

2. Two contestants on Biggest Loser are Valerie and Oscar. Their weight loss progress is shown below.

Valerie's weight loss is shown by this function, where W is her weight in pounds and t is the time in weeks.

$$m = -2.5 \quad W = 235 - 2.5t$$

$$b = 235$$

Oscar's weight loss is tracked in the table below.

| | | | | |
|--------|-----|-----|-----|-----|
| Weeks | 0 | 2 | 5 | 6 |
| Weight | 247 | 243 | 237 | 235 |

$$m = \frac{\Delta y}{\Delta x} = \frac{-4}{2} = -2$$

- Who weighed more at the beginning of the show? (b-intercepts)

Oscar because $247 > 235$.

- Who is losing weight faster? (slope)

Valerie because she loses 2.5 lbs. per week and Oscar loses 2 lbs. per week.

3. Mr. Rich recently planted a crop of money trees in his garden.

A. $m=4$ $b=5$

The first tree was five inches tall when planted. It has grown four inches every month since being planted. $y=4x+5$

B.

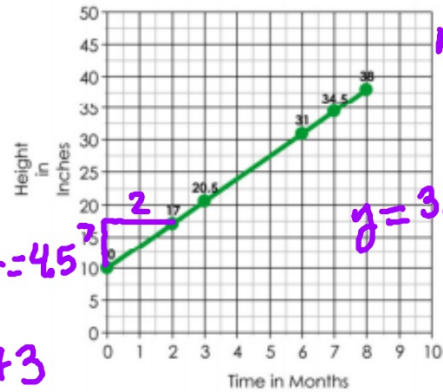
Measurements were taken of the second tree and given below:

| | | | | |
|--------|---|----|------|------|
| Months | 0 | 2 | 3 | 5 |
| Height | 3 | 12 | 16.5 | 25.5 |

$+2$ $+1$ $+2$ $b=3$
 $m = \frac{\Delta y}{\Delta x} = \frac{9}{2} = 4.5$
 $y = 4.5x + 3$

C.

Money Tree Growth



$b=10$
 $m = \frac{\Delta y}{\Delta x} = \frac{7}{2} = 3.5$

$y = 3.5x + 10$

- Which of the trees is growing the fastest? (slope)
Tree B because 4.5 is greater than 4 and 3.5.
- Which tree was the tallest when it was first planted? (y-intercept)
Tree C because 10 is greater than 5 and 3.
- Challenge: Which tree is the tallest after 6 months?

TC = 31 in. TA - $4x+5 = 29$ TB - $4.5x+3 = 30$

Tree C

3. Mr. Rich recently planted a crop of money trees in his garden.

A.

The first tree was five inches tall when planted. It has grown four inches every month since being planted.

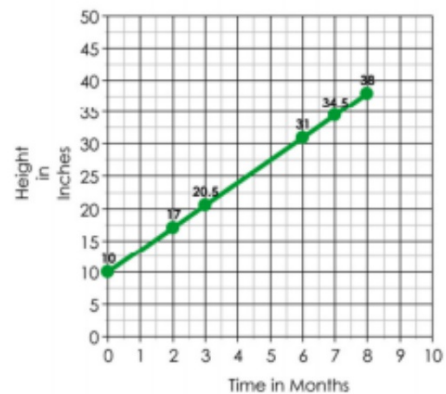
B.

Measurements were taken of the second tree and given below:

| | | | | |
|--------|---|----|------|------|
| Months | 0 | 2 | 3 | 5 |
| Height | 3 | 12 | 16.5 | 25.5 |

C.

Money Tree Growth



- Which of the trees is growing the fastest?

Tree B. It is growing 4.5 inches per month; Tree A grows $4 \frac{\text{in}}{\text{mo}}$ and Tree C grows $3.5 \frac{\text{in}}{\text{mo}}$.

- Which tree was the tallest when it was first planted?

Tree C. It was 10 inches tall when planted. Tree A was 5 inches, and Tree B was 3 inches.

- Challenge: Which tree is the tallest after 6 months?

Tree C. It will be 31 inches tall. Tree A will be 29 inches tall, and Tree B will be 30 inches tall.

4. Tony is the best pizza deliveryman in the city. He has been offered jobs by all the best pizza places.

Bombinoes' Pizza is offering \$56 per shift and \$2.50 in commission for each pizza delivered.

$m=2.5$ $b=56$
 $y=2.5x+56$
 $b=48$

Little Squeezer's showed Tony a table of salaries.

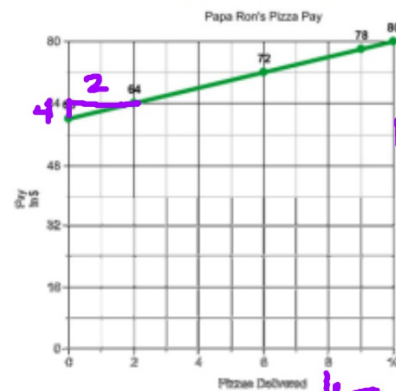
| | | | | |
|--------|----|----|----|----|
| Pizzas | 0 | 2 | 4 | 10 |
| Salary | 48 | 54 | 60 | 78 |

$m = \frac{\Delta y}{\Delta x} = \frac{6}{2} = 3$
 $y = 3x + 48$

Pizza Tent has given Tony his pay options in the following function. S represents Tony's salary, and p represents the number of pizzas he delivers.

$m = 2.75$ $S = 2.75p + 52$ $b = 52$

Papa Ron's made their offer in the form of this graph.



$y = 2x + 60$

- Which company pays the best pay per shift? (y-intercept)
Papa Ron's because \$60 is greater than 48, 52 and 56.
- Which company pays the most per pizza? (slope)
Little Squeezer's because 3 is greater than 2, 2.5 and 2.7!
- Challenge: If Tony is going to deliver at least 20 pizzas every night, which company should he work for?
BP: $2.5(20) + 56$ LS: $3(20) + 48$ PR: $2.75(20) + 52$ PR: $2(20) + 60$
 $50 + 56$ $60 + 48$ $55 + 52$ $40 + 60$
106 **108** **107** **100**

4. Tony is the best pizza deliveryman in the city. He has been offered jobs by all the best pizza places.

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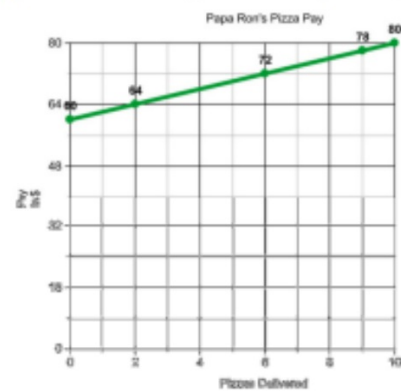
Little Squeezer's showed Tony a table of salaries.

| | | | | |
|--------|----|----|----|----|
| Pizzas | 0 | 2 | 4 | 10 |
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Pizza Tent has given Tony his pay options in the following function. S represents Tony's salary, and p represents the number of pizzas he delivers.

$$S = 2.75p + 52$$

Papa Ron's made their offer in the form of this graph.



- Which company pays the best pay per shift?
Papa Ron's pays the best flat salary at \$60 per shift.
- Which company pays the most per pizza?
Little Squeezer's pays the most per pizza at \$3 per pizza.
- Challenge: If Tony is going to deliver at least 20 pizzas every night, which company should he work for? He should work for **Little Squeezer's**. He will earn \$108 for delivering 20 pizzas. For 20 pizzas, *Bombinoes'* would pay \$106, *Pizza Tent* would pay \$107, and *Papa Ron's* would pay \$100. After this point **Little Squeezer's** will always be his best choice because it has the highest pay per pizza.

Determine which object (A or B) is traveling at greater speed.

$A < B$

(A)

$m = 100$ $y = 100x$

x is time in hours
 y is distance in miles

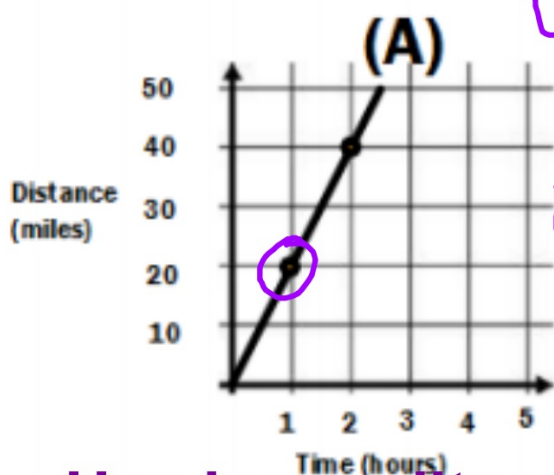
(B)

| x | y |
|-----|------|
| 3 | 600 |
| 4 | 1200 |
| 5 | 1800 |

$m = \frac{\Delta y}{\Delta x} = \frac{600}{1} = 600$

Use inequality symbols to represent which object is traveling at a greater speed.

Determine which object (A or B) is traveling at greater speed.



$$A > B$$

$$m = \frac{20}{1} = 20$$

(B)

$$d = 15t \quad m = 15$$

d is distance in miles
t is time in hours

Use inequality symbols to represent which object is traveling at a greater speed.

The function $m = 140h$, where m is the miles traveled in h , hours represents the speed of the first Japanese high speed train. The speed of a high speed train operating today in China is shown in the table.

| Hours | Miles |
|-------|-------|
| 1 | 217 |
| 2 | 434 |
| 3 | 651 |

+1 () 217
 +1 () 434 } 217
 +1 () 651 } 217
 $m = 217h$

a) Compare the functions.

$$m = 140h$$

$$m = 217h$$

b) If you ride each train for five hours, how far will you travel on each train?

$$m = 140(5)$$

$$m = 700$$

700 miles on Japanese

$$m = 217(5)$$

$$m = 1085$$

1085 miles on China

In the U.S. you have many options for places to wash your car.

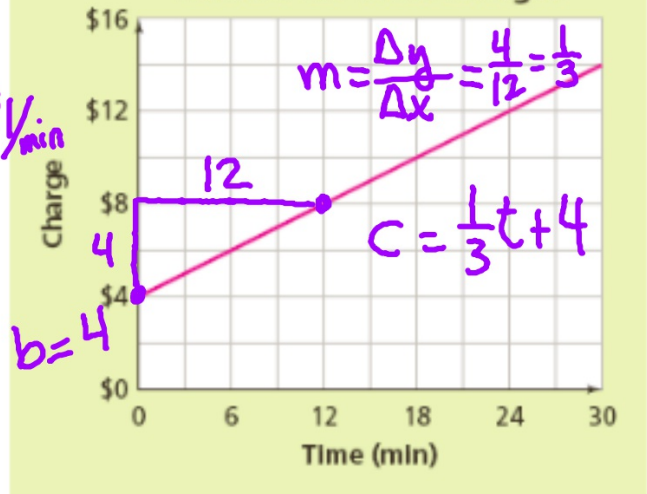
Here are two different car wash locations:

Squeaky Clean Car Wash Charges

| | | | | | |
|------------|-----|------|------|------|------|
| Time (min) | 5 | 10 | 15 | 20 | 25 |
| Charge | \$8 | \$13 | \$18 | \$23 | \$28 |

Handwritten notes for the table: $b=3$ (pointing to the charge at 0 min), $m = \frac{\Delta y}{\Delta x} = \frac{5}{5} = 1/\text{min}$ (with arrows showing the slope calculation between points).

Euclid's Car Wash Charges



a) Compare the functions relating charge c to time t in minutes

Handwritten equations: $c = 1t + 3$ and $c = \frac{1}{3}t + 4$

b) If you wash your car for eight minutes, which car wash will cost less and by how much?

Handwritten calculations for Squeaky Clean: $c = 1(8) + 3$, $c = 8 + 3$, $c = 11$

Handwritten calculations for Euclid's: $c = \frac{1}{3}(8) + 4$, $c = \frac{8}{3} + 4$

Handwritten calculations: $c = 6\frac{2}{3}$, $c = 7$, and the conclusion "Euclid's is less by \$4".

DIRECTIONS: In each problem determine which situation has the greatest rate of change (slope) and which situation has the smallest rate of change (slope). State what the rate of change (slope) is in BOTH cases. Write a FULL solution.

1- Below are representations of CJ, Holland, and Brandon's speed as they run a race.

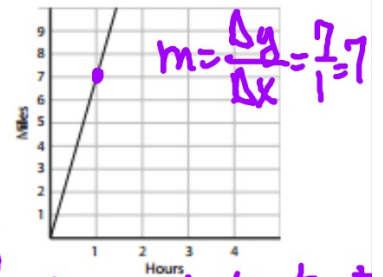
CJ:

| x (hours) | y (miles) |
|-----------|-----------|
| 0 | 0 |
| 2 | 13 |
| 4 | 26 |
| 6 | 39 |

$m = \frac{\Delta y}{\Delta x} = \frac{13}{2} = 6.5$

Holland: $y = 6x$
 $y = mx$
 $m = 6$

Brandon:



Holland has the smallest speed at 6 mph. Brandon has the greatest rate at 7 mph.

2- Below are representations of Smith's, Harmon's, and Macey's price on hamburger.

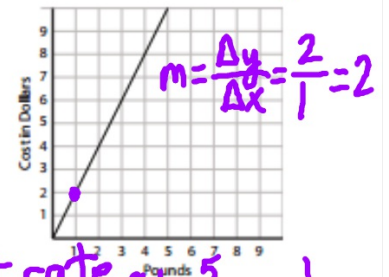
Smith's:

| x (pounds) | y (dollars) |
|------------|-------------|
| 0 | 0 |
| 4 | 5 |
| 8 | 10 |
| 12 | 15 |

$m = \frac{\Delta y}{\Delta x} = \frac{5}{4}$

Harmon's: $y = \frac{7}{2}x$
 $y = mx$
 $m = \frac{7}{2}$

Macey's:



Smith's is the smallest rate at $\frac{5}{4}$ and Macey's is the greatest at $\frac{7}{2}$.

DIRECTIONS: In each problem determine which situation has the greatest rate of change (slope) and which situation has the smallest rate of change (slope). State what the rate of change (slope) is in BOTH cases. Write a FULL solution.

3- Below are representations of Tyler, Aubri, and Kyote's speed as they swim.

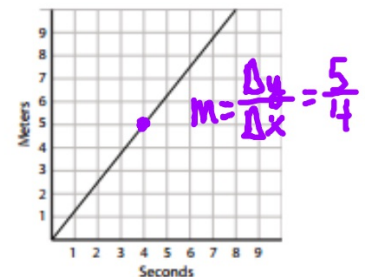
Tyler:

| x (seconds) | y (meters) |
|-------------|------------|
| 0 | 0 |
| 4 | 6 |
| 8 | 12 |
| 12 | 18 |

$$m = \frac{\Delta y}{\Delta x} = \frac{6}{4} = \frac{3}{2}$$

Aubri: $y = \frac{3}{2}x$
 $y = mx$
 $m = \frac{3}{2}$

Kyote:



Aubri and Tyler have the greatest speed at $\frac{3}{2}$ while Kyote has the smallest speed at $\frac{5}{4}$.

HW: 1st page of review sheet

