Warmup $10 /\left(\frac{\sin x}{\sin x}+\frac{2 \pi^{2}}{2 \pi^{2}}+\frac{\cos x}{\cos x}+\frac{\tan x}{\tan x}+13-\right.$

## Created by Max Robinson (student from last year)

$\square$ Bill had 50 cookies in a tub. He gave two cookies to each classmate.

Write an equation to represent how many cookies Bill has left.
2. The inputs ( $x$ ) would represent $\qquad$
3. The outputs ( y ) would represent $\qquad$
The slope is ___ and it represents $\qquad$
5. The $y$-intercept is $\qquad$ and it represents

The table from the cookies situation is shown to the right. Suppose you had to

| $x$ | $y$ |
| :--- | :--- |
| 0 | 50 |
| 1 | 48 |
| 2 | 46 |
| 3 | 44 |
| 4 | 42 |
| 5 | 40 |



## Go over HW, collect Warmups

## Write an equation, make a table, and draw a graph.

## Example

$\square$ A tree was planted when it was 5 feet tall. Each year, it grew 3.5 more feet.
$y=3.5 x+5$
$\square$ INPUTS (x): \# of years
$\square$ OUTPUTS ( $\mathbf{y}$ ): height of tree
$\square$ SLOPE: Growth in feet per year
$\square$ Y-INTERCEPT: original height

| $x$ (years) | $y$ (height) |
| :--- | :--- |
| 0 | 5 |
| 1 | 8.5 |
| 2 | 12 |
| 3 | 15.5 |
| 4 | 19 |
| 5 | 22.5 |

## REMEMBER:

## IN A REAL-WORLD SITUATION

$\square$ Slope $=$ Rate of change
$\square$ Y-intercept $=$ original amount

Write an equation, make a table, and draw a graph.
$\square$ Each month, Bob's phone plan charges a \$10 flat fee, plus $\$ 0.05$ per text message sent.
$\square=0.05 x+10$
$\square$ INPUTS: \# of texts
$\square$ OUTPUTS: total cost
$\square$ SLOPE: cost per text
$\square$ Y-INTERCEPT: flat fee (cost for 0 texts)

## MINI-LESSON:

To Connect or Not To Connect?

## Refresher: WHY do we connect the points for a normal function?



## To connect or not to connect?

$\square$ You must pay $\$ 10$ per $t$-shirt plus a flat shipping fee of \$6.
$\square y=10 x+6$

| x (\# of <br> shirts) | $y$ (fotal <br> cost) |
| :---: | :---: |
| 1 | 16 |
| 2 | 26 |
| 3 | 36 |
| 4 | 46 |
| 5 | 56 |



## To connect or not to connect?

$\square$ The temperature is 6 degrees and it is rising 10 degrees per hour. 70


## TO CONNECT OR NOT TO CONNECT???

$\square$ For a normal equation, you should always connect the points, because " $x$ " could be any number.
$\square$ For a story problem, you don't always connect the points, because the decimals don't always make sense for "x".
$\square$ Ask yourself one question: DO THE NUMBERS IN BETWEEN MAKE SENSE???

- If yes, connect. (Continuous graph)
$\square$ If no, do not connect. (Discrete graph)


## Should we have connected these?

## Example

$\square$ A tree was planted when it was 5 feet tall. Each year, it grew 3.5 more feet.
$\square=3.5 x+5$
***Yes, you can have fractions of a year***

| $x$ (years) | $y$ (height) |
| :--- | :--- |
| 0 | 5 |
| 1 | 8.5 |
| 2 | 12 |
| 3 | 15.5 |
| 4 | 19 |
| 5 | 22.5 |

## Should we have connected these?

$\square$ Bill had 50 cookies in a tub. He gave two cookies to each classmate.

| $x$ (classmates) | $y$ (cookies lefi) |
| :--- | :--- |
| 0 | 50 |
| 1 | 48 |
| 2 | 46 |
| 3 | 44 |
| 4 | 42 |
| 5 | 40 |

a classmate. The graph doesn't
continuously go from 50 to 48; it
happens instantaneously***

## Should we have connected these?

$\square$ Each month, Bob's phone plan charges a $\$ 10$ flat fee, plus $\$ 0.05$ per text message sent.
$\square y=0.05 x+10$
***No, you can not have fractions of

| $x$ | $y$ |
| :--- | :--- |
| 0 | 10 |
| 1 | 10.05 |
| 2 | 10.10 |
| 3 | 10.15 |
| 4 | 10.20 |
| 5 | 10.25 |

a text. The cost does not go up
$\begin{array}{ll}5 & 10.25\end{array}$ gradually from $\$ 10.00$ to $\$ 10.05$, it
goes up instantaneously***

## FINAL NOTE about connecting points

$\square$ Sometimes, in your textbook, or in another problem, you might see the points connected, even if it technically wouldn't make sense.
$\square$ They do this because connecting the dots can help you see the overall trend better.

## HOMEWORK: Linear Situations

Worksheet
$\square$ When creating the graphs, DO NOT just use the numbers in your table as your scale. You should scale it by something "common", like 5 s , or 10 s , or 20s.
$\square$ Your $x$ and $y$-axis do NOT need to use the same scale.

