- 1. The sum of three times Anna's age plus her mother's age is 42. Her mother is 6 more than 6 times Anna's age. How old is Anna?
- 2. A store sells 5 T-shirts and 10 pairs of shorts for \$132.50. The next day they sell 3 T-shirts and 5 pairs of shorts for \$69.50. What is the cost of a T-shirt?

1. The sum of three times Anna's age plus her mother's age is 42. Her mother is 6 more than 6 times Anna's age. How old is

9x

Anna? x: Anna's age 3xt

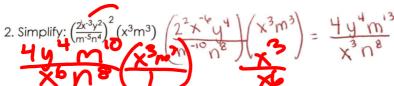
12 3x+y>42 30 42 / 4=6x+6

2. A store sells 5 T-shirts and 10 pairs of shorts for \$132.50. The next day they sell 3 T-shirts and 5 pairs of shorts for \$69.50. What is the cost of a T-shirt?

$$5x + 10y = 132.50$$
 (8  $3x + 5y = 69.50$ 

## **Exponential Functions and Exponents Plus**

1. Rodney purchases a car for \$17,400. The value of the car depreciates by 12% per year. What is the value of the car after 8 years?  $17400(.88)^8$  \$6,258



- 3. Which of the following is **not true** regarding the function  $y = 2^x$ :
- a. The function is an exponential function
- b. The function has a domain of all real numbers
- © As the value of x gets very large the value of y gets close to zero
- d. As the value of x increases by one the value double
- 4. If a student deposits \$1500 in the bank and earns an annual interest rate of 8% how much will he have after 15 years? 1500 (1.08) 15 = 4758
- 5. Which of the following is true for  $y = .5(3)^x$
- a.) The function shows exponential growth.
- b. The function shows exponential decay.
- c. The function is a linear function.
- d. The y intercept is 3.
  - 6. The population of Barnardsville in 2014 was estimated to be 24,000 people with an annual rate of increase (growth) of about 2.4%. Which function would give you the estimated total population, y, of Barnardsville in 2021?

[A] 
$$y = 24000 (1 + 2.4)^7$$

$$(C)$$
y = 24000 (1 + .024)<sup>7</sup>

[B] 
$$y = 24000 (1 + 2.4)^{21}$$

[D] 
$$y = 24000 (1 + .24)^{21}$$

7. Simplify: 
$$\left(\frac{x^5y^5}{y^3}\right)^2 = \frac{x^{10}y^{10}}{y^6} = x^{10}y^4$$

8. Gavin wants to spend less than half of his monthly \$2,000 paycheck on housing and savings. also wants to spend at most 30% of his paycheck on housing and at least 10% of his paycheck savings. Which system of inequalities can be used to determine the amount Gavin can spend housing, h, and savings, s?

b 
$$h + s < 1000$$
  
 $h \le 600$   
 $s \ge 200$ 

c. 
$$h + s < 1000$$
  
 $h < 600$   
 $s > 200$ 

d. 
$$h + s < 2000$$
  
 $h \le 600$   
 $s \ge 200$ 

9. Fernando bought a new car at a cost of \$28,000. The car depreciates approximately 15% of its value each year. Which function would give you the estimated value of the car, y, after t years?

[A] 
$$y = 28000 (.15)^{\dagger}$$

[B] 
$$y = 28000 (1.150)$$

$$[C]y = 28000 (.85)$$

[A] 
$$y = 28000 (.15)^{\dagger}$$
 [B]  $y = 28000 (1.150^{\dagger})$  [C]  $y = 28000 (.85)^{\dagger}$  [D]  $y = 28000 (1.015)^{\dagger}$ 

104.25%

10. Sydney plans to put her graduation money into an account and leave it there for 4 years while she goes to college. She receives \$900 in graduation money that she puts into an account earning 4.25% interest annually. How much will be in Sydney's account at the end of four years?



[D]	\$1 042 02
	\$1,063.03



11 Maria recorded the population for two different attacks to kindle account of the

11. Maria recorded the population for two different cities in North Carolina. The results are shown in the table below

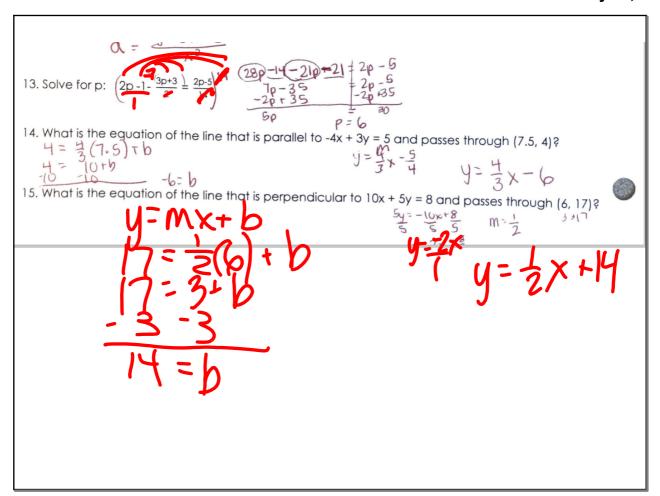
Time		
(years)	City 1, NC 300	City 2, NC
2008	950	150
2010	1,248	299 EXP EX
2012	1,551	598
2014	1,862	1196

Which statement best describes her data?

- [A] Both cities' population changed at a constant rate.
- [B] Both cities' population changed at an exponential rate.
- [C] city 1 increased its population at a constant rate, and City 2 increased its population at an exponential rate.
- [D] City 1 increased its population at an exponential rate, and City 2 increased its population.

12. The standard form of a quadratic equation is  $y = ax^2 + bx + c$ . Write the formula in terms of a.

$$\alpha = \frac{y - bx - c}{x^2}$$



## **Quadratic Check on Canvas**

5-11 Quadratics Check.notebook	May 11, 2023