Name:

GROUP PRACTICE
QUADRATIC FORMULA

HINT: REMEMBER TO PUT IN STANDARD FORM!!!!

1) Solve: $x^2 + 5x - 5 = 0$

$a=1\ b=5\ c=-5$

$x = \frac{-5 \pm \sqrt{(5)^2 + -4(1)(-5)}}{2(1)}$

$x = \frac{-5 \pm \sqrt{25+20}}{2}$

$x = \frac{-5 \pm \sqrt{45}}{2}$

$\sqrt{45}$: $45 = 5 \cdot 9$, $9 = 3 \cdot 3$

$\boxed{x = \frac{-5 \pm 3\sqrt{5}}{2}}$

2) Solve: $-3x^2 + 5x = -2$

$-3x^2 + 5x + 2 = 0$

$a=-3\ b=5\ c=2$

$x = \frac{-5 \pm \sqrt{(5)^2 + -4(-3)(2)}}{2(-3)}$

$x = \frac{-5 \pm \sqrt{25+24}}{-6}$

$x = \frac{-5 \pm \sqrt{49}}{-6} = \frac{-5 \pm 7}{-6}$

$\boxed{x = -\frac{1}{3}, 2}$

3) Solve: $2x^2 - 2x - 3 = 0$.

$a=2\ b=-2\ c=-3$

$x = \frac{2 \pm \sqrt{(-2)^2 + -4(2)(-3)}}{2(2)}$

$x = \frac{2 \pm \sqrt{4+24}}{4}$

$x = \frac{2 \pm \sqrt{28}}{4}$ $\boxed{x = \frac{2 \pm 2\sqrt{7}}{4}}$

$\sqrt{28}$: $28 = 4 \cdot 7$, $4 = 2 \cdot 2$

$x = \frac{1 \pm \sqrt{7}}{2}$ OR

4) Solve: $x^2 + 8 = 6x$

$x^2 - 6x + 8 = 0$

$a=1\ b=-6\ c=8$

$x = \frac{6 \pm \sqrt{(-6)^2 + -4(1)(8)}}{2(1)}$

$x = \frac{6 \pm \sqrt{36 + -32}}{2}$

$x = \frac{6 \pm \sqrt{4}}{2}$ $x = \frac{6 \pm 2}{2}$ $\boxed{x = 4, 2}$

5) Solve: $2x^2 + 7 = x$

$2x^2 - x + 7 = 0$

$a=2\ b=-1\ c=7$

$x = \frac{1 \pm \sqrt{(-1)^2 + -4(2)(7)}}{2(2)}$

$x = \frac{1 \pm \sqrt{1 + -56}}{4}$

$x = \frac{1 \pm \sqrt{-55}}{4}$ $x =$ NO real solution!

6) Solve: $3x^2 = 4x + 5$

$3x^2 - 4x - 5 = 0$

$a=3\ b=-4\ c=-5$

$x = \frac{4 \pm \sqrt{(-4)^2 + -4(3)(-5)}}{2(3)}$

$x = \frac{4 \pm \sqrt{16+60}}{6}$

$x = \frac{4 \pm \sqrt{76}}{6} = \boxed{\frac{4 \pm 2\sqrt{19}}{6}}$

$\sqrt{76}$: $76 = 2 \cdot 38$, $38 = 2 \cdot 19$

$= \frac{2 \pm \sqrt{19}}{3}$

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7) Solve: $6x^2 + 10x = 4$

$6x^2+10x-4=0$

$a=6 \quad b=10 \quad c=-4$

$x=\frac{-10 \pm \sqrt{(10)^2+-4(6)(-4)}}{2(6)}$

$x=\frac{-10 \pm \sqrt{100+96}}{12}$

$x=\frac{-10 \pm \sqrt{196}}{12}$

$x=\frac{-10 \pm 14}{12}$ $\boxed{x=\frac{1}{3} \text{ OR } -2}$

8) Solve: $x^2 + 4x - 7 = 0$

$a=1 \quad b=4 \quad c=-7$

$x=\frac{-4 \pm \sqrt{(4)^2+-4(1)(-7)}}{2(1)}$

$x=\frac{-4 \pm \sqrt{16+28}}{2}$

$x=\frac{-4 \pm \sqrt{44}}{2}$

$\boxed{x=\frac{-4 \pm 2\sqrt{11}}{2}}$ OR $x=-2 \pm \sqrt{11}$

$\sqrt{44}$: $44 = 4 \cdot 11$, $4 = 2 \cdot 2$

9) Solve: $0 = 3x^2 - 6x - 10$

$a=3 \quad b=-6 \quad c=-10$

$x=\frac{6 \pm \sqrt{(-6)^2+-4(3)(-10)}}{2(3)}$

$x=\frac{6 \pm \sqrt{36+120}}{6}$

$x=\frac{6 \pm \sqrt{156}}{6}$

$x=\boxed{\frac{6 \pm 2\sqrt{39}}{6}}$ or $\frac{3 \pm \sqrt{39}}{3}$

$\sqrt{156}$: $156 = 2 \cdot 78$, $78 = 2 \cdot 39$, $39 = 3 \cdot 13$

10) Solve: $0 = x - 6 + x^2$

$0=x^2+x-6$

$a=1 \quad b=1 \quad c=-6$

$x=\frac{-1 \pm \sqrt{(1)^2+-4(1)(-6)}}{2(1)}$

$x=\frac{-1 \pm \sqrt{1+24}}{2}$

$x=\frac{-1 \pm \sqrt{25}}{2}$ $x=\frac{-1 \pm 5}{2}$ $\boxed{x=2,-3}$

11) Solve: $0 = x^2 + 2 + 5x$

$a=1 \quad b=5 \quad c=2$

$x=\frac{-5 \pm \sqrt{(5)^2+-4(1)(2)}}{2(1)}$

$x=\frac{-5 \pm \sqrt{25+-8}}{2}$

$\boxed{x=\frac{-5 \pm \sqrt{17}}{2}}$

12) Solve: $0 = -3x^2 + 4x + 5$

$a=-3 \quad b=4 \quad c=5$

$x=\frac{-4 \pm \sqrt{(4)^2+-4(-3)(5)}}{2(-3)}$

$x=\frac{-4 \pm \sqrt{16+60}}{-6}$

$x=\frac{-4 \pm \sqrt{76}}{-6}$

$\boxed{x=\frac{-4 \pm 2\sqrt{19}}{-6}}$ $x=\frac{-2 \pm \sqrt{19}}{-3}$

$\sqrt{76}$: $76 = 2 \cdot 38$, $38 = 2 \cdot 19$

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13) Solve: $12x^2 - 44x + 35 = 0$

$a=12 \quad b=-44 \quad c=35$

$$x = \frac{44 \pm \sqrt{(-44)^2 + -4(12)(35)}}{2(12)}$$

$$x = \frac{44 \pm \sqrt{1{,}936 + -1680}}{24}$$

$$x = \frac{44 \pm \sqrt{256}}{24} \qquad x = \frac{44 \pm 16}{24}$$

$$\boxed{x = 2.5, \tfrac{7}{6}}$$

14) Solve: $0 = 2x^2 - 4x + 5$

$a=2 \quad b=-4 \quad c=5$

$$x = \frac{4 \pm \sqrt{(-4)^2 + -4(2)(5)}}{2(2)}$$

$$x = \frac{4 \pm \sqrt{16 + -40}}{4}$$

$$x = \frac{4 \pm \sqrt{-24}}{4}$$

NO real solution

15) Solve: $-4x^2 + 10x + 17 = 0$

$a=-4 \quad b=10 \quad c=17$

$$x = \frac{-10 \pm \sqrt{(10)^2 + -4(-4)(17)}}{2(-4)}$$

$$x = \frac{-10 \pm \sqrt{100 + 272}}{-8}$$

$$x = \frac{-10 \pm \sqrt{372}}{-8}$$

$$\boxed{x = \frac{-10 \pm 2\sqrt{93}}{-8}}$$

$\sqrt{372}$

$372 = 2 \cdot 186$

$186 = 2 \cdot 93$

$93 = 3 \cdot 31$

16) Solve: $-16 = x^2 - 8x$

$0 = x^2 - 8x + 16$

$a=1 \quad b=-8 \quad c=16$

$$x = \frac{8 \pm \sqrt{(-8)^2 + -4(1)(16)}}{2(1)}$$

$$x = \frac{8 \pm \sqrt{64 + -64}}{2}$$

$$x = \frac{8 \pm \sqrt{0}}{2}$$

$$\boxed{x = 4}$$

17) Solve: $6x^2 + 4 + 9x = 0$

$a=6 \quad b=9 \quad c=4$

$$x = \frac{-9 \pm \sqrt{(9)^2 + -4(6)(4)}}{2(6)}$$

$$x = \frac{-9 \pm \sqrt{81 + -96}}{12}$$

$$x = \frac{-9 \pm \sqrt{-15}}{12}$$

NO real solution!

17) Solve: $-1x^2 - 2 + 3x = 0$

$a=-1 \quad b=3 \quad c=-2$

$$x = \frac{-3 \pm \sqrt{(3)^2 + -4(-1)(-2)}}{2(-1)}$$

$$x = \frac{-3 \pm \sqrt{9 + -8}}{-2}$$

$$x = \frac{-3 \pm \sqrt{1}}{-2} \qquad x = \frac{3 \pm 1}{2}$$

$$\boxed{x = -1, -2}$$