lesson forty three - student resource sheet

Lesson Objective: Solve quadratic equations by using the quadratic formula.

Vocabulary Box

quadratic equation – An equation that can be written in the form $ax^2 + bx + c = 0$.
Example: $x^2 + 7x + 30 = 0$.

Guided Practice

Complete the following practice problems with your partner. Then your teacher will review the answers. Make sure that you show all important work.

Directions: Solve each equation using the quadratic formula. Check your answers.

1. $x^2 - 11x + 24 = 0$

2. $4x^2 + 1 = 5x$

3. $x^2 + 7x + 11 = 0$

Summary/Closure

A. Vocabulary Words

1. Write the standard form of a quadratic equation.

2. Make up your own specific quadratic equation.

3. For your equation, write the values of *a, b,* and *c*.

B. Summarize What We Learned Today

Directions: Write two quadratic equations and solve them using the quadratic formula. Then write a few sentences to explain how to solve a quadratic equation using the quadratic formula. You will use this explanation as a personal reference sheet.

lesson forty four - student resource sheet

Lesson Objective: Solve quadratic equations by using the quadratic formula.

Vocabulary Box

quadratic equation – An equation that can be written in the form $ax^2 + bx + c = 0$.
Example: $x^2 + 7x + 30 = 0$.

Independent Practice

Please complete the following practice problems on your own. Your teacher will review the answers. Make sure that you show all of your work.

Directions: Solve each equation using the quadratic formula. Check your answers.

1. $6x^2 – x – 2 = 0$

2. $x^2 = 2x + 15$

3. $x^2 – 4x – 6 = 0$

4. $x^2 + 30x + 200 = 0$

5. $x^2 + 6x + 6 = x + 20$

6. $x^2 + 3x + 4 = 0$

Directions: Solve each equation using the quadratic formula. Check your answers.

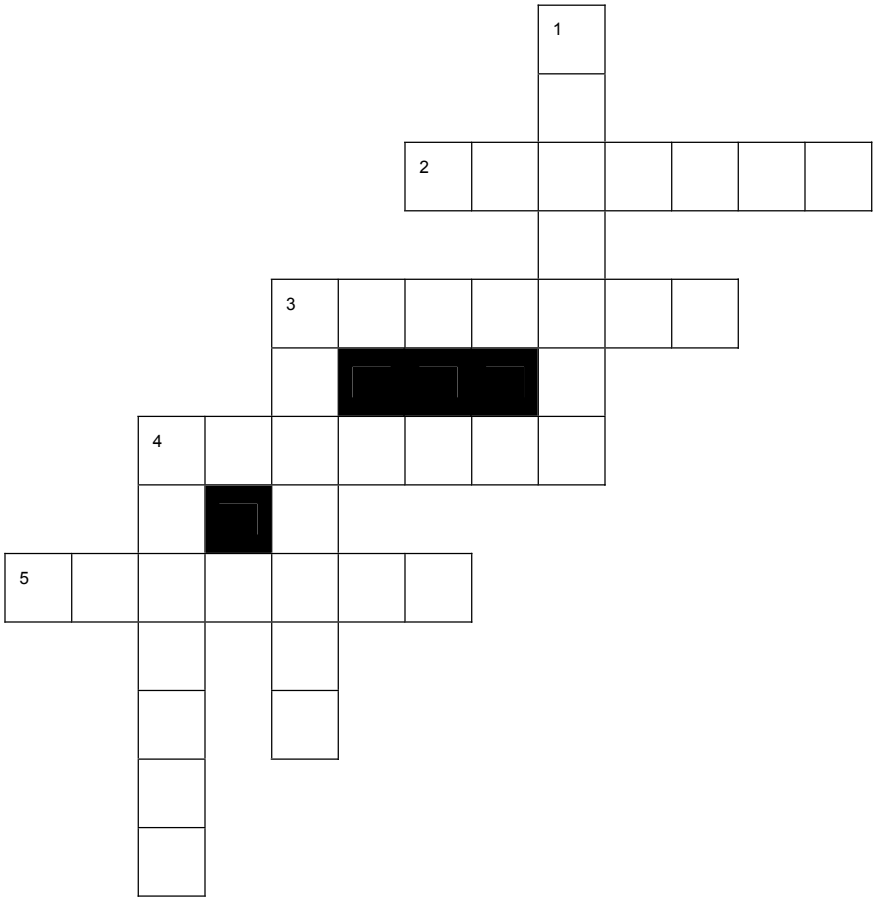
1. $x^2 + 36 = 12x$

2. $x^2 – 45 = 0$

3. $x^2 + 5x = 0$

Problem Solving

For each clue, find the quadratic equation that has the given solutions. Then enter it into the crossword puzzle. Here's an example: If the clue were x = 2 or x = –9, the equation with the given solutions would be $x^2 + 7x – 18 = 0$.



Clues:

Across

2. x = 11 or x = –3
3. x = –4 or x = –3
4. x = –10 or x = 2
5. x = –5 or x = –3

Down

1. x = 6 or x = 2
3. x = 5 or x = 3
4. x = 9 or x = –1

Directions: Solve each equation using the quadratic formula. Check your answers.

1. $x^2 - 10x + 24 = 0$

2. $x^2 + 8x = 48$

3. $2x^2 - x - 4 = 0$

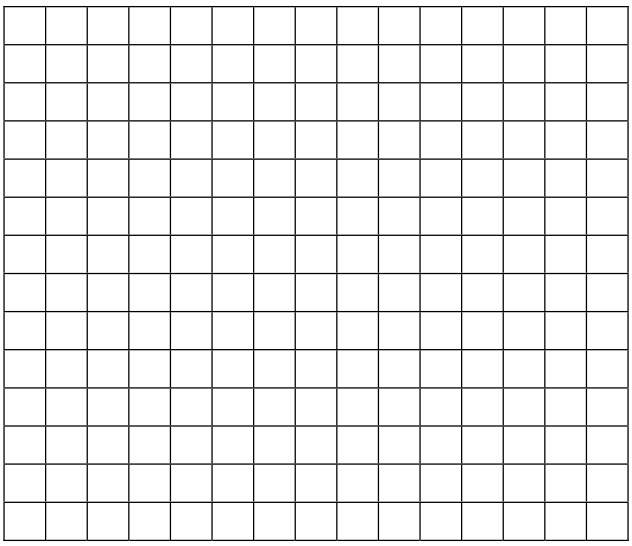
lesson forty five - student resource sheet

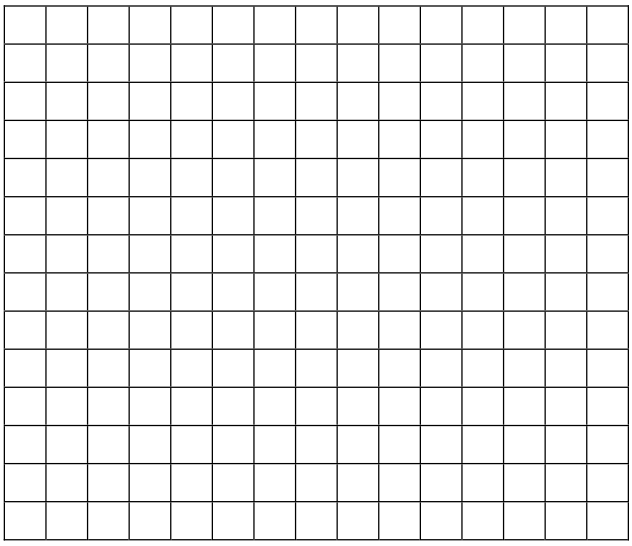
Lesson Objective: Graph and apply the formulas for exponential growth, $y = C(1 + r)^t$, and decay, $y = C(1 – r)^t$, to solve real-world problems.

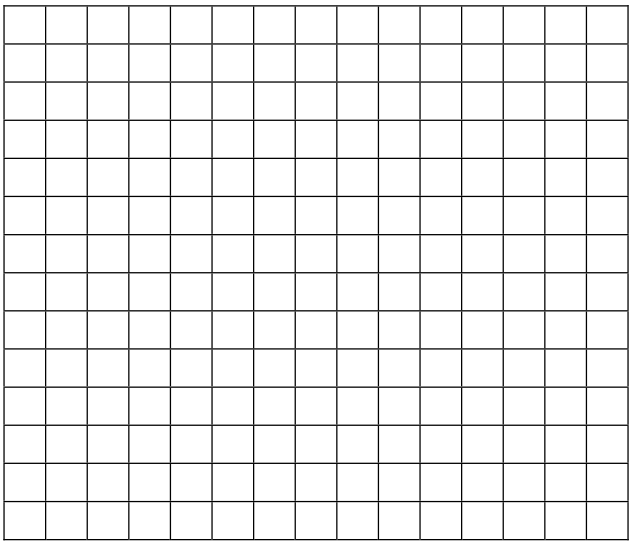
Vocabulary Box

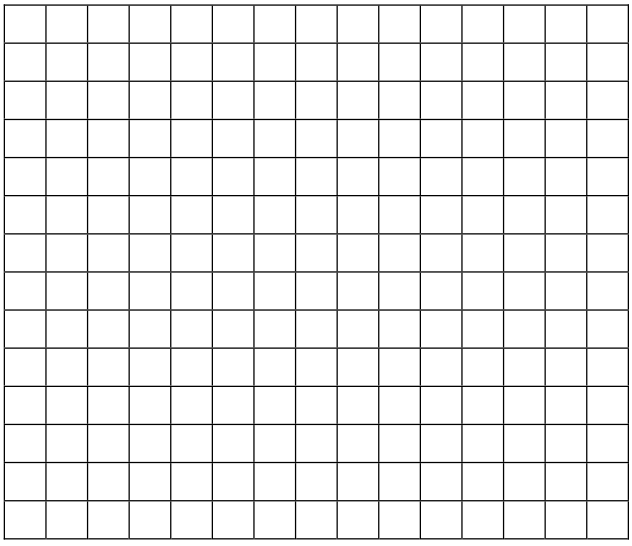
exponential decay – A decreasing quantity that can be shown by the function $y = C(1 – r)^t$, where $C > 0$ and $0 < r < 1$.

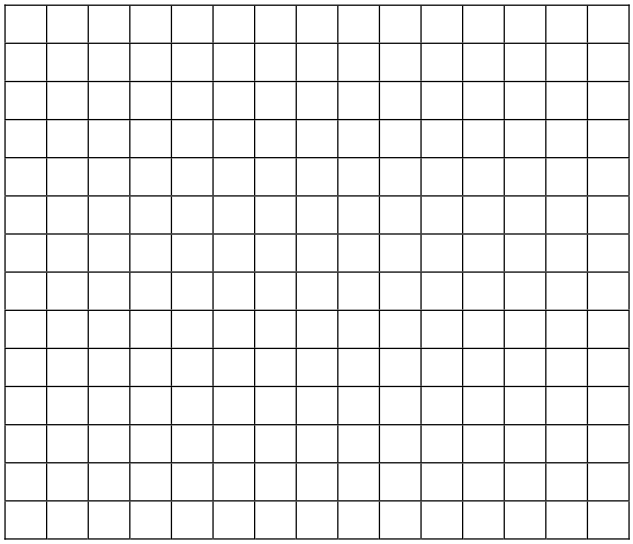
exponential growth – An increasing quantity that can be shown by the function $y = C(1 + r)^t$, where $C > 0$ and $r > 0$.

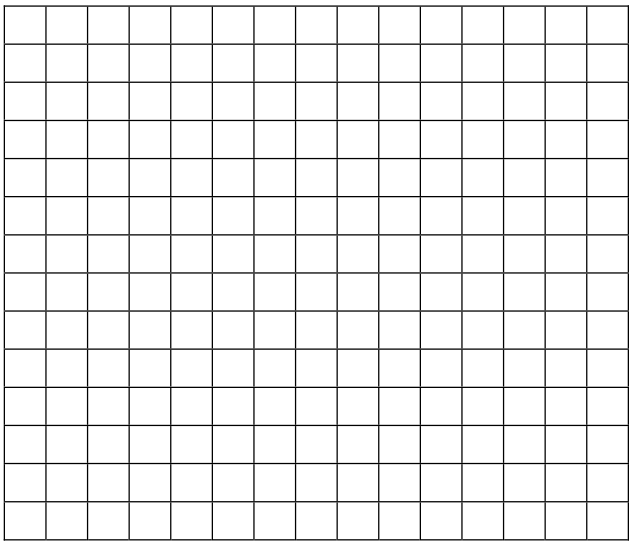


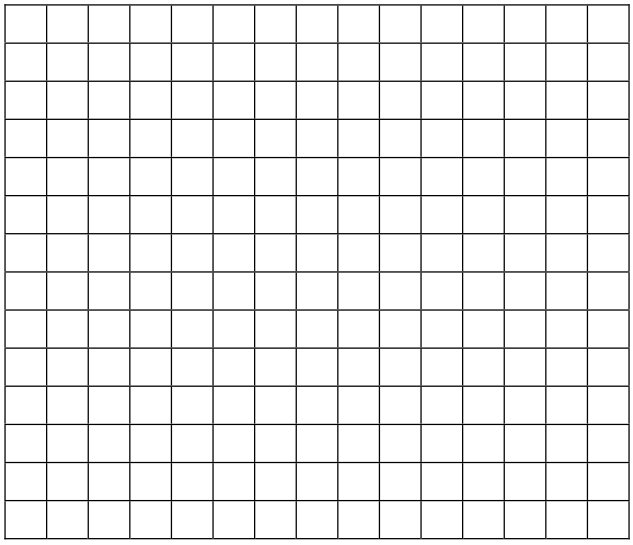


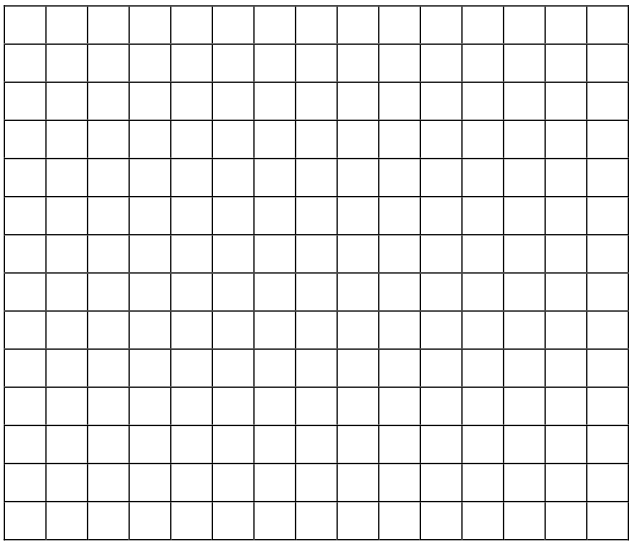


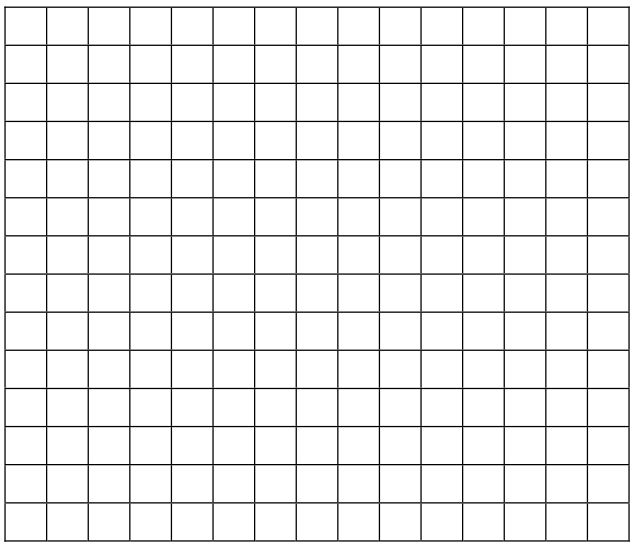


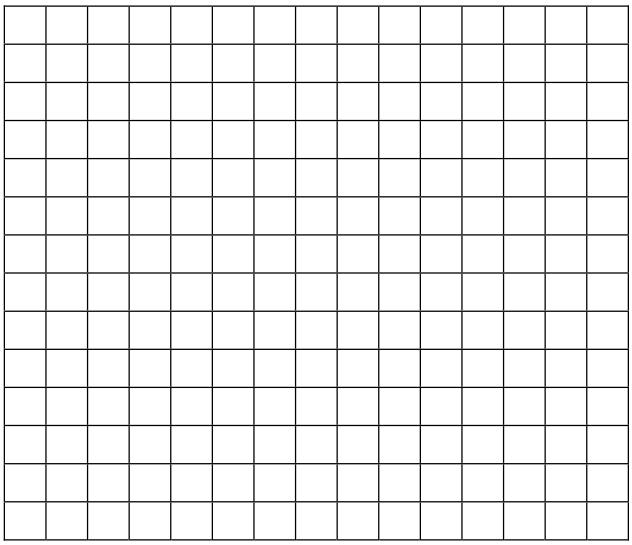




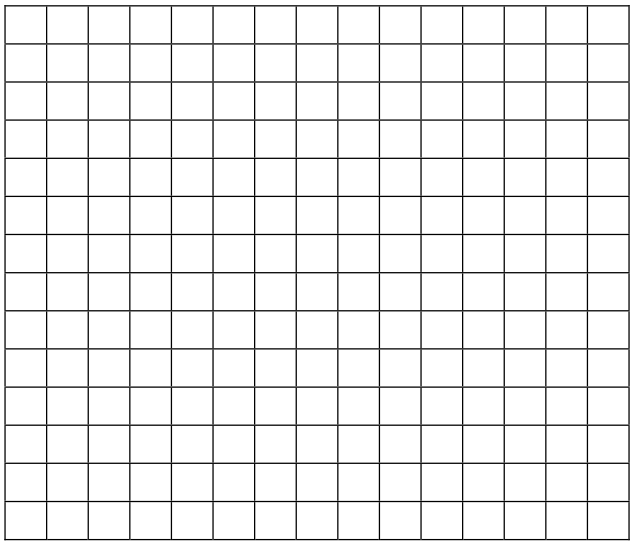


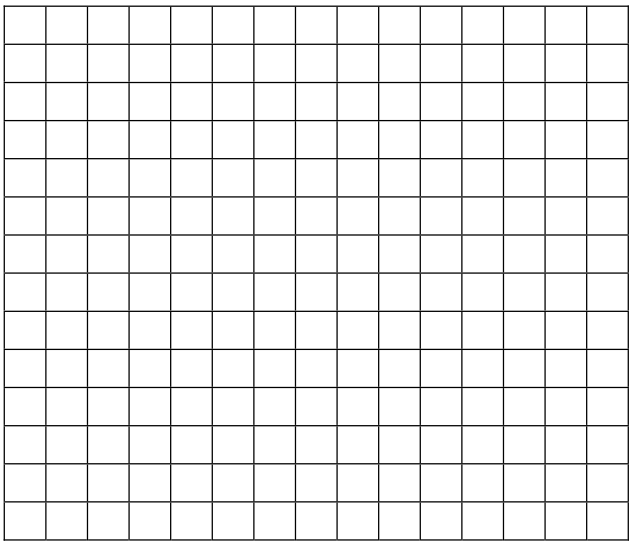






lesson forty five - student resource sheet





Guided Practice

Complete the following practice problems with your partner. Then your teacher will review the answers.

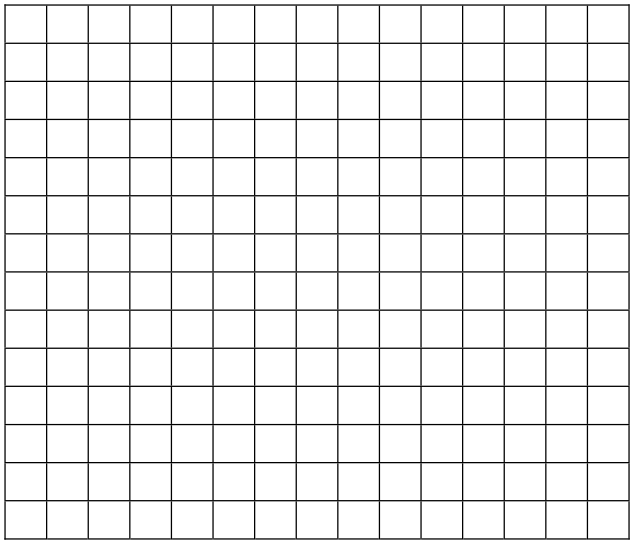
Directions: Answer each question.

1. Evaluate $y = 625(0.4)^t$ for t = 1, t = 2, t = 3, and t = 5.

2. Write an exponential growth equation. The starting amount is 343; rate of growth: 7%.

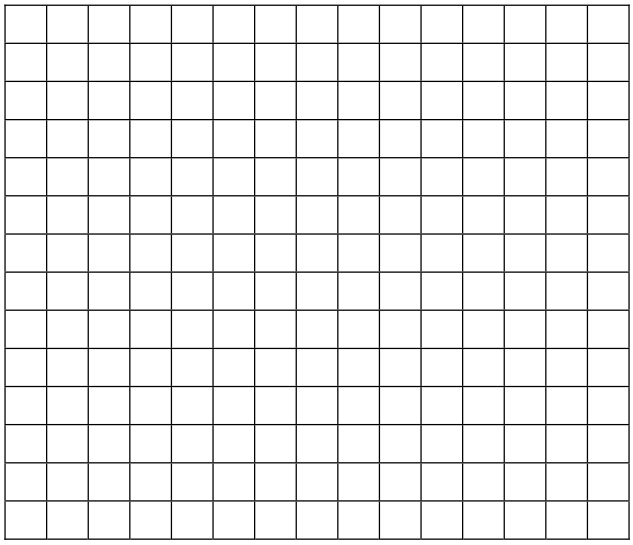
3. Write an exponential growth or exponential decay equation: "On a certain day, my bathroom faucet leaked at a rate of 360 drips per hour. Each subsequent day, it leaked 5% more than the day before."

4. Graph the function from problem #3.



5. Write an exponential growth or exponential decay equation: "I am losing 0.5% of the hairs on my head each year. At the start of this year, I had 100,000 hairs on my head."

6. Graph the function from problem #5.

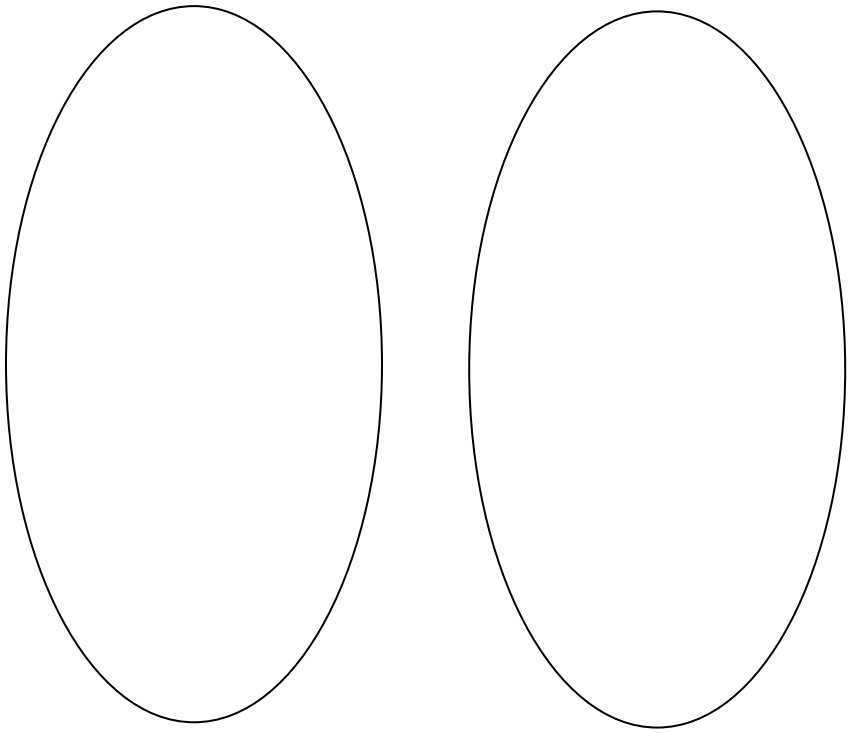


Summary/Closure

A. Vocabulary Words

Directions: Correctly group the following items in the ovals below.

- exponential decay
- $C > 0$ and $r > 0$
- decreasing
- $y = C(1 + r)^t$
- exponential growth
- increasing
- $C > 0$ and $0 < r < 1$
- $y = C(1 – r)^t$



B. Summarize What We Learned Today

Directions: Write an example of an exponential growth equation and of an exponential decay equation. Then graph each equation. Then explain how to write and graph exponential growth and exponential decay equations. You will use this explanation as a personal reference sheet.