Name_____

Geometry CP Summer Packet

-Show your work for answering all these questions. Write the answer in the space provided. There will be a test on this material during the first week of school. Are you stuck on some of the questions?? Sign up for math camp on the KCHS website!

Solve the following equations for x. SHOW YOUR WORK. Don't just write the final answer. *Remember to distribute if there are parentheses*

1) $5x + 4 = 3x + 7$

2) $5x + 4 = x - 2$

3) $2x - 8 = x + 50$

4) $30 = -5(6n + 6)$

5) $5x + 4 + x - 2 + 3x + 7 = 180$

6) $6x - 6 + 3x + 1 = 43 + x$

7) $-5(4x - 2) = -2(3 + 6x)$

8) $2x + 1 + 3x + 19 + 90 = 180$

Name_____

9) $\frac{7}{12} = \frac{7}{9}m$

10) $\frac{20}{3} = x + \frac{19}{6}$

11) $-\frac{22}{9}r = \frac{11}{9}$

12) $\frac{50}{3}x = -\frac{7}{10}$

For the next problems, you can leave your answer as a square root if it's not a perfect square*

Here are a few example problems to jog your memory. If there is a number added or subtracted, you always need to move that over FIRST.

Example1: $9x^2 - 9 = 0$

$+9 \quad +9$

$\frac{9x^2}{9} = \frac{9}{9} \quad \sqrt{x^2} = \sqrt{1}$

$x = \pm 1$

Example2: $4x^2 - 1 = 15$

$+1 \quad +1$

$\frac{4x^2}{4} = \frac{16}{4} \quad \sqrt{x^2} = \sqrt{4}$

$x = \pm 2$

Example3: $25x^2 - 2 = 7$

$+2 \quad +2$

$\frac{25x^2}{25} = \frac{9}{25} \quad \sqrt{x^2} = \frac{\sqrt{9}}{\sqrt{25}}$

$x = \pm \frac{3}{5}$

Example4: $-8 + 81x^2 = 56$

$+8 \quad +8$

$\frac{81x^2}{81} = \frac{64}{81} \quad \sqrt{x^2} = \frac{\sqrt{64}}{\sqrt{81}}$

$x = \pm \frac{8}{9}$

Example5: $100x^2 + 3 = 7$

$-3 \quad -3$

$\frac{100x^2}{100} = \frac{4}{100} \quad \sqrt{x^2} = \sqrt{\frac{4}{100}}$

$x = \pm \frac{2}{10} = \pm \frac{1}{5}$

Example6 $\sqrt{(x-2)^2} = \sqrt{25}$

$x - 2 = \pm 5$

$x = 2 \pm 5$

Name_____

13) $8n^2 - 4 = 532$

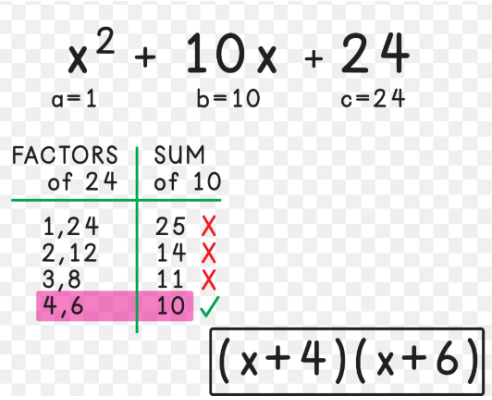
14) $10n^2 - 10 = 470$

15) $-7n^2 = -448$

16) $3 - 4x^2 = -8$

Factoring Review.

WHEN A = 1. Here is an example.



Factor the following problems using a = 1.

17) $m^2 + 12m + 32$

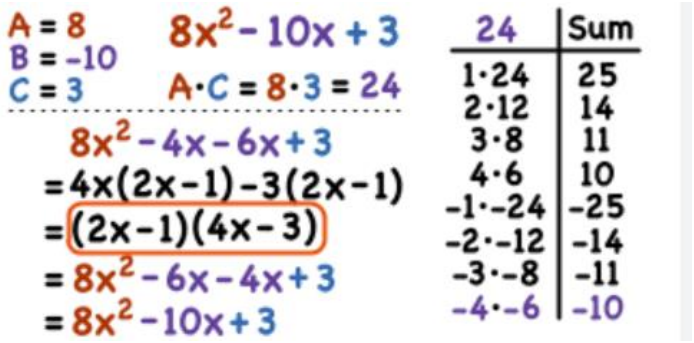
Name_____

18) $m^2 + 13m + 40$

19) $x^2 - x - 56$

20) $x^2 - 6x + 8$

WHEN A $>$ 1 AC METHOD. Here is an example.



21) $3m^2 - 17m - 56$

22) $25x^2 + 30x + 9$

Name_____

23) $3x^2 - 2x - 5$

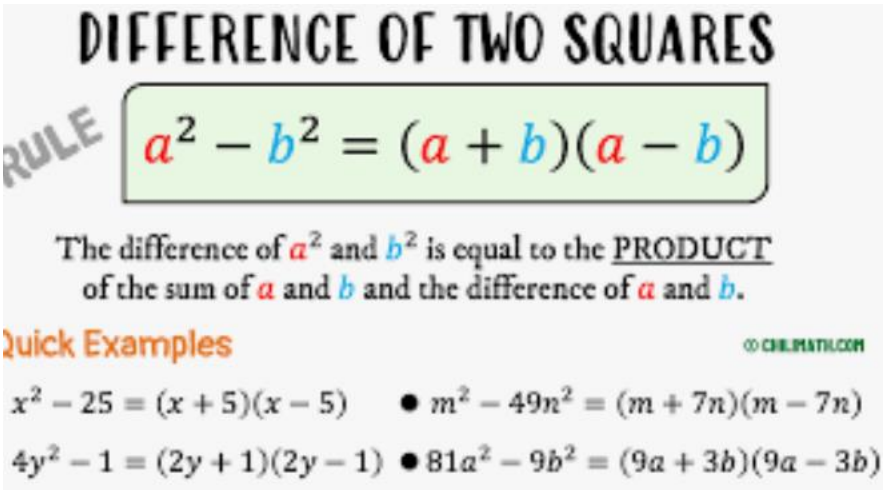
24) $5x^2 + 19x + 12$

25) $2x^2 + 11x + 5$

26) $5x^2 - 18x + 9$

Name_____

DIFFERENCE OF SQUARES. Here are some examples.



27) $4x^2 - 49$

28) $36x^2 - 1$

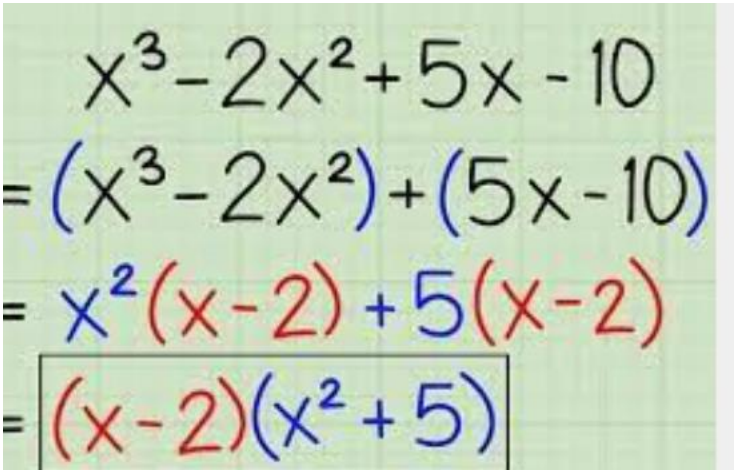
29) *you might need to take out a gcf first!* $2x^2 - 18$

30) $9x^2 - 16y^2$

Name_____

31) $54x^2 - 6y^2$

FACTOR BY GROUPING. Here is an example.



32) $21mn - 14m - 3n^2 + 2n$

33) $12b^3 - 9b^2 + 16b - 12$

Name_____

34) $12x^2 + 4x^2 + 3x + 1$

35) $2x^3 + 5x^2 + 6x + 15$

36) $5x^3 - 10x^2 + 3x - 6$

Solve the equations by factoring. You will use one of the methods from the previous problems. Here is one example using one of the methods.

$$2x^2 + 4x - 6 = 0$$
$$2(x^2 + 2x - 3) = 0$$
$$2(x-1)(x+3) = 0$$
$$x - 1 = 0 \text{ or } x + 3 = 0$$
$$x - 1 + 1 = 0 + 1 \quad | \quad x + 3 - 3 = 0 - 3$$
$$x = 1 \quad | \quad x = -3$$

Name_____

Solve each equation by factoring. You must decide which method to use.

37) $b^2 - 7b + 6=0$

38) $5x^3 - 11x^2 - 12x = 0$

39) $x^3 + 5x^2 - 4x - 20 = 0$

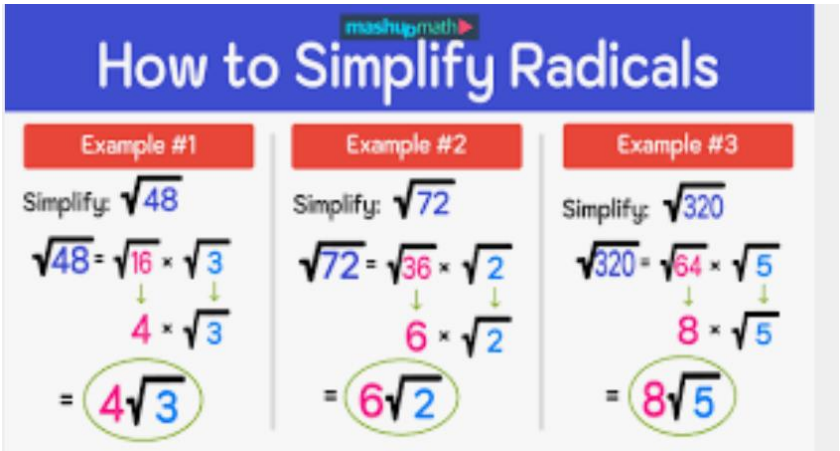
40) $8r^2 = 24r - 16$ *hint- you need to get everything to one side first then get 0 on the right side*

Name_____

41) $7x^2 + 7x = 42$

42) $7n^2 - 1 = 26n + 7$

Simplifying square roots. Find the highest perfect square that goes into the number, then go from there! Here are some examples.



Name_____

43) $\sqrt{18}$ 44) $\sqrt{12}$ 45) $\sqrt{45}$

46) $\sqrt{216}$ 47) $\sqrt{343}$ 48) $9\sqrt{245}$

49) $2\sqrt{36}$ 50) $2\sqrt{200}$ 51) $3\sqrt{405}$

Rationalize the denominator for the following problems. Here are some examples.

$$\frac{5}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{5\sqrt{2}}{\sqrt{4}} = \frac{5\sqrt{2}}{2}$$

$$\frac{\sqrt{11}}{2\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{\sqrt{77}}{2 \cdot 7} = \frac{\sqrt{77}}{14}$$

Name_____

52) $\frac{3}{\sqrt{2}}$

53) $\frac{5}{3\sqrt{2}}$

54) $\frac{3\sqrt{4}}{\sqrt{5}}$

55) $\frac{4\sqrt{4}}{\sqrt{5}}$

56) $\frac{4\sqrt{3}}{5\sqrt{3}}$

Name_____

57) $\frac{5+\sqrt{2}}{\sqrt{18}}$ *you will distributive that $\sqrt{18}$ to both terms in the numerator then simplify!*

58) $\frac{5-4\sqrt{2}}{\sqrt{6}}$

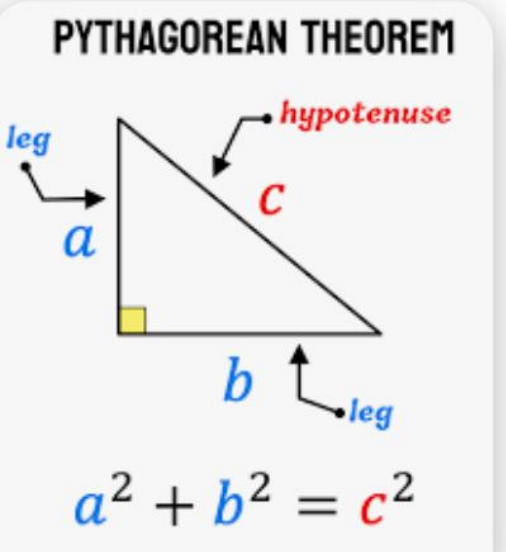
59) $\frac{-5+\sqrt{5}}{\sqrt{13}}$

60) $\frac{2-4\sqrt{3}}{\sqrt{3}}$

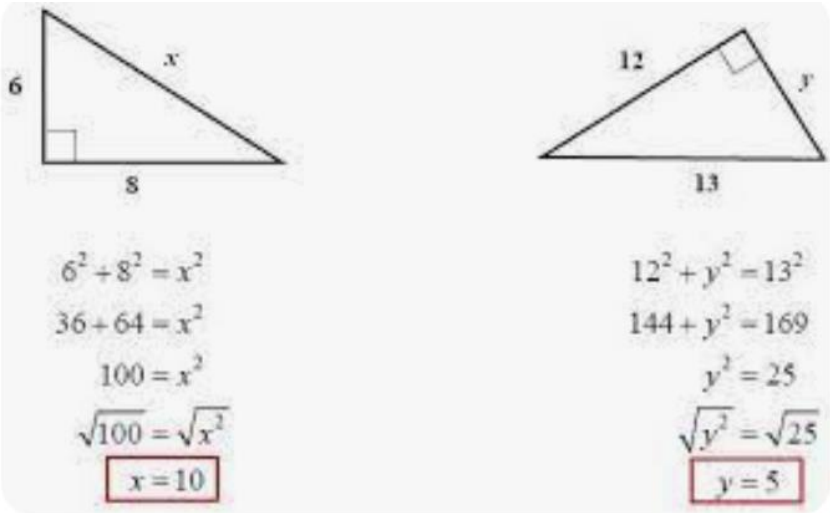
Name_____

Pythagorean Theorem

-This is used A TON in Geometry! The side across from the 90 degree angle is c, and the other two sides are a and b. You always do $a^2 + b^2 = c^2$. Here is the rule.

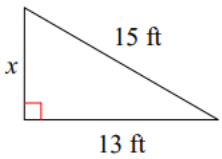


Here are some examples where you find one of the missing sides. The order changes depending on which side you are trying to find. If you get a square root in your answer, you must simplify it!

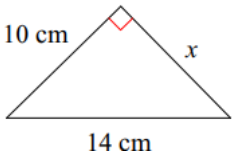


Solve the problems using the Pythagorean theorem.

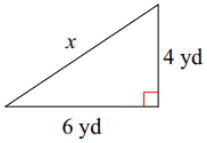
61)



62)

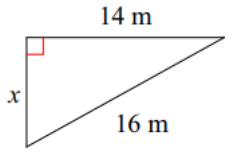


63)

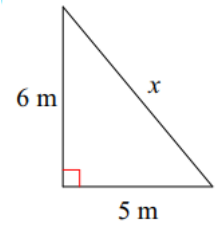


Name_____

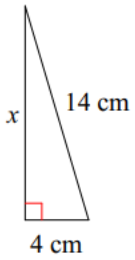
64)



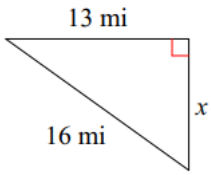
65)



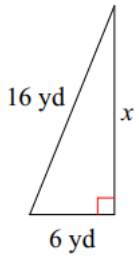
66)



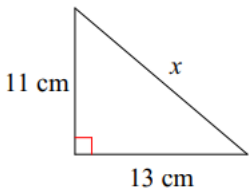
67)



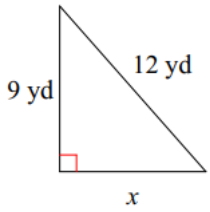
68)



69)



70)



Answer key

1) x = 3/2 2) x = -3/2 3) x = 58 4) n = -2 5) x =19 6) x = 6

7) x = 2 8) x = 14 9) m = ¾ 10) x = 7/2 11) r = -1/2 12) x = -21/500

13) n= +and - $\sqrt{67}$ 14) n= +and - $4\sqrt{3}$ 15) n= + and – 8

Name_____

16) n = + and - $\frac{\sqrt{11}}{2}$ 17) (m+8)(m+4) 18) (m+5)(m+8) 19) (x+7)(x-8)

20) (x-4)(x-2) 21) (3m+7)(m-8) 22) (5x+3)^2 23) $(3x-5)(x+1)$

24) (2x-3)(x+3) 25) (2x+1)(x+5) 26) (5x-3)(x-3) 27) (2x+7)(2x-7)

28) (6x-1)(6x+1) 29) 2(x+3)(x-3) 30) (3x-4y)(3x+4y) 31) 6(3x+y)(3x-y)

32) (3n-2)(7m-n) 33) (4b-3)(3b^2+4) 34) $(4x^2+1)(3x+1)$

35) $(x^2+3)(2x+5)$ 36) $(5x^2+3)(x-2)$ 37) b = 6, b = 1 this was an a = 1 problem 38) x = 0, -4/5, 3 this was an AC method one after you took out a gcf!

39) x = -5, -2, 2 this was a grouping one 40) r = 2, 1 this was an a = 1 after you took out a gcf! 41) x = -3, 2 this was an a = 1 after you took out a gcf! 42) n =4, -2/7 this was a grouping one!

43) $3\sqrt{2}$ 44) $2\sqrt{3}$ 45) $3\sqrt{5}$ 46) $6\sqrt{6}$ 47) $7\sqrt{7}$ 48) $63\sqrt{5}$

49) 12 50) $20\sqrt{2}$ 51) $27\sqrt{5}$ 52) $\frac{3\sqrt{2}}{2}$ 53) $\frac{5\sqrt{2}}{6}$ 54) $\frac{3\sqrt{20}}{5} = \frac{6\sqrt{5}}{5}$

55) $\frac{8\sqrt{5}}{5}$ 56) 4/5 57) $\frac{5\sqrt{2}+3}{6}$ 58) $\frac{5\sqrt{6}-8\sqrt{3}}{6}$ 59) $\frac{-5\sqrt{13}+\sqrt{65}}{13}$ 60) $\frac{2\sqrt{3}-12}{3}$

61) $2\sqrt{14}$ 62) $4\sqrt{6}$ 63) $2\sqrt{13}$ 64) $2\sqrt{15}$ 65) $\sqrt{61}$ 66) $6\sqrt{5}$ 67)$\sqrt{87}$

68) $2\sqrt{55}$ 69) $\sqrt{290}$ 70) $3\sqrt{7}$