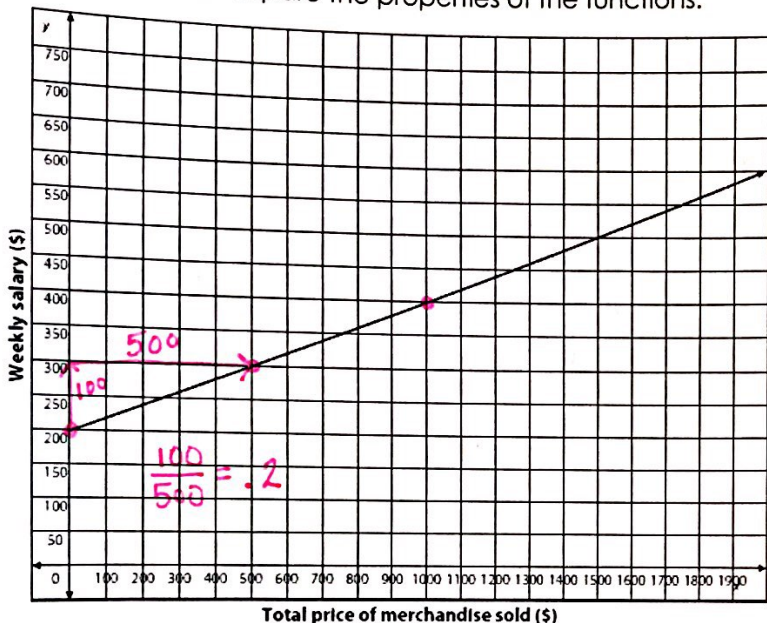


Day 7: Comparing Multiple Representations of Functions

Name: Key

Block: _____

1. Your employer has offered two pay scales for you to choose from. The first option is to receive a base salary of \$250 a week plus 15% of the price of any merchandise you sell. The second option is represented in the graph below. Compare the properties of the functions.



First Option $y = 250 + .15x$

y-intercept: \$250
Starting salary

slope: .15
15% of merchandise sold

Second Option

y-intercept: \$200
Starting salary

slope: .20
20% of merchandise sold

a. Which function has a higher starting salary and why?

The first option has a higher starting salary. (\$250 vs \$200)

b. Which function has a greater commission rate and why?

The second option has a higher commission rate (20% vs 15%)

2. Compare the properties of the functions below in terms of the problem situation:

Rental Store A
A rental store charges \$40 to rent a steam cleaner, plus an additional \$4 per hour.

Rental Store B
The table below shows the total cost in dollars to rent a steam cleaner at a different rental store, $g(x)$ represents the total cost after x hours.

Hours (x)	Total cost ($g(x)$)
3	46
4	53
5	60
6	67

a. Which function has a higher starting price and why?

Rental Store A charges more to start (\$40 vs \$25)

b. Which function has a higher rental cost per hour and why?

Rental Store B charges \$7 per hour while Rental Store A charges \$4 per hour.

2 39
1 32
0 25

3. Compare the properties of the functions below in terms of the problem situation:

Job Offer A

Jazlynn received a job offer with a starting salary of \$32,000 and a 1.5% increase every year.

Job Offer B

She received a second job offer represented by the following equation:

$$f(x) = 30,000(1 + 0.02)^x$$

2% raise

a. Which function has a higher starting salary and why?

Job Offer A offers a starting salary of \$32,000 vs Offer B which starts at \$30,000.

b. Which function has a greater pay increase rate and why?

Job Offer B offers a 2% raise whereas Offer A offers a raise of 1.5%.

4. Compare the properties of the functions below in terms of the problem situation:

Allatoona High School

The enrollment of Allatoona High School, $f(x)$, after x years is modeled by the function $f(x) = 1700(1 + 0.025)^x$.

Harrison High School

The following table shows the enrollment of Harrison High School, $g(x)$, after x years.

x	$g(x)$
0	1900
1	1872
2	1843
3	1816
4	1789

a. Which school has a higher starting population and why?

Harrison starts at 1900 students whereas Allatoona starts with 1700.

b. Which function has a greater enrollment rate and why?

Allatoona is gaining students at a rate of 2.5%. Harrison is losing students at a rate of 1.5%.

5. Three turtles are running a race. They are free to roam in any direction. The following are their information from the starting line in t number of seconds. *minutes*

Elmer: $E(t) = t^2 - 4t + 4$

$E(t) = 40$

Between 8 and 9 minutes

Fred: $F(t) = 3(t-2)^2 - 18$

$F(t) = 40$

Between 6 and 7 minutes

looked at table

George:

x	1	2	3	4	5	6	7	8
$G(t)$	-18	-20	-18	-12	-2	12	30	52

+2 +6 +10 +14 +18 +22

a. Which turtle is winning the race at $t = 2$?

use table { Elmer: 0
Fred: -18 ft

Elmer is winning at $t=0$

b. Which turtle is winning the race at $t = 6$?

George: -20 ft

use table { Elmer: 16 ft
Fred: 30 ft
George: 12 ft

Fred is now winning at $t=6$.

c. Who would you predict to win the race if the race was 40 feet long and why?

I would predict Fred to win as he should cross the line between 6 and 7 minutes

6. Three students are shooting wads of paper with a rubber band, aiming for a trash can in the front of the room. The height of each student's paper wad, in feet, is given as a function of the time in seconds. Which student's paper wad flies the highest?

- The path of Micaiah's paper was is modeled by the equation $f(x) = -x^2 + 2x + 7$ *8 ft*
- After 3 seconds, Trey's paper wad achieves a maximum height of 6.5 feet above the floor. *6.5 ft*
- Quincy's paper wad is estimated to reach the heights shown in the table below. *7 ft*

x	0	2	3	4
y	3	6	7	6

$x = \frac{-b}{2a} = \frac{-2}{2(-1)} = \frac{-2}{-2} = 1$

$y = -(1)^2 + 2(1) + 7$
 $y = 8 \text{ ft}$

micaiah's paper wad went the highest at 8 ft.