

Do evens

Name _____

Date _____

Completing the Square

Write the expression as the square of a binomial

1. $x^2+16x+64$ $(x+8)^2$	2. $x^2+20x+100$ $(x+10)^2$	3. $x^2-24x+144$ $(x-12)^2$	4. $x^2-38x+361$ $(x-19)^2$	5. $x^2+1.4x+0.49$ $(x+.7)^2$
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Fill in the blank so that each expression is a perfect square trinomial.

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|-------------------------|---------------------------|---------------------------|--|
| 6. p^2-6p+ <u>9</u> | 10. v^2+24v+ <u>144</u> | 14. y^2-40y+ <u>400</u> | 18. x^2-44x+ <u>484</u> |
| 7. k^2+14k+ <u>49</u> | 11. x^2+18x+ <u>81</u> | 15. x^2+22x+ <u>121</u> | 19. w^2-36w+ <u>324</u> |
| 8. x^2-12x+ <u>36</u> | 12. n^2-10n+ <u>25</u> | 16. x^2-28x+ <u>196</u> | 20. x^2+9x+ <u>$\frac{81}{4}$</u> $(\frac{9}{2})^2$ |
| 9. m^2-8m+ <u>16</u> | 13. x^2+26x+ <u>169</u> | 17. x^2-30x+ <u>225</u> | 21. x^2-11x+ <u>$\frac{121}{4}$</u> $(-\frac{11}{2})^2$ |

Solve by completing the square & leave answers in simplest radical form

<p>22. $r^2-6r=2$</p> $r^2-6r+9 = 2+9$ $(r-3)^2 = 11$ $(r-3)^2 = \pm\sqrt{11}$ $r-3 = \pm\sqrt{11}$ $r = 3 \pm \sqrt{11}$	<p>23. $p^2-4p=-1$</p> $p^2-4p+4 = -1+4$ $(p-2)^2 = 3$ $\sqrt{(p-2)^2} = \pm\sqrt{3}$ $p-2 = \pm\sqrt{3}$ $p = 2 \pm \sqrt{3}$	<p>24. $y^2+8y+13=0$</p> $y^2+8y+16 = -13+16$ $(y+4)^2 = 3$ $\sqrt{(y+4)^2} = \pm\sqrt{3}$ $y+4 = \pm\sqrt{3}$ $y = -4 \pm \sqrt{3}$
<p>25. $t^2=1+8t$</p> $t^2-8t = 1$ $t^2-8t+16 = 1+16$ $(t-4)^2 = 17$ $\sqrt{(t-4)^2} = \pm\sqrt{17}$ $t-4 = \pm\sqrt{17} \quad t = 4 \pm \sqrt{17}$	<p>26. $x^2=18x-25$</p> $x^2-18x+81 = -25+81$ $(x-9)^2 = 56$ $\sqrt{(x-9)^2} = \pm\sqrt{56}$ $x-9 = \pm 2\sqrt{14}$ $x = 9 \pm 2\sqrt{14}$	<p>27. $4r=r^2-7$</p> $r^2-4r+4 = 7+4$ $(r-2)^2 = 11$ $\sqrt{(r-2)^2} = \pm\sqrt{11}$ $r-2 = \pm\sqrt{11}$ $r = 2 \pm \sqrt{11}$
<p>28. $u^2+2u=7$</p> $u^2+2u+1 = 7+1$ $(u+1)^2 = 8$ $\sqrt{(u+1)^2} = \pm\sqrt{8}$ $u+1 = \pm 2\sqrt{2}$ $u = -1 \pm 2\sqrt{2}$	<p>29. $4=z^2+12z$</p> $z^2+12z+36 = 4+36$ $(z+6)^2 = 40$ $\sqrt{(z+6)^2} = \pm\sqrt{40}$ $z+6 = \pm 2\sqrt{10}$ $z = -6 \pm 2\sqrt{10}$	<p>30. $c^2+5c-36=0$</p> $c^2+5c+25 = 36+25$ $(c+5)^2 = 61$ $\sqrt{(c+5)^2} = \pm\sqrt{61}$ $c+5 = \pm\sqrt{61}$ $c = -5 \pm \sqrt{61}$