

Happy New Year

find your new seat

Agenda this week

→ 4 day unit on skill transfer from Algebra I (sequences, expon. functions and exponents)

→ Start ch. 2 next Monday

Make sure you know each other's names. (in your group) of 2 or 4

Then pick up the Warm Up

With each function: underline if its a linear function, circle if its an exponential function and leave blank if it is neither

① $f(x) = 5(2)^x$ $f(x) = 3x^2$ $f(x) = 3x - 2$ $f(x) = 3(4)^{x^2}$

$f(x) = 3 + 5(x-1)$ $f(x) = 1.2^x$ $f(x) = 3(1)^x$ $y = 7x$

$f(x) = 10(1.2)^x$ $f(x) = 3(2)^x$

② A bacteria decays at a rate of 30% per hour. If there are 2000 bacteria to start with:

a) Write an equation that will represent the number after t hours.
 $t_n = 2000(.7)^t$ $f(t) = 2000(.7)^t$

b) How much will be left in 8 hours?
 $f(8) = 2000(.7)^8 = 115.3$ bact

c) Approximately, when will there be only 2 bacteria left?

$2 = 2000(.7)^t$

In about 19.4 hours there will be 2 bacteria

wait for instructions $100 + 14\%$

Percent Growth

③ Forca the sequence to grow by 14% multiplier 1.14

120, 136.8, 155.952, 177.79, ...

$y = 120(1.14)^{x-1}$

$y = db^x$

④ Force 10,000 to decrease by 2.5% multiplier 0.975

1000, $\frac{975}{100}$, $\frac{950.625}{100}$, $\frac{926.8125}{100}$

$$y = 1000(0.975)^x$$

$100 - 2.5 = 97.5$
÷100

⑤ Start with 1000 ANTS. Write a formula
so it grows by 8.1% multiplier _____

formula _____

How many weeks would it take to reach 80,000 ants?

New
recording sheet it's yellow

with one assignment so far.....
solutions are available (green)

Four Day Unit

Transfer Skill Review from Alg/Geom
before starting Chapter 2

GDC tidbit
battery usage

what if exponents are
negative ????

What if there were negative exponents?

$$\left(\frac{3}{5}\right)^{-1} = \left(\frac{5}{3}\right)^1 = \boxed{\frac{5}{3}}$$

$$5^{-1} = \left(\frac{5}{1}\right)^{-1} = \frac{1}{5}$$

$$\left(\frac{a}{de}\right)^{-1} = \boxed{\frac{de}{a}}$$

$$\left(\frac{1}{x}\right)^{-1} = \frac{x}{1} = \boxed{x}$$

$$\left(\frac{1}{4}\right)^{-2} = \left(\frac{4}{1}\right)^2 = \frac{16}{1} = \boxed{16}$$

$$\frac{1}{3^1} = \frac{1}{3^1}$$

$$\left(\frac{x}{y}\right)^{-3} = \left(\frac{y}{x}\right)^3 = \boxed{\frac{y^3}{x^3}}$$

$$\frac{1}{x^{-2}} = \boxed{x^2}$$

$$\left(\frac{3x}{y}\right)^{-2} = \left(\frac{y}{3x}\right)^2 = \boxed{\frac{y^2}{9x^2}}$$

$$e^{-2} = \boxed{3e^2}$$

$$a^2 b^{-2} \cdot a^3 \cdot b^4 = a^4 a^3 \cdot b^{-2} b^4 = \boxed{a^7 b^2}$$

$$x^4 y^2 \cdot x^{-5} y^2 = x^{-1} y^4 = \boxed{\frac{y^4}{x}}$$

$$\frac{n^8}{n^{-2}} = \frac{n^8 n^2}{1} = \boxed{n^{10}}$$

$$\frac{5x^{-3}}{x^6} = \frac{5}{x^6 x^3} = \boxed{\frac{5}{x^9}}$$

$$\frac{(n^2 m^{-4})^2 \cdot n^5 m^{-2}}{(n^2 m^{-4})^2} = \boxed{\frac{n^9}{m^{10}}}$$

$$\frac{n^4 m^{-8} \cdot n^5 m^{-2}}{n^9 m^{-10}} = \boxed{\frac{n^9}{m^{10}}}$$

Each pair should pick up and work on one handout.

Exponent Review

Boot camp

Manipulating Powers

- Exponent LAWS (Add to your toolbox)
- | | | |
|--------------------------------|---|-----------------------------|
| 1) $(a^x)^y = a^{xy}$ | 4) $(ab)^x = a^x b^x$ | 7) $\frac{1}{a^x} = a^{-x}$ |
| 2) $a^x \cdot a^y = a^{x+y}$ | 5) $\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$ | |
| 3) $\frac{a^x}{a^y} = a^{x-y}$ | 6) $a^{-x} = \frac{1}{a^x}$ | |

Handout

Exponent LAWS
(Add to your notes)

Manipulating Powers

1) $(a^x)^y = a^{xy}$	4) $(ab)^x = a^x b^x$	7) $\frac{1}{a^x} = a^{-x}$
2) $a^x \cdot a^y = a^{x+y}$	5) $\left(\frac{a}{b}\right)^x = \frac{a^x}{b^x}$	
3) $\frac{a^x}{a^y} = a^{x-y}$	6) $a^{-x} = \frac{1}{a^x}$	

Simplify each expression.
Example: $(x^2)^4 = x^{2 \cdot 4} = x^8$

1. $x^4 \cdot x^2 = x^6$
Use the 2nd law

2. $\frac{x^2 \cdot x^8}{x^8} = x^2$

3. $(x^2 y)^3 = x^6 y^3$
 $(x^2)^3 y^3 \rightarrow$

4. $\left(\frac{x}{y^3}\right)^5 = \frac{x^5}{(y^3)^5} = \frac{x^5}{y^{15}}$

5. $y^{-15} = \frac{1}{y^{15}}$

6. $\frac{1}{x^{-15}} = x^{15}$

7. $\frac{a^6}{a^9 a^3} = \frac{1}{a^3}$

8. $(2c^2)^3 = 8c^6$

9. $\frac{n^4 \cdot n^6}{n^8 \cdot n^2} = 1$
 $\frac{x}{10} = \frac{6}{7}$

10. $4a^5 \cdot 3a^3 = 12a^8$

11. $\left(\frac{v}{3}\right)^4 \cdot \left(\frac{5}{v}\right)^2 = \frac{25v^2}{81}$
 $\frac{v^4 v^2}{81} \cdot \frac{25}{v^2} = \frac{25v^2}{81}$

12. $(x^{-2})^2 = x^{-4} = \frac{1}{x^4}$

13. $\left(\frac{2}{x}\right)^{-1} = \frac{x}{2}$

See your
Ch 1 Test

Assignment:
is in **Appendix A** in the back Appendix

A.....10, 23, 88, 91, 92, 116, 119, 120

A-10
A-23

