

# Foundations to Math 1 Unit 7 Study Guide

Teacher: \_\_\_\_\_

Student Name: ANSWER KEY

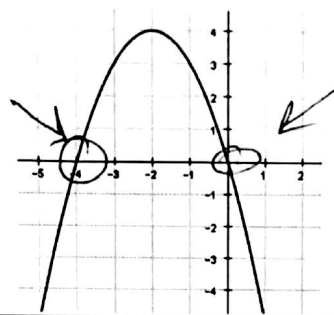
**DIRECTIONS:** Do all work on separate scratch paper. Your work must be neat, well organized, complete, and lead to the answer you give, circle your answers. Copy your answers to the appropriate place provide on this Study Guide.

Objective	Score
1	A B NY
2	A B NY
3	A B NY
4	A B NY
5	A B NY

## OBJ. 1: Quadratic Structure

Use  $f(x) = -3x^2 + 30x - 72$  to answer questions 1 and 2:

1. What direction does the graph open and does it have a maximum or minimum?
2. What is the vertex of the function?  $-b/2a$
3. How many zeros does the equation  $f(x) = x^2 - 36$  have?



4. Find the roots of the graph.

ANSWERS:

1. down, maximum
2. (5, 3)
3. 2
4.  $\{-4, 0\}$

4/4 = 100	3/4 = 80	0-2 = NY
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## OBJ. 2: Solving Quadratic Functions

Steps: 1. Set equal to zero (=0) 2. "X" method 3. Set each factor ( ) = 0 ( ) = 0

4.  $3x^2 - 75 = 0$      $3(x^2 - 25) = 0$     6.  $6x^2 - 7x = 20$
7.  $2x^2 - 5 = 9x$      $2(x+5)(x-5) = 0$     8.  $6x^2 + 18x - 24 = 0$   
 $x = -5$      $x = 5$

5.  $(x+5)(x-5)$      $x = 5, -5$
6.  $x = 5/2, -4/3$
7.  $x = 5, -1/2$
8.  $x = -4, 1$

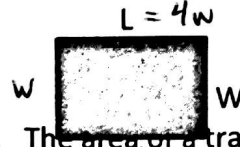
4/4 = 100	3/4 = 80	0-2 = NY
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## Obj. 3: Review

9. A movie club charges a one-time membership fee of \$25 which allows members to purchase movies for \$7 each. Another club does not charge a membership fee and sells movies for \$12 each. How many movies must a member purchase for the costs of the two clubs to be the equal? (Example: A movie club charges a membership fee of \$100 which allows members to purchase movies for \$5 each:  $100 + 5x$ )

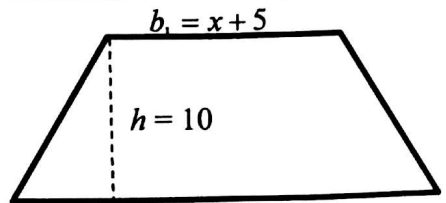
$25 + 7x = 12x$   
 $25 = 5x$   
 $5 = x$   
 x = # of movies  
 5 movies

10. The perimeter of a rectangle is 50. The length is 4 times the width. Find the dimensions of the rectangle.



Hint: Perimeter is add up all the sides.  
 $4w + 4w + w + w = 50$   
 $10w = 50$      $w = 5$      $l = 4(5) = 20$

11. The area of a trapezoid can be found using the formula  $A = \frac{1}{2}h(b_1 + b_2)$ . Write the expression that represents the area in simplest form. Hint: Plug  $h$  and  $b_1$ . And  $b_2$  into the formula.



$\frac{1}{2}(10)(x + 5 + x - 3)$

9.  $x = 5$  5 movies
10.  $w = 5$      $l = 20$
11.  $10x + 10$
12. 15, 17, 19

4/4 = 100	3/4 = 80	0-2 = NY
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13. A
14. -3
15. (-1, 4)
16. down; 0;  $x = 2$ ; (2, 4);  $\{0, 4\}$     max = 4

4/4 = 100	3/4 = 80	0-2 = NY
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4/4 = 100	3/4 = 80	0-2 = NY
17.		
18.		
19.		
20.		
4/4 = 100	3/4 = 80	0-2 = NY

$$b_2 = x - 3$$

(multiply)

(=)

(add)

12. There are three consecutive odd integers. The product of the larger two integers is equivalent to the sum of the first integer squared and 98. What are the integers? Hint:  $n, n + 2, n + 4$  OR  $n, n + 1, n + 2$

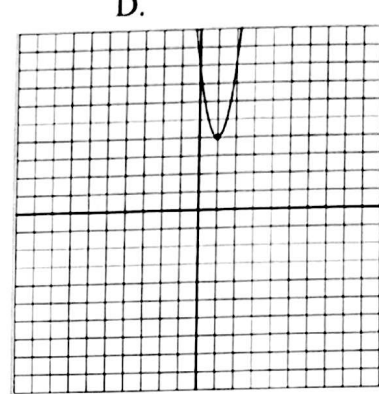
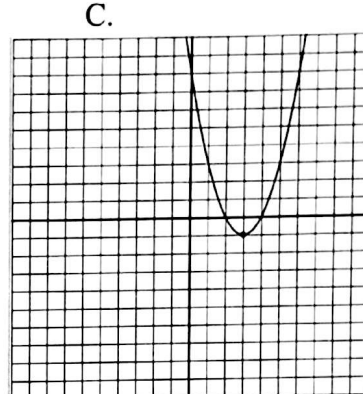
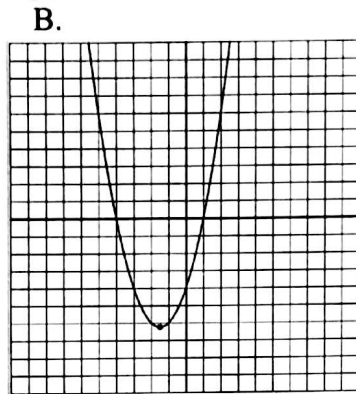
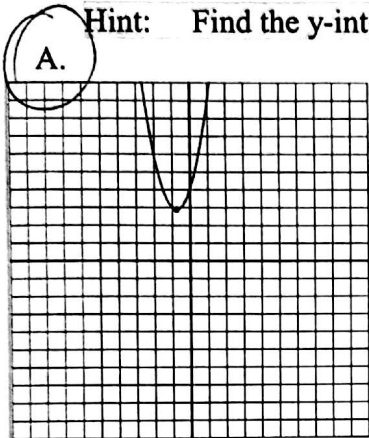
$$\begin{aligned} n, n+2, n+4 \\ 15, 17, 19 \\ n^2 + 6n + 8 = n^2 + 98 \\ 6n + 8 = 98 \\ n = 15 \end{aligned}$$

OBJ. 5: Calculator Inactive

Name \_\_\_\_\_

13. Which of the following is the graph of the function  $f(x) = 2x^2 + 3x + 4$ ? (Circle one)

Hint: Find the y-intercept



14. What is the y-intercept of  $h(t) = 6x - 3 + 9x^2$ ?

15. What is the maximum of  $g(n) = -4x^2 - 8x + 37$ ? Hint: Find the vertex.  $x = -b/2a$  plug in  $x$  to find  $y$ .

$$\frac{+8}{2(-4)} = \frac{8}{-8} = -1 \quad \text{Plug in } -1$$

16.

Opens	(Circle One) Up or <u>Down</u>
y - intercept	= 0
Axis of Symmetry	$x = 2$
Vertex	(2, 4)
x-intercepts / roots / solutions / zeros	{0, 4} $x=0$ (0,0) $x=4$ (4,0)
(Circle one) <u>Maximum</u> or Minimum	Value of: 4

