Today's Materials
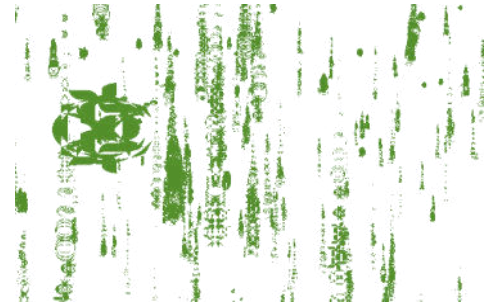

- Homework 4.14
- Packet
- Chromebook
- Can do attitude

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Inverse Functions

Lesson 15

15.1 What Does It Say?

10 minutes → Pg 25

WRGDB LV D JRRG GDB.

Can you figure out what it says in English? How was the original message encoded?

What strategies did you try????

The message says........

TODAY IS A GOOD DAY.

WRGDB LV D JRRG GDB.

How'd they do that?

YOU GOTTA BE KITTEN ME!

The message is coded using a shift 3 cipher.

Each letter is shifted over 3 letters.

plain text	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
cipher text	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	A	B	C

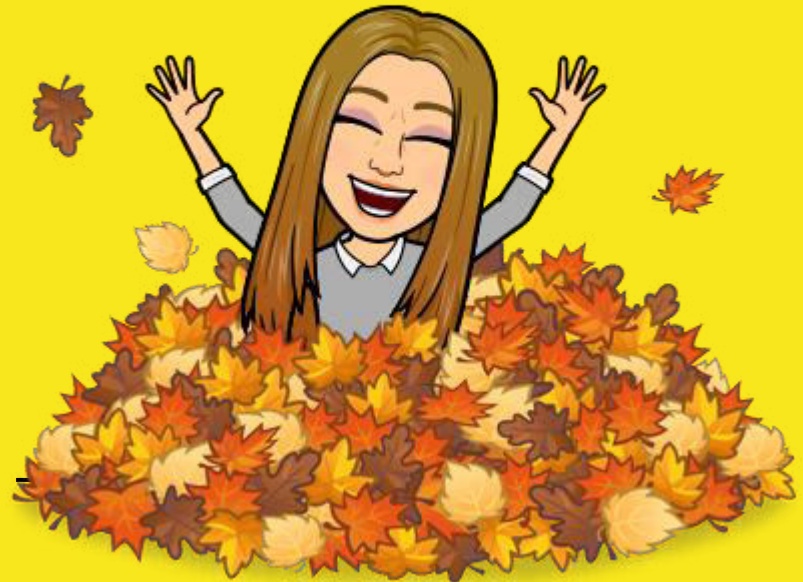What does JRRG IRRG say?

Let's define functions forward and backward.

- I understand the meaning of an "inverse function" and how it could be found

- When given a linear function that represents a situation, I can use words and equations to describe the inverse function.

Goals!

15.2 Caesar Says Shift

15 min
Pg 25

via Nat Geo Wild on GIPHY

#1) Now it's your turn!

- Write a *short* and *friendly* message

- Pick a # from 1-10. This will by your shift.

- Create a key for your cipher and encode your *short* and *friendly* message

- After you're done encoding, trade with someone on your team and decipher eachother's message.

You have 8 minutes!

CHALLENGE Accepted!

#2) Suppose m and c each represent the position number of a letter in the alphabet, but m represents the letters in the orginal message and c the letters in your secret code.

What the heck does that mean???.

plain text	A	B	C	D	E	F	G	H	I	J
cipher text	D	E	F	G	H	I	J	K	L	M

a.)

letter in message				
m	6	9	19	8
c				
letter in code				

b.) Use m and c to write an equation that can be used to *encode* an original message into your secret code.

c.) Use m and c to write and equation that can be used to *decode* your secret code into the original message.

Let's share our equations!

How are the two equations alike?

How are they different?

Are they functions?

Here's an example from another period…. It's a shift 3 cipher

$c=m+3$ and $m=c-3$

15.3 U.S. Dollars and Mexican Pesos

10 min   Pg 27

An American traveler who is heading to Mexico exchanges some U.S. dollars for Mexican pesos. At the time of his travel, 1 dollar can be exchanged for 19.32 pesos.

At the same time, a Mexican businesswoman who is in the United States is exchanging some Mexican pesos for U.S. dollars at the same exchange rate.

1. Find the amount of money in pesos that the American traveler would get if he exchanged:

a. 100 dollars

b. 500 dollars

Answer #1-4 with your team.

An American traveler who is heading to Mexico exchanges some U.S. dollars for Mexican pesos. At the time of his travel, 1 dollar can be exchanged for 19.32 pesos.

At the same time, a Mexican businesswoman who is in the United States is exchanging some Mexican pesos for U.S. dollars at the same exchange rate.

Viva México

How'd it go??

1. a. 1,932 pesos

    b. 9,660 pesos

2. $p = 19.32d$

3. a. About 51.76 dollars

    b. About 258.80 dollars

4. Sample response: The inverse function would help the businesswoman to quickly find the dollar amount for any amount of pesos. The equation is $d = \frac{p}{19.32}$ (or equivalent).

Synthesis

1) The amount of money in cents, *c*, is a function of the amount in dollars, *d*. What equation can we write to represent this function?

2) How can we find the **inverse function**?

Did we meet our goals?

- I understand the meaning of an "inverse function" and how it could be found

- When given a linear function that represents a situation, I can use words and equations to describe the inverse function.
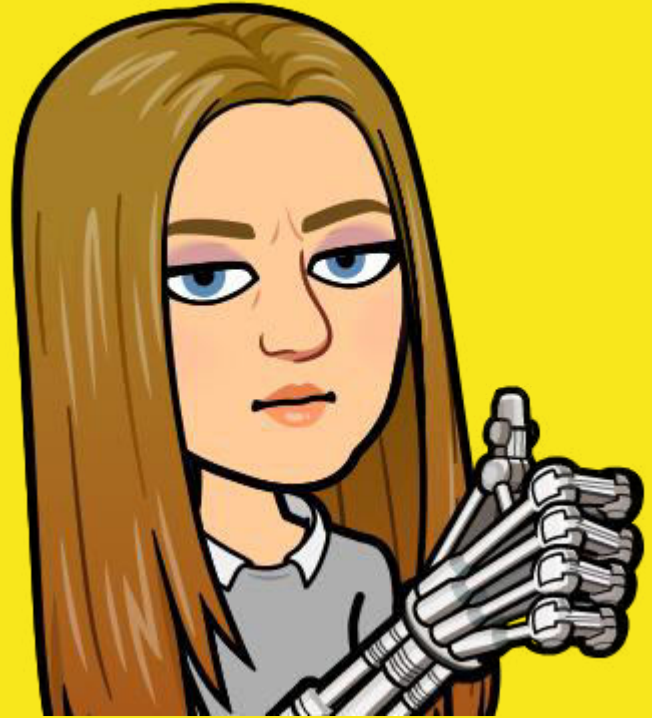
15.4: To and From Kelvin

5 minutes → Cool Down