sim 4,2)$.
5. Line A passes through the points $(5, \sim 2)$ and $(10, \sim 1)$. Line B passes through the points $(\sim 5,7)$ and $(\sim 10,6)$. How are the lines similar? How are the lines different? Explain.
6. Line D passes through the points $(\sim 3,8)$ and $(\sim 3,13)$. Line G passes through the points $(0,9)$ and $(33,9)$. Describe the relationships between the lines.
7. If you finish early... Becca runs at a constant speed on the treadmill. After 5 minutes, Becca ran .525 miles, and after 15 minutes, Becca ran 1.575 miles. Assuming she maintains a constant speed, will Becca have ran more than 6 miles in one hour? Explain.

CLOSER (on a post -it) ©
Write down any Concept you Learned, along with One Specific Example. How is this concept Relevant to the real world, problem solving, and/or mathematics in general?

