We've seen functions like this before:

$$
f(x)=4 x+2, \quad g(n)=1 / 2 n-3, \text { etc... }
$$

Generally, slope-intercept form is:

$$
y=m x+b
$$

This is "slope-intercept form" because:
$m$ is the slope of the line $b$ is the $y$-intercept.
Ex: A linear function has a slope of $4 / 3$ and a $y$-intercept of -4 . Write an equation for this function.

$$
\begin{array}{rl}
\text { function. } \\
m=4 / 3, & \text { so } \ldots, \\
b=-4 & y=m x+b \\
y & =4 / 3 x+(-4) \\
y & =4 / 3 x-4
\end{array}
$$

Ex: Graph the function $y=1 / 2 x+3$.

$$
\begin{aligned}
& m=\frac{1}{2} \leadsto \text { rise } \\
& b=3
\end{aligned}
$$

(1) Plot the $y$-int.
(2) From there, apply the clone.


$$
b=3
$$

apply the slope.
So $y$-intercept is at 3 .
Ex: Determine the equation of the following line:


$$
\left\{\begin{array}{l}
y \text {-int is -4 } \quad m=\frac{y_{2}-y_{1}}{x_{2}-x_{1}} \\
\text { so, } \\
b=-4 \quad \frac{(2)-(-4)}{(-4)-(0)}=\frac{6}{-4}=-\frac{3}{2} \\
y=m x+b \\
y=-\frac{3 / 2}{2} x-4
\end{array}\right.
$$

Ex: The school holds a dance. The DJ costs $\$ 300$ and the school sells tickets for $\$ 5 /$ person.
(i) Write an equation for the profit $(P)$ in dollars:

Profit:Income-Expenses... cost of $D J$

$$
P=5 n-300
$$

(slope intercept
$\imath_{\text {number of }}$ form). students
(ii) If 123 people bought tickets, what's the profit?

$$
\begin{aligned}
& n=123 \text { so.. } \\
& \quad P=5 n-300 \\
& p=5(123)-300 \\
& p=615-300 \\
& P=315
\end{aligned} \Rightarrow \text { Profit of } \$ 315 \text {. }
$$

(iii) If the profit was $\$ 350$, how many people attended:

$$
\begin{gathered}
P=350 \text { so... } \\
P=5 n-300 \\
(350)=5 n-390 \\
+300 \quad+390 \\
\frac{650}{5}=\frac{5 n}{5} \\
n=\frac{650}{5}=130
\end{gathered}
$$

$\Rightarrow 130$ people attended.
(iv) Could the profit have been exactly $\$ 146$ ?

Cant have "0.2" of a person...
so a profit af $\$ 146$ is impossible.

HW: Pg. 362 \# 4.7, 819, $11,12,18,23$

