Name: $\qquad$
Date: $\qquad$

$$
\begin{array}{lll}
x_{1} & y_{1} & x_{2} \\
y_{2}
\end{array}
$$

1. What is the equation of a line passing through points $(\mathbf{- 8}, \mathbf{2 9 0})$ and $(-3,135)$ ?

$$
\begin{aligned}
& a=\frac{y_{2}-y_{1}}{x_{2}-x_{1}} \\
& a=\frac{135-290}{-3-(-8)}=\frac{-155}{5}=-31
\end{aligned}
$$

$$
\begin{aligned}
y & =a x+b \\
290 & =-31(-8)+b \\
290 & =248+b \\
-248 & -248 \\
42 & =b \quad \text { Equation: } y=-31 x+42
\end{aligned}
$$

2. What is the equation of a line with a rate of change of $\frac{-1}{3}$, passing through point $\underset{(-6,17)}{x}$ ?

$$
\begin{gathered}
y=a x+b \\
17=-0 . \overline{3}(-b)+b \\
17=2+b \\
-2=2 \\
15=b
\end{gathered}
$$

$$
a=-0 \cdot \overline{3}
$$


3. What is the equation of the line represented in the graph below?

4. What is the equation of the line represented in the graph at right?

$$
\begin{aligned}
& a=\frac{0-22}{-2-6}=\frac{-22}{-8}=\{2.75\} \\
& y=a x+b \\
& 0=2.75(-2)+b \\
& 0=-5.5+b \\
& 5.5=b
\end{aligned} \quad \begin{aligned}
& a=2.75 \\
& x=-2 \\
& y=0
\end{aligned}
$$

Equation: $\qquad$



Equation: $y=2.75 x+5.5$
5. Jimmy gets a job delivering pizzas at his uncle's pizza shop.

His uncle pays him $25 \$$ to show up, and 3.50 for every pizza he delivers.

$$
b \quad a
$$

a. What is the rule that determines Jimmy's pay at the end of a shift?
b. If Jimmy delivers 13 pizzas during a shift, how much money will he make that day?
c. If Jimmy makes $\$ 119.50$ in a shift, how many pizza's must he have delivered?

$$
x=\text { \# of pizzas } \quad y=\$ \text { earned }
$$

b) $y=3.5 x+25$ where $x=13$ [c) $y=3.5 x+25$ where $y=11950$

$$
\begin{aligned}
& y=3.5(13)+25 \\
& y=45.50+25 \\
& \{y=70.50 \$ 3
\end{aligned}
$$

$$
\begin{aligned}
& 119.50=3.5 x+25 \\
& -25 \\
& \frac{94.50}{3.5}=\frac{3.5 x}{3.5} x \\
& \underbrace{27=x} \\
& \text { Rule: } \underbrace{\text { Jimmy will have delivered } 27 \quad \text { pizzas }}_{\text {Jimmy will make" } 70.50} \$
\end{aligned}
$$

6. Amanda, Tiffany and Emily join an exclusive gym for a year. They each pay an initial yearly membership fee, but must also pay a small fee each time they visit the gym.

- Amanda visits the gym 92 times and must pay a total of $\$ 306$

$$
\binom{x_{1}, y_{1}}{92,306}
$$

- Tiffany pays $\$ 402.25$ after visiting the gym 147 times.

$$
(147,402.25)
$$

If Emily pays a total of $\$ 649$, how many times must she have visited the gym?
$x=\#$ of gym visits $\quad y=\$$ cost of gym

$$
a=\frac{402.25-306}{147-92}
$$

$$
\begin{array}{r}
\left.a=\frac{96.25}{5 s}=\{1,5\}\right\} \\
\text { rate per } \\
\text { visit! }
\end{array}
$$

$$
\begin{aligned}
& y=\$ \text { cost of gym } \\
& y=a x+b \\
& 306=1.75(92)+b \\
& 306=161+b \\
& -161=-161 \\
& \underbrace{145=b}
\end{aligned}
$$

$y=1.75 x+145$
where $y=649$

$$
\begin{aligned}
& 649=1.75 x+145 \\
& -145 \quad-145 \\
& \frac{504}{1.75}=\frac{1.75 x}{1.75} \\
& 288=x
\end{aligned}
$$

Emily must have visited the gym $\qquad$ times

