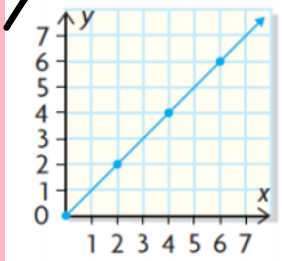
Thursday, May 18

1. Which of the following is non-linear?

A)



B)

x	y
−3	9
−2	4
−1	1
0	0

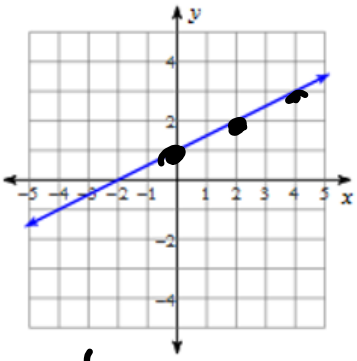
C)

x	y
5	1
6	2
7	3
8	4

D)

x	y
1	0.25
2	0.50
3	0.75
4	1.00

2. What is the equation of the graphed line?



A) $y = x - 1$

B) $y = -x + 1$

C) $y = \frac{1}{2}x + 1$

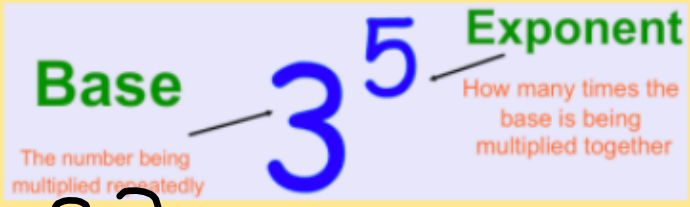
D) $y = -\frac{1}{2}x + 1$

Exponents and Scientific Notation EOG Review

Exponents

$(-3)^2 = 9$

$(-3)^3 = -27$



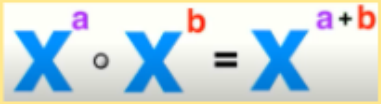
Evaluating

- Multiply the base by itself however many times the exponent tells you to
- When you have a negative base and your exponent is even, your answer is positive
- When you have a negative base and your exponent is odd, your answer is negative
- ***Anything to the zero power is one!!***

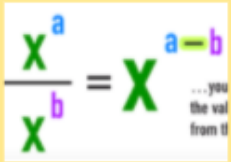
Exponents

Simplifying

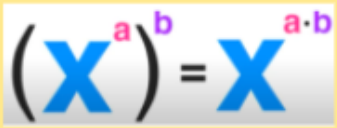
- When multiplying…
  Leave the base the same and add the exponents



- When dividing…
  Leave the base the same and subtract the exponents



- When raising a power to a power…
  Leave the base the same and multiply the powers



We Do

What is the value of $\frac{4^3 \cdot 4^{-1} \cdot 5^{-2}}{4^4 \cdot 5^{-3} \cdot 5^0}$?

$\frac{4^3}{4^5}$ $\frac{4^3}{4^1 4^4}$ $\frac{5^3}{5^2 5^0}$ $= \frac{4 \cdot 4 \cdot 4 \cdot 5 \cdot 5 \cdot 5}{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 5 \cdot 5} = \frac{5}{16}$

$4^{3-5} = 4^{-2}$ 5^2

Which expression is equivalent to $(4^4 \cdot 4^3)^2$?

A. 4^2

B. 4^5

C. 4^{14}

D. 4^{24}

$(4^7)^2$

$4^8 \cdot 4^6$

4^{14}

What is the value of the expression $(2^2)(2^{-2}) \div (2^{-3})$?

A. 8

B. 2

C. $\frac{1}{2}$

D. $\frac{1}{8}$

$$\frac{(2^2)(2^{-2})}{2^{-3}}$$

$$\frac{2^2 \cdot 2^3}{2^2} = \frac{2^5}{2^2} = 2^{5-2} = 2^3$$

$$2 \cdot 2 \cdot 2$$

The area of the surface of the Atlantic Ocean is approximately 31,830,000 square miles. How is this area written in scientific notation?

A 3.183×10^4

B 3.183×10^5

C 3.183×10^6

D 3.183×10^7

A light year is defined as the distance light travels in one year. One light year is 9.46×10^{12} kilometers. A galaxy is about 150,000 light years wide. ***About*** how many kilometers wide is the galaxy?

A 1.419×10^{16} C 1.419×10^{18}

B 1.419×10^{17} D 1.419×10^{19}

LY / KM $\frac{1}{9.46 \times 10^{12}} = \frac{150000}{x}$

1.5×10^{5}

14.19×10^{17} $\approx 1.4 \times 10^{18}$

Suppose that a scientist estimates that every square mile of the ocean contains an average of 4.6×10^{4} pieces of trash. The area of the Earth's surface that is covered by oceans is approximately 1.2×10^{8} square miles. Using the estimate, how many pieces of trash are in the Earth's oceans?

A 5.5×10^{12} C 3.4×10^{4}

B 1.2×10^{8} D 2.6×10^{3}

$\frac{1 \text{ mi}}{4.6 \times 10^{4} \text{ tr}} = \frac{1.2}{}$

Students do front of worksheet (go onto back if time).

The Winning Goal

Coleman's Touchdown

The Winning Goal

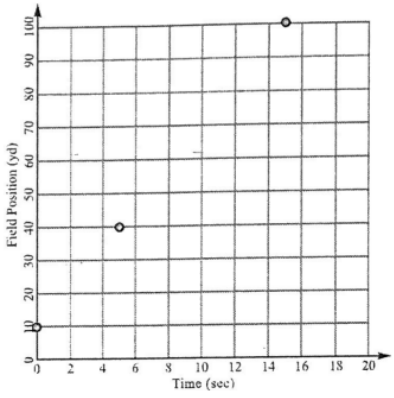
Kaitlin and Brea are teammates on the field hockey team. Their team is currently near the end of a game. The score is tied, and one of the current players is tired. The coach has to determine who to send in as a substitute, Kaitlin or Brea. She needs the faster player to help set up what could be the winning goal.

The coach collected data for each player earlier in the game. Kaitlin's data are shown in the table, and Brea's data in the graph.

KAITLIN

x TIME (sec)	y FIELD POSITION (yd)
3	21
5	35
9	63

BREA



1. Create an equation in slope-intercept form that could be used to predict Kaitlin's position at any time.

$y = 7x$

Students could determine the slope by using the table or a graph of the data.

2. Create an equation in slope-intercept form that could be used to predict Brea's position at any time.

$y = 6x + 10$

Students can identify the points (0,10), (5,40), and (15,100) from the graph.

3. Which player should the coach send in? How did the equations help you with the decision? Explain how you arrived at your answer.

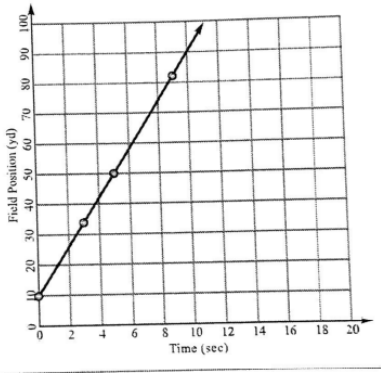
The coach should put Kaitlin in because she is faster. Students should look at the coefficient of x in each equation, which represents the speed of the player.

Answer Key – Coleman's Touchdown

Coleman is a very fast running back on the football team. The coach recorded his times during a play that resulted in a touchdown. The play started on the 10-yard line. The data for Coleman's run are given in the table below.

x TIME (sec)	y FIELD POSITION (yd)
0	10
3	34
5	50
9	82

1. Plot the data points on the graph. Connect the points with a line.



2. What is the value of the y-intercept for the graph?

(0,10) *or* 10 yards

3. Extend the line to predict when Coleman scored the touchdown. (**Hint:** A touchdown is scored when the field position is 100 yards.)

Coleman scored a touchdown at 11.25 seconds *or* about 11 seconds.

4. Use the data provided to calculate Coleman's speed during the time intervals given below.

TIME INTERVAL	SPEED
0 to 3 seconds	$\left[\frac{34-10}{3-0}=8 \text{ yd/sec}\right]$
3 to 5 seconds	$\left[\frac{50-34}{5-3}=8 \text{ yd/sec}\right]$
5 to 9 seconds	$\left[\frac{82-50}{9-5}=8 \text{ yd/sec}\right]$
9 seconds to when he scored a touchdown	$\left[\frac{100-82}{11.25-9}=8 \text{ yd/sec}\right]$

5. What do you notice about Coleman's speed?

It stayed the same *or* it was consistent.

Note: At this point, you may wish to ask students what type of graph this is. They should notice it's linear. A linear graph always has the same rate of change. This may not be obvious to all students.

6. Create an equation in slope-intercept form that can be used to predict Coleman's field position at any time.

$y=8x+10$

7. Sergio claims that he is faster than Coleman. Sergio said his soccer coach told him he was timed at 7 yards per second. Who is faster, Coleman or Sergio? How do you know? Explain your answer mathematically.

Coleman is faster. Coleman runs at 8 yd/sec, so he is 1 yd/sec faster than Sergio.

HW due Friday: ALEKS EOG Review

Don't forget:

65% of pie complete by 6/2

Replacement assignment on ALEKS due 5/31

EOGs start tomorrow with Reading

1. Get a good night's sleep

2. Eat a decent breakfast

3. Since the computers will be set up inside the classroom, we will have to wait in the hallway

4. Phones and digital watches will go off and in bookbag and in the front of the room