12. Solve: $a^2 + 13a = -42$

$+42 \quad +42$

$a^2 + 13a + 42 = 0$

$(a+6)(a+7) = 0$

$a+6=0 \quad a=-6$

$-6 \quad -6$

$a+7=0$

$-7 \quad -7$

$a=-7$

13 : 6, 7 : 42

$a=-6,-7$

Solve each equation. Check the solutions

$(7w+5)(7w-5)$

13. Factor: $49w^2 - 25$

13. _____

$a^2 - b^2 = (a+b)(a-b)$

14. Solve: $-6(3n-2) = 4(-3-2n)$

14. _____

15. Solve: $4y^2 + 16y + 7 = (6y^2 + 5y) - (2y^2 + 15)$

15. _____

16. Factor completely: $8n^2 - 48n + 40$ **HINT: GCF first!**

16. _____

(15) $4y^2+16y+7=6y^2+5y-2y^2-15$

$4y^2+16y+7=4y^2+5y-15$

$-4y^2 \quad -4y^2$

$16y+7=5y-15$

$-5y+7 \quad -5y-7$

$11y=-22$

$\frac{11y}{11}=\frac{-22}{11}$

$y=-2$

16. Factor completely: $8n^2 - 48n + 40$ **HINT: GCF first!**

16. _____

16

$8n^2 - 48n + 40$

$8(n^2 - 6n + 5)$

$8(n-5)(n-1)$

$-5 \cdot -1 = 5$

$-5 + -1 = -6$

I don't care. $v = 48$

$* \quad 0 = (2t-3)(2t-3)$

$2t - 3 = 0$

$+3 \quad +3$

$t = 3/2$

18. **BASEBALL** Tonisha hit a baseball into the air with an initial upward velocity of 48 feet per second. The height h in feet of the ball above the ground can be modeled by $h = -16t^2 + 48t + 2$, where t is the time in seconds after Tonisha hit the baseball. Find the time it takes the ball to reach 38 feet above the ground.

$\frac{2t}{2} = \frac{3}{2}$

I do care that $h = 38$, and I need to find t.

$h = 16t^2 + 48t + 2$

$38 = 16t^2 + 48t + 2$

$-38 \qquad -38$

$0 = 16t^2 + 48t - 36$

$\frac{0}{4} = \frac{16t^2}{4} + \frac{48t}{4} - \frac{36}{4}$

$0 = -4t^2 + 12t - 9$

$0 = 4t^2 - 12t + 9$ *

(19)

w

$w+2$

$w(w+2)=224$

$w^2+2w=224$

$w^2+2w-224=0$

$(x-14)(x+16)=0$

$x=14, -16$

$14+16=30$

$-14+-16=30$

19. The product of two consecutive even integers is 224. Find their sum.

19. _____

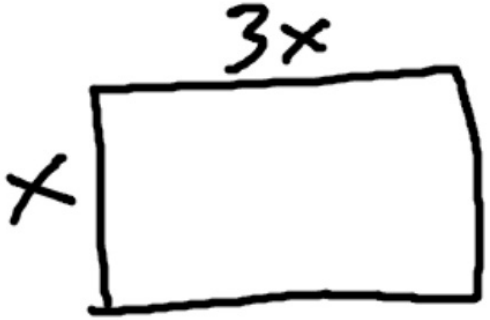
$x=\sqrt{\frac{64}{3}}$

20. The length of a rectangle is three times the width. The area is 64 square centimeters. What is the length?

20. _____

$\sqrt{x^2}=\sqrt{\frac{64}{3}}$

(20)



$(3x)(x)$

$3x^2=64$

17. _____

17. If the area of a square is multiplied by four, the area becomes 25 square inches. Find the length x of a side of the square.

(17) $\frac{4x^2}{4} = \frac{25}{4}$

$x^2 = \frac{25}{4}$

$x = \sqrt{\frac{25}{4}} = \frac{\sqrt{25}}{\sqrt{4}}$

$x = \frac{5}{2}$