Before we begin, are there any questions from last day's work?

Today's Learning Goal(s):

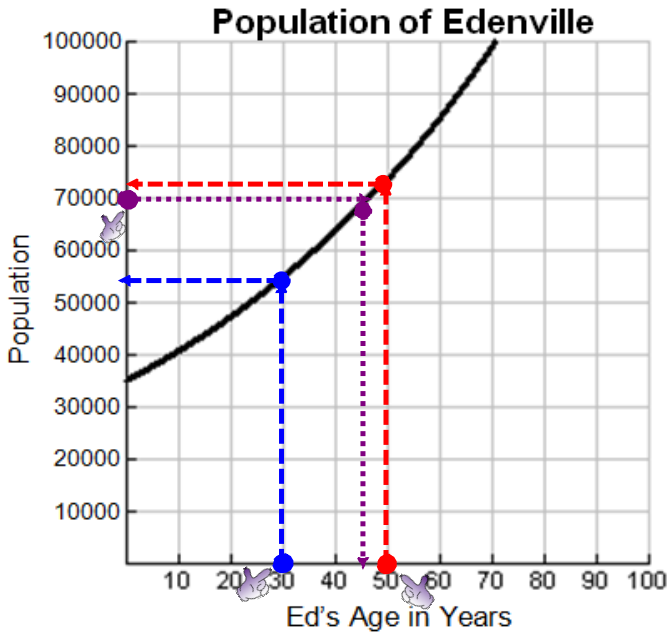
By the end of the class, I will be able to:

a) draw upon prior knowledge of interpreting graphs
b) recognize the logarithm of a number to a given base as the exponent to which the base must be raised to get the number
c) determine the approximate logarithm of a number to any base by using systematic trial

1.6.1 Interpreting Graphs

Date: Feb 15/17

When Ed was born, his town of Edenville had a population of 35 000.
The average yearly growth rate since then has been 1.5%. The population of the town is recorded in the graph below.

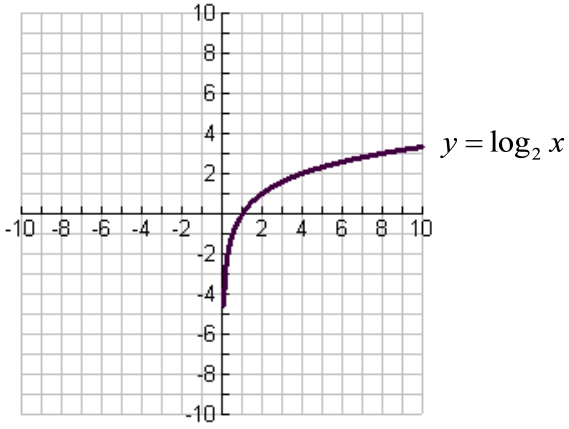


1. Using the graph, what was the population of Edenville on Ed's 30th birthday?
   - tap above the blue dot (first)
   - ≐ 55 000 (half way between 50 000 and 60 000)
2. Using the graph, what was the population of Edenville on Ed's 50th birthday?
   - tap above the red dot (next)
   - ≐ 72 250 (about $\frac{1}{4}$ way between 70 000 and 80 000)
3. How old will Ed be when the population of the town doubles in size from the time he was born?
   - tap to the right of the purple dot (3rd)
   - ≐ Use 70 000 ∴ between 45 and 47 years old
4. Explain how the characteristics of the graph may indicate exponential growth.
   - -it is non-linear
   - -it is increasing in steepness from left to right

1.6.2 Approximate Logarithms of a Number

Date: _____

Consider the graph of $y = \log_2 x$.



1. Using the graph of $y = \log_2 x$, if $x = 2$ determine the value of y.

$y = \log_2 2$

$\therefore y = 1$

2. Using the graph of $y = \log_2 x$, if $x = 4$ determine the value of y.

$y = \log_2 4$

$\therefore y = 2$

3. Using the graph of $y = \log_2 x$, if $x = 8$ determine the value of y.

$y = \log_2 8$

$\therefore y = 3$

4. How would you evaluate $\log_2 32$, without using the graph? Explain your reasoning.

The log function is "exponential".

$\therefore 2^y = 32$

$\therefore y = 5$

5. In your groups, discuss how you would evaluate $\log_2 6$, both with and without the graph.

With the graph: $x = 6$ (between 2.5 & 2.7) $\therefore y \doteq 2.6$

Without the graph, $\because 2^y = 6$ (then use trial and error)

Read pp.336-337, then complete p.338 #4, 6, 7

Complete 1.6.3 "Breaking Logs" activity.
If away, then begin tomorrow's lesson with it.

Review the learning goals. Were we successful today?

Homework: **Read pp.336-337**

p. 338 # 4, 6, 7

Answer any remaining homework questions
Students ask for "at desk" clarification.

$\text{Base}^{\text{Exponent}} = \text{Answer}$

$\log_{\text{Base}} \text{Answer} = \text{Exponent}$

ex $y = \log_2 8$

$y = 3$

$\therefore 3 = \log_2 8$ $\quad \because 2^3 = 8$

$\log 1000 = 3$