## Warmup 9/( $\sqrt{5} \cdot \sqrt{5} \cdot \sqrt{5} \cdot \sqrt{5})$

***NEED A WHITEBOARD, MARKER, ERASER INSIDE YOUR DESK***

1) This is Billy's height, recorded on his various birthdays. Is Billy growing at a constant rate? If so, what is the rate?

| Years | Billy's height (inches) |
| :---: | :---: |
| $\mathbf{4}$ | $\mathbf{3 2}$ |
| 7 | $\mathbf{4 1}$ |
| $\mathbf{9}$ | 47 |

2) One common mistake might be to divide 32 by 4 to get the rate at which Billy is growing. Explain what is wrong with this strategy.

- If you divide 141 by 11 , you are saying 141 gallons drained out of the tank in 11 minutes.
- But 141 is not the amount that drained out, it is the amount that is left. We don't know how many drained out in those 11 minutes! It doesn't tell us the starting amount!
- You must go by the numbers you already have.


4 gallons per minute. Were there 190 gallons at the start?


How long until there are 50 gallons left?

$$
3^{5}=13.75 \mathrm{~min}
$$

(I) $\boldsymbol{N}^{\prime}$ (1. 1,05 gallons = he's incorrect


## Review Homework

Here is an $x / y$ table. Is the rate of change constant? Show using the numbers in the table, then verify with the graph.



Review Homework
Do the points on the graph have a constant rate of change? If so, what is this rate? Make an $x /$. table to help you with your calculations.

he table shows the number of bikes made by a company for certain years. Find the rate of change for ch time period. During which time period did the number of bike increase at the fastest rate?


## Review Homework

it tanker truck had access to a certain number of gallons of water at a recent fire. After several $d$ he did not record the initial amount of water as he was required, but he knew the truck used recorded the following information:

| \# of hours at the <br> scene | 0 | 3 | 5 | 8 | $?$ |
| :--- | :--- | :--- | :--- | :--- | :--- |
| \# of gallons <br> remaining | $?$ | 336,000 | 240,000 | 96,000 | 0 |

- How many gallons per hour does the truck use?


## $48,000 \mathrm{gal} /$ hour

- How much water did the truck have originally?


480,000 gallons

- How long will it take the truck to run out of water?

10 hours

## Which roof is steeper???




## Which roof is steeper?



## Which line is steeper?

Increases 2 numbers for every 1 " $x$ "


Increases 3 numbers for every 1 "x"


## How steep is this line?

Increases 4 numbers for


## How steep is this line?



## Which roof is steeper?



Increases 8 numbers for every 4

$$
8 \div 4=2
$$

Increases 2 numbers for every 1


Increases 15 numbers for every 10

$$
15 \div 10=1.5
$$

Increases 1.5 numbers for every 1

## Which line is steeper?



## How steep is this line?

Increases 2 numbers for

$$
\begin{aligned}
& \text { every } 4 \text { "x" } \\
& 2 \div 4=0.5
\end{aligned}
$$

Increases 0.5 for every 1


## How steep is this line?

Increases 3 numbers for

| every 4 " $x$ " |
| :---: |
| $3 \div 4=0.75 \quad$ |

Increases 0.75 for every 1 (3/4 of a box)


## How steep is this line?



## SLOPE

- SLOPE is how steep a line is.
- Specifically, it is how much the $y$-value increases for each $\mathbf{x}$.
- Bigger slope number = steeper line!
- A straight line will NEVER CHANGE SLOPE!!!



# How to find Slope from a Graph: 

Pick two points, then find the:

- change in $y$
change in $x$
- (Also known as $\left.\frac{\text { rise }}{\text { run }}\right)$


## Find the slope...

## change in $y$

change in $x$


