2.2 Class Notes

2.2 Shh... Please be Discrete

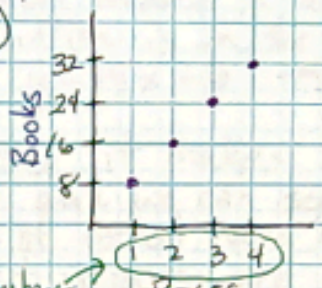
Learning Targets:

- Linear vs. exponential
- Discrete vs. continuous
- Domain

1. 8 books per box

(Boxes) n	f(n) (Books)
1	8
2	16
3	24
4	32

Domain – Natural numbers



$f(n) = 8n$ ← We only use natural numbers.

Linear or exponential?

Discrete or continuous?

1. Domain – the input values, the x values, or the independent variable.

Where do we see the domain in a...

table? The left side → 1, 2, 3

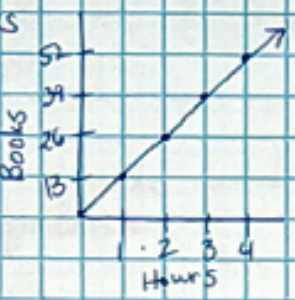
graph? 

equation? $f(n) = 5n - 7$

Any number we put in for n is the domain.

3. Ebooks → 13 e-books download in one hour

hour n	f(n) books	
1	13	+13
2	26	+13
3	39	+13
4	52	



$f(n) = 13n$

Discrete or Continuous?

Because it makes sense to look at all the time between the hour marks.

Linear or Exponential?

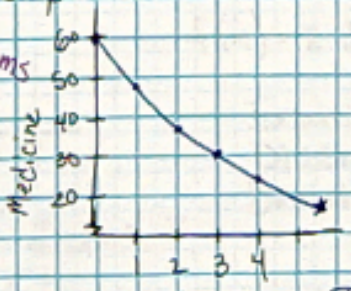
Because: the table shows we add 13 each hour, the graph shows a straight line, and the function is in the form of a line

$y = mx + b \rightarrow f(x) = 13n + 0$

Domain – Since it makes sense to look at any time and we can see how many books (or parts of books) have been downloaded, the input values are all the numbers → ℝ. (real #)

4. Medicine dissipates over time (20% decrease)

hours n	f(n) milligrams of medicine	
0	60	×.8
1	48	×.8
2	38.4	×.8
3	30.72	×.8
4	24.576	



$f(n) = 60 \cdot .8^n$

Discrete or Continuous?

The medicine's effectiveness decreases gradually, not all at once.

Linear or Exponential?

Multiplying in the table, curved in the graph, equation has the variable as the exponent.

Reflection: