

Name _____
Review 3
Creating Equations

Algebra 1 Final

A-CED.1, A-CED.2

1. What equation could be used to solve the problem below?

If three times a number is increased by 24, the result is 4 less than seven times the number.

(1) $3x + 24 = 4 - 7x$ (3) $3x + 24 = 7x - 4$

(2) $3(x + 24) = 7x - 4$ (4) $27x = 7x - 4$

2. Mrs. Smith wrote "Eight less than three times a number is greater than fifteen" on the board. If x represents the number, which inequality is a correct translation of this statement?

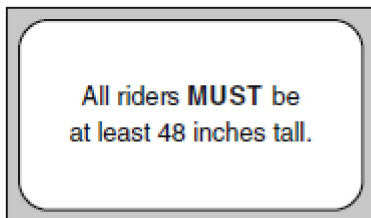
(1) $3x - 8 > 15$

(2) $3x - 8 < 15$

(3) $8 - 3x > 15$

(4) $8 - 3x < 15$

3. The sign shown below is posted in front of a roller coaster ride at the Wadsworth County Fairgrounds.



If h represents the height of a rider in inches, what is a correct translation of the statement on this sign?

(1) $h < 48$

(2) $h > 48$

(3) $h \leq 48$

(4) $h \geq 48$

4. The length of the shortest side of a right triangle is 8 inches. The lengths of the other two sides are represented by consecutive odd integers. Which equation could be used to find the lengths of the other sides of the triangle?

(1) $8^2 + (x + 1) = x^2$

(2) $x^2 + 8^2 = (x + 1)^2$

(3) $8^2 + (x + 2)^2 = x^2$

(4) $x^2 + 8^2 = (x + 2)^2$

5. Donna wants to make trail mix made up of almonds, walnuts and raisins. She wants to mix one part almonds, two parts walnuts, and three parts raisins. Almonds cost \$12 per pound, walnuts cost \$9 per pound, and raisins cost \$5 per pound.

Donna has \$15 to spend on the trail mix. Determine how many pounds of trail mix she can make. [Only an algebraic solution can receive full credit.]

6. Jack is 27 years older than Susan. In 5 years time he will be 4 times as old as her. Find the present ages of Jack and Susan.

7. Sabrina and Raj go together to a local video store. Sabrina rents two movies and three games for a total cost of \$24.30. Raj rents three movies and one game for a total cost of \$18.25. How much does it cost to rent one movie? How much does it cost to rent one game?

8. The table shows the average sale price p of a house in New York City, for various years t since 1960. Write a function to represent the data.

Years since 1960, t	0	1	2	3	4	5	6
Average sale price (in thousands of dollars), p	45	36	29	24	21	20	21

9. Peculiar Purples are unusual types of bacteria. They multiply through a mechanism in which each single bacterial cell splits into four. Peculiar Purples split every 12 minutes.

A. If the multiplication rate remains constant throughout the hour and we start with three bacterial cells, after one hour, how many bacterial cells will there be? Show your work

Number of Splits (n)	Time (minutes)	Number of Bacteria $P(n)$
0		
1		
2		
3		
4		
5		

B. Write a function to model the growth of Peculiar Purples and explain what the variable and parameters represent in the context.

C. Use your model from part (B) to determine how many Peculiar Purples there will be after three splits, i.e., at time 36 minutes. Do you believe your model has made an accurate prediction? Why or why not?

10. The tables below represent values for two functions, f and g , one absolute value and one quadratic.

a. Label each function as either absolute value or quadratic. Then explain mathematically how you identified each type of function.

$f(x)$: _____

x	$f(x)$
-3	1.5
-2	1
-1	0.5
0	0
1	0.5
2	1
3	1.5

$g(x)$: _____

x	$g(x)$
-3	4.5
-2	2
-1	0.5
0	0
1	0.5
2	2
3	4.5

b. Represent each function algebraically.