CP Algebra II
Review for Quadratic Equation TEST

Name KEY

Solve the following quadratic equations by ***factoring***.

1) $2g^2 + 18g = 0$

$2g(g+9) = 0$

$g = 0, \quad g = -9$

2) $6y^2 - 23y + 20 = 0$

$(2y - 5)(3y - 4)$

$y = 5/2 \quad y = 4/3$

Fill in the blank with the number that correctly completes the square.

3) $w^2 + 22w + \underline{121}$

4) $y^2 - 5y + \underline{6.25}$ $\left(\frac{25}{4}\right)$

5) $5m^2 + 20m + \underline{20}$ OR 20 IF YOU CHANGE IT BACK

$m^2 + 4m + \underline{4}$

Solve by ***completing the square***.

6) $2n^2 + 12n - 30 = 0$

$\frac{}{2} \quad \frac{}{2} \quad \frac{}{2} \quad \frac{}{2}$

$n^2 + 6n - 15 = 0$

$n^2 + 6n + \underline{9} = 15 + 9$

$\sqrt{(n+3)^2} = \sqrt{24} = \sqrt{4}\sqrt{6}$

$n + 3 = \pm 2\sqrt{6}$

$n = -3 \pm 2\sqrt{6}$

7) $-3x^2 + 9x = -12$

$\frac{}{-3} \quad \frac{}{-3} \quad \frac{}{-3}$

$x^2 - 3x = 4$

$x^2 - 3x + 2.25 = 4 + 2.25$

$(x - 1.5)^2 = 6.25$

$x - 1.5 = \pm 2.5$

$x = \pm 2.5 + 1.5$

$x = 4, \quad x = -1$

For the remaining problems, first determine the best method to use (**F** – factoring, **C** –Complete the square or **Q** – quadratic formula), then solve it!

8) $x^2 + 8x - 48 = 0$ method: F

$(x + 12)(x - 4) = 0$

$x = -12, \quad x = 4$

9) $2y^2 - 3y = 6$ method: Q

$2y^2 - 3y - 6 = 0$

$\frac{3 \pm \sqrt{9 - 4(2)(-6)}}{4}$

$\frac{3 \pm \sqrt{9 + 48}}{4}$

$y = \frac{3 \pm \sqrt{57}}{4}$

10) $x^2 + 2x = 7$ method: C

$x^2+2x+1 = 7+1$

$\sqrt{(x+1)^2} = \sqrt{8} < \frac{\sqrt{4}}{\sqrt{1}}$

$x+1 = \pm 2\sqrt{2}$

$x = -1 \pm 2\sqrt{2}$

11) $4a^2 - 36 = 0$ method: F

$(2a+6)(2a-6) = 0$ OR

$a = -\frac{6}{2}$ $a = \frac{6}{2}$

$a = -3, 3$

$4(a^2-9)=0$

$4(a+3)(a-3)$

$a = -3, a = 3$

12) $m^2 - 4m + 13 = 0$ method: C

$m^2-4m+4 = -13+4$

$\sqrt{(m-2)^2} = \sqrt{-9}$

$m-2 = \pm 3i$

$m = 2 \pm 3i$

13) $6w^2 + 9w = 0$ method: F (GCF)

$3w(2w+3) = 0$

$w = 0, \; w = -3/2$

14) $d^2 - 5 = 12d$ method: Q

$d^2-12d-5 = 0$

$\frac{12 \pm \sqrt{144-4(1)(-5)}}{2}$

$\frac{12 \pm \sqrt{144+20}}{2}$

$\frac{12 \pm \sqrt{164}}{2} < \frac{\sqrt{41}}{\sqrt{4}}$

$\frac{12 \pm 2\sqrt{41}}{2}$

$6 \pm \sqrt{41}$

15) $9x^2 - 18x - 1 = 0$ method: C

* let's make this one "time allowing" for extra practice

$x^2 - 2x - \frac{1}{9} = 0$

$x^2 - 2x + 1 = \frac{1}{9} + 1$

$\sqrt{(x-1)^2} = \sqrt{\frac{10}{9}}$

$x - 1 = \pm \frac{\sqrt{10}}{3}$

$x = 1 \pm \frac{\sqrt{10}}{3}$

Now, test your calculator "quad" program to make sure it is running properly. Find the discriminant and the roots (or solutions) to the following equations.

16) $5x^2 - 32x - 21 = 0$

D = 1444

roots: 7, -.6

17) $8x^2 + 5x = -3$

D = -71

roots: $-.3 \pm .5i$