Name: _____

Semester 2 Final Review A
Quadratic Solutions

If the solutions are not whole numbers, write them as a fraction and as a decimal rounded to the nearest tenth.

Example:
Solve the quadratic equation by factoring, completing the square or by using the quadratic formula. Round to the nearest tenth, if necessary.
$10x^2 + 7x - 12 = 0$

Use the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$10\cancel{x^2} + 7\cancel{x} - 12$$
$$a = 10, b = 7, c = -12$$

$$x = \frac{-(7) \pm \sqrt{(7)^2 - 4(10)(-12)}}{2(10)}$$

$$x = \frac{-7 \pm \sqrt{49 + 480}}{20}$$

$$x = \frac{-7 \pm \sqrt{529}}{20}$$

$$x = \frac{-7 \pm 23}{20}$$

$$x = \frac{-7 + 23}{20} \text{ or } x = \frac{-7 - 23}{20}$$

$$x = \frac{16}{20} \text{ or } x = \frac{-30}{20}$$

$$x = \boxed{\left\{-\frac{3}{2}, \frac{4}{5}\right\}} \text{ or } x = \boxed{\{-1.5, 0.8\}}$$

1. Solve the quadratic equation by factoring, completing the square or by using the quadratic formula. Round to the nearest tenth, if necessary.
$8x^2 + 17x - 21 = 0$

2. Solve the quadratic equation by factoring, completing the square or by using the quadratic formula. Round to the nearest tenth, if necessary.
$x^2 + 4x - 12 = 0$

3. Solve the quadratic equation by factoring, completing the square or by using the quadratic formula. Round to the nearest tenth, if necessary.
$x^2 - 5x - 50 = 0$

4. Solve the quadratic equation by factoring, completing the square or by using the quadratic formula. Round to the nearest tenth, if necessary.
$-6x^2 + 2x + 4 = 0$

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Write the solutions in reduced radical form.

Example:
Solve the equation using the quadratic formula *(you must use the quadratic formula and show your work to get credit)*.

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

Use the quadratic formula:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

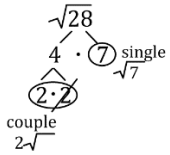
$$1x^2 + 4x - 3$$

$$a = 1, b = 4, c = -3$$

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

$$x = \frac{-4 \pm \sqrt{16 + 12}}{2}$$

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



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

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

$$x = \boxed{-2 \pm \sqrt{7}}$$

5. Solve the equation using the quadratic formula *(you must use the quadratic formula and show your work to get credit)*.

$$x^2 - 18x + 79 = 0$$

6. Solve the equation using the quadratic formula *(you must use the quadratic formula and show your work to get credit)*.

$$x^2 + 14x + 43 = 0$$

7. Solve the equation using the quadratic formula *(you must use the quadratic formula and show your work to get credit)*.

$$x^2 - 26x + 157 = 0$$

8. Solve the equation using the quadratic formula *(you must use the quadratic formula and show your work to get credit)*.

$$x^2 + 8x + 13 = 0$$

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Determine the factors, the simplest form of the quadratic equation, and the *x*-intercepts from the given solutions.

Example: The solutions to a quadratic equation are 5 and -11. Factors: *switch the signs and put them inside parentheses with x.* $5\rightarrow (x-5)$ and $11\rightarrow (x+11)$ $\boxed{(x-5)\ and\ (x+11)}$ Equation: *write the factors next to each other.* $\boxed{f(x)=(x-5)(x+11)}$ *x*-intercepts: *same as the solutions.* $\boxed{5\ and\ -11}$	9. The solutions to a quadratic equation are 16 and -5. Factors: Equation: $f(x)=$ *x*-intercepts:	10. The solutions to a quadratic equation are -12 and 3 Factors: Equation: $f(x)=$ *x*-intercepts:

11. The solutions to a quadratic equation are 15 and -14. Factors: Equation: $f(x)=$ *x*-intercepts:	12. The solutions to a quadratic equation are 1 and 20. Factors: Equation: $f(x)=$ *x*-intercepts:

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Quadratic Solutions Answers:

1. $x=\left\{-3,\frac{7}{8}\right\}$ *or* $x=\{-3.0,0.9\}$	2. $x=\{-6,2\}$	3. $x=\{-5,10\}$	4. $x=\left\{-\frac{2}{3},1\right\}$ *or* $x=\{-0.7,1.0\}$
5. $x=9\pm\sqrt{2}$	6. $x=-7\pm\sqrt{6}$	7. $x=13\pm2\sqrt{3}$	8. $x=-4\pm\sqrt{3}$
9. Factors: $(x-16)\ and\ (x+5)$ Equation: $f(x)=(x-16)(x+5)$ *x*-intercepts: 16 and -5	10. Factors: $(x+12)\ and\ (x-3)$ Equation: $f(x)=(x+12)(x-3)$ *x*-intercepts: -12 and 3	11. Factors: $(x-15)\ and\ (x+14)$ Equation: $f(x)=(x-15)(x+14)$ *x*-intercepts: 15 and -14	12. Factors: $(x-1)\ and\ (x-20)$ Equation: $f(x)=(x-1)(x-20)$ *x*-intercepts: 1 and 20