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Warmup 9/Smallest number whose digits add up to 10

- 1) The following table shows various ages and heights of Francine's growth. Did she grow at a constant rate? If so, find the rate. If not, say when she was growing the fastest and the slowest.

| Age (years) | Height (in) |
|-------------|-------------|
| 0 | 22 |
| 2 | 30 |
| 5 | 39 |
| 11 | 51 |
| 14 | 58.5 |

- 2) Explain why somebody might think that Francine was growing the fastest between ages 5 and 11. Then explain what you would say to this person to help convince them otherwise.

p.175 (1 - 6, 10)

- 1) Yes; the rate of change is always 3 cents per hour.
- 2) No; the rate of change from 1 to 2 seconds is 14.7 m/s, but the rate of change from 2 to 3 seconds is 24.5 m/s
- 3) Yes; the oil constantly increases by 2 cups and the vinegar constantly increases by $\frac{3}{4}$ cup.
- 4) Yes; the rate of change is 2 inches per minute.
- 5) Yes; the rate of change is 7.5 miles per inch.
- 6) Yes; the rate of change is \$15 per person. **NOT \$20 per person! It's not proportional!**
- 10) 2.4 ft/min \rightarrow bottom table
10 ft/min \rightarrow 2nd table
-0.8 ft/min \rightarrow top table
0.25 ft/min \rightarrow 3rd table

Picture retakes:

- If you were gone that day, you should already be on the schedule. You should check to make sure.
- If you would like a retake, you need to bring a note from your parent and the original picture packet to Mrs. Purcell-Orleck by TOMORROW.

CITY SAVER

- **We NEED the unsold books back! ASAP!!!! Write a note to yourself.**

Extra problems: Proportional and Linear

Say if the relationship is:

- Proportional
- Linear but not proportional
- Not linear

| x | y | x | y | x | y | x | y |
|---|----|---|----|---|----|---|----|
| 0 | 10 | 3 | 15 | 0 | 0 | 2 | 8 |
| 1 | 12 | 4 | 20 | 2 | 7 | 3 | 11 |
| 2 | 14 | 6 | 30 | 4 | 14 | 4 | 14 |
| 3 | 16 | 8 | 40 | 6 | 28 | 6 | 20 |
| 4 | 18 | 9 | 45 | 8 | 56 | 9 | 29 |

Table of Contents

| | |
|--------------|---|
| p. 1 | Consecutive Sums Project |
| p. 2 | Stacking Cups Problem |
| p. 3 | Converting Fractions and Decimals (1.1) |
| p. 4 | Roots (1.8 & 1.9) |
| p. 5 | Rational vs. Irrational (1.1) |
| p. 6 | What is a Function? |
| p. 7 | Function Notation |
| p. 8 | Graphing Functions |
| p. 9 | Analyzing Key Features of Graphs |
| p. 10 | Proportional Relationships |
| p. 11 | Constant Rate of Change |
| p. 12 | Slope |

Constant Rate of Change

11

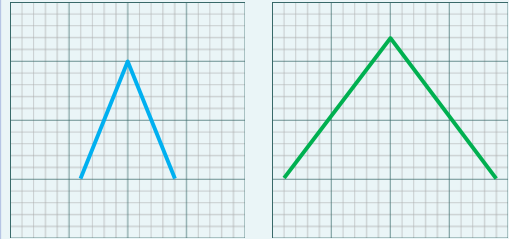
Objectives:

- Be able to find the slope (rate of change) of a line on a graph!
- Be able to find the slope between two points without using a graph

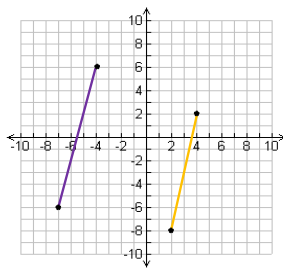
Which roof is steeper???



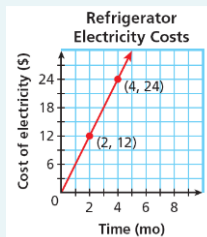
Which roof is steeper?



Which line is steeper?



The graph shows the average electricity costs (in dollars) for operating a refrigerator for several months. Find the slope of the line. Then tell what the slope represents.



Step 2 Tell what the slope represents.

In this situation y represents the cost of electricity and x represents time.

So slope represents $\frac{\text{change in cost}}{\text{change in time}}$ in units of $\frac{\text{cost in dollars}}{\text{months}}$.

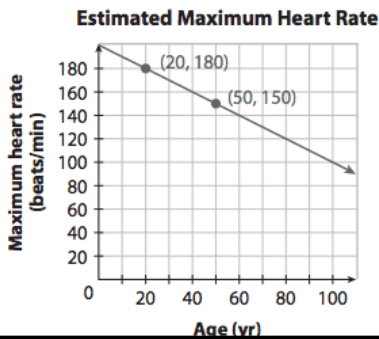
A slope of 6 means the cost of running the refrigerator is a rate of 6 dollars per month.

Finding Slope from a Graph:

• $\frac{\text{change in } y}{\text{change in } x}$

• (Also known as $\frac{\text{rise}}{\text{run}}$)

Find and interpret the slope.

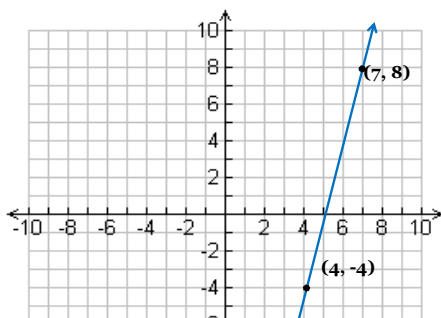


- A line has a constant rate of change!

AKA

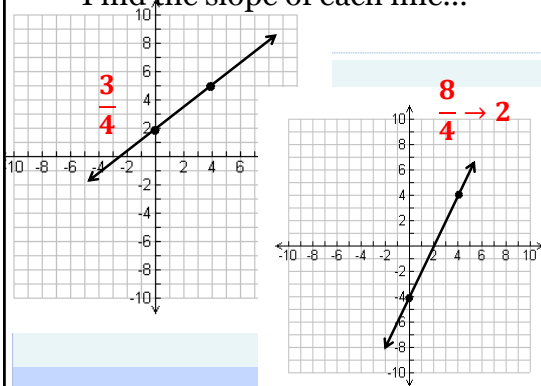
- A linear function has a constant slope!

Find the slope...

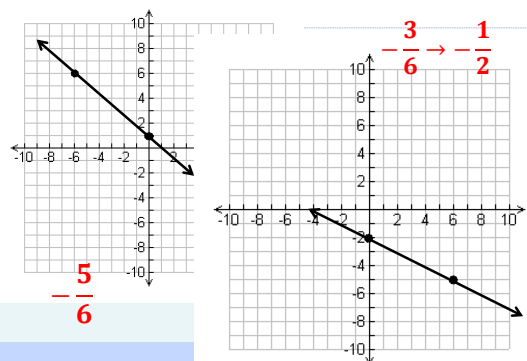


- **Direction matters!!!**
 - Up/to the right: positive change
 - Down/to the left: negative change

Find the slope of each line...



Find the slope of each line...



Homework (Due Wednesday)

p. 185 (1 – 8, 10 – 12)