

Algebra Review

Write an algebraic expression to represent each verbal expression.

- 1.) Fourteen decreased by the square of a number \_\_\_\_\_
- 2.) Twice the sum of a number and 11 \_\_\_\_\_
- 3.) The product of the square of a number and five \_\_\_\_\_
- 4.) The square of the sum of a number and 13 \_\_\_\_\_

Define a variable and write an inequality for each problem. Then solve the inequality.

- 5.) The product of 11 and a number is less than 53. \_\_\_\_\_
- 6.) Three fourths of a number decreased by 25 is at least 8. \_\_\_\_\_
- 7.) The opposite of five times a number is less than 321. \_\_\_\_\_
- 8.) Ninety decreased by 5 is greater than or equal to the product of a number and 10.  
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Word Problems—Solve the following word problems by setting up an equation.

*Hint—you might have to use the quadratic formula or solve by factoring- draw diagrams if needed.*

- 9.) A picture has a height that is  $\frac{4}{3}$  its width. It has an area of 192 square inches. What are the pictures dimensions?  
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- 10.) The product of two consecutive negative integers is 1122. What are the numbers?  
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- 11.) The length of a tropical garden at a local conservatory is 5 feet more than its width. A walkway 2 feet wide surrounds the outside of the garden. If the total area of the walkway and garden is 594 square feet, find the dimensions of the garden.(draw a diagram)  
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**Don't forget you're supposed to be writing equations to solve these word problems!**

12.) Find two integers whose sum is 15 and whose product is 54.

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13.) The width of a rectangle is 5 less than its length. The perimeter of the rectangle is 68. Find the length of the rectangle.

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14.) The length of a rectangle is 2 less than 3 times its width. If the area measures 65 square meters find the dimensions of the rectangle.

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**Solve the following systems of equations. Leave exact answers please. Show all work.**

15.  $y = x + 3$  \_\_\_\_\_  
 $5x + y = 9$

16.  $14x + 2y = 34$  \_\_\_\_\_  
 $x - 5y = 5$

17.  $4x + 3y = -6$  \_\_\_\_\_  
 $5x - 6y = -27$

18.  $4x + 4y = 0$  \_\_\_\_\_  
 $-x - 2y = 4$

19.  $8x + 6y = 180$  \_\_\_\_\_  
 $4x + 15y = 180$

20.  $y + 15 + 39 - x = 90$  \_\_\_\_\_  
 $x + y + y + 15 = 180$

21. Your school sold 456 tickets for the high school play. An adult ticket costs \$3.50 and a student costs \$1.00. The total ticket sales was \$1131. How many adult tickets and how many student tickets did they sell? Set up a system to solve.

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**Factor to solve the following equations. Show all work and method of factoring and place solutions on the line.**

22.  $y^2 - 15y - 54 = 0$  \_\_\_\_\_

23.  $x^2 + 12x = -32$  \_\_\_\_\_

24.  $k^2 + 28 = 16k$  \_\_\_\_\_

25.  $c^2 - 11c - 60 = 0$  \_\_\_\_\_

26.  $3x^2 + 10x - 8 = 0$  \_\_\_\_\_

27.  $6x^2 - 7x = 3$  \_\_\_\_\_

28.  $5x^2 + 16x + 3 = 0$  \_\_\_\_\_

29.  $3x^2 - 15x = 42$  \_\_\_\_\_

30.  $20x^2 + 80x + 35 = 0$  \_\_\_\_\_

31.  $49d^2 + 28d + 4 = 0$  \_\_\_\_\_

32.  $25n^2 - 64 = 0$  \_\_\_\_\_

33.  $4x^2 = 16$  \_\_\_\_\_