

Created by Bryson Carter

Warm Up 11/(Solution of  $3b - 2 = 2b + 12$ )

1. Which expression is equivalent to  $32(2)^{x+4}$  ?
- A.  $(2)^{5x+20}$
  - B.  $(2)^{x+7}$
  - C.  $(2)^{x+9}$
  - D.  $(2)^{3x}$

C

## Exponent Rules, cont.

Write this expression with one base and one exponent.

$$2^6 \cdot 2^{x+3}$$

$$2^{x+9}$$

## Exponent Rules, cont.

Write this expression with one base and one exponent.

$$8 \cdot 2^{x+3}$$

$$2^{x+6}$$

## Exponent Rules, cont.

Write this expression with one base and one exponent.

$$81 \cdot 3^{2x}$$

$$3^{2x+4}$$

Which expression is equivalent to  $18(3)^{n+2}$ ?

- A  $2(3)^n$
- B  $2(3)^{n+4}$
- C  $2(3)^{2n+2}$
- D  $2(3)^{2n+4}$

D

Check Homework



## Quiz Tomorrow

Exponential Growth and Decay  
Compound Interest  
Equations with Exponents

Copy/Pasted from the Quiz:

You must show all work, even what you type  
into the calculator!

$$64 = 2^{x-6}$$

$$x = -3$$

$$16^x = 4^{x-3}$$

$$x = -3$$

$$27^x = 9^{x-3}$$

$$x = -6$$

$$7^x = 49^{x-3}$$

$$x = 6$$

$$3^{2x} = 9^x$$

Infinite Solutions (All real  
numbers)

$$32^{4x} = 64^{6x-2}$$

$$x = 3/4$$

$$2^{5x} = 2^{5x+1}$$

no solution

$$2(9)^x = 162$$

$$x = 2$$

$$\frac{2}{5}(10)^x = 40$$

$$x = 2$$

$$4(2)^x = 128$$

$$x = 5$$

From 1993 to 1997, Nashville property values increased by 33% (average 8.25% per year). Property values are expected to grow at about the same rate or more between the years 2013 and 2017 (they only measure every four years).



Let's say Mia bought a house for \$150,000 in 2013. Her neighborhood property values increase in value at 8.25% per year.

1. Write an equation to describe the situation.

$$y = 150,000(1.0825)^x$$

2. What will her house be worth in 2017?

\$205,969.48



Let's say Mia bought a house for \$150,000 in 2013. What if the value **DECREASED** at 8.25% per year???

1. Write an equation to describe the situation.

$$y = 150,000(0.9175)^x$$

2. What will her house be worth in 2017?

\$106,295.66



Martika spent \$3200 for a used car. The car's value will depreciate by 35% each year. How much will her car be worth in 2 years?

- A. \$392  
B. \$960  
C. \$1,120  
D. \$1,352

D

Jessica opened a bank account that earns 2 percent interest compounded annually. Her initial deposit was \$500 and she uses the equation  $J(t) = \$500(x)^t$  to find the value of the account after  $t$  years.

- a. What is the value of  $x$  in the equation?

1.02

Her friend Aly opens up a bank account and deposits \$500 into the account initially. Her account earns 2% interest compounded quarterly.

- b. Write a function  $A(t)$  for how much Aly has in her account after  $t$  years.

$$A(t) = 500(1.005)^{4t}$$

- c. How much more will Aly have in her account than Jessica after 5 years? (Jessica's account was the same, but compounded annually)

41 cents

## Homework



1. Make-Your-Own-Problems Worksheet
2. Study for your quiz tomorrow!