Today's Plan:

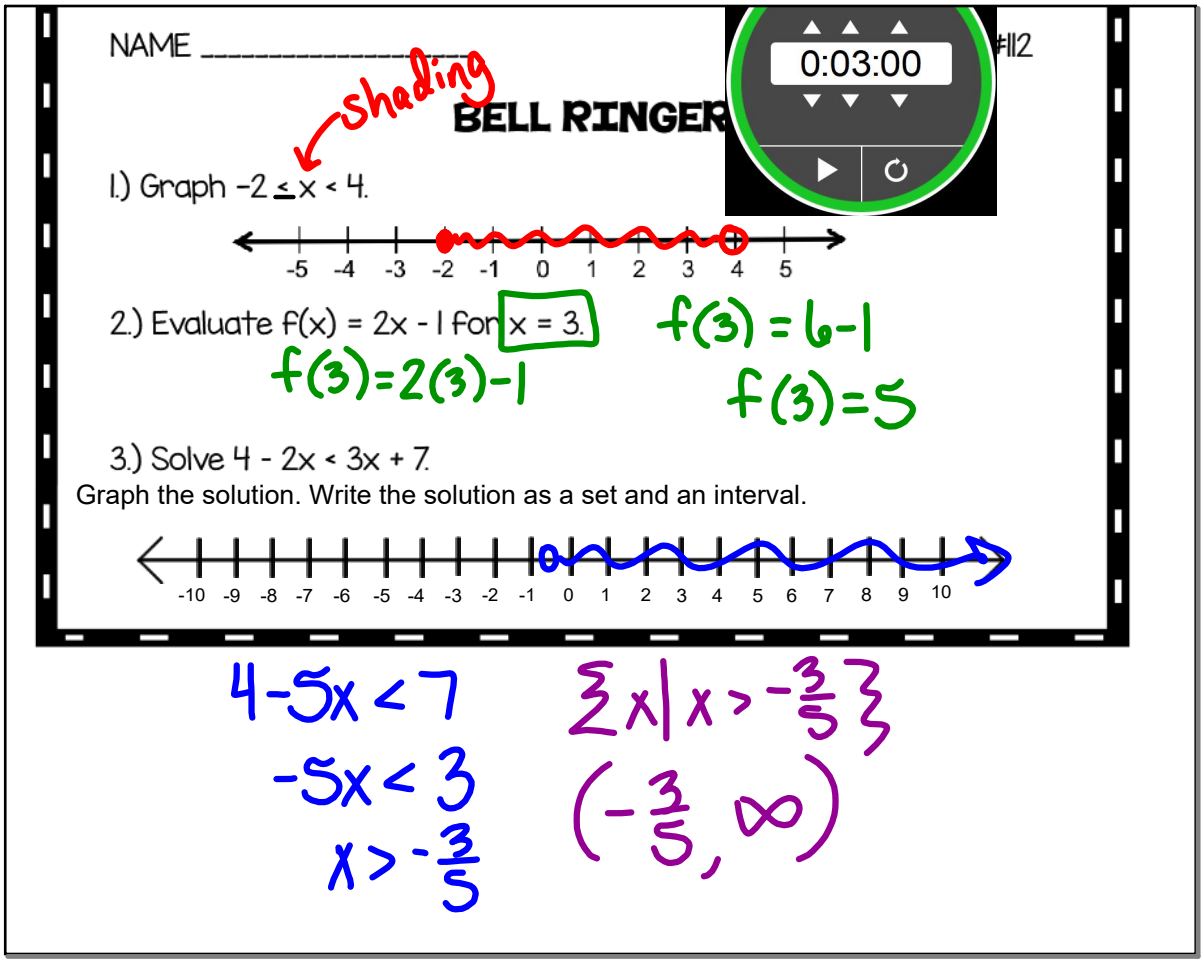
Learning Target (standard): I will solve quadratic equations by completing the square.

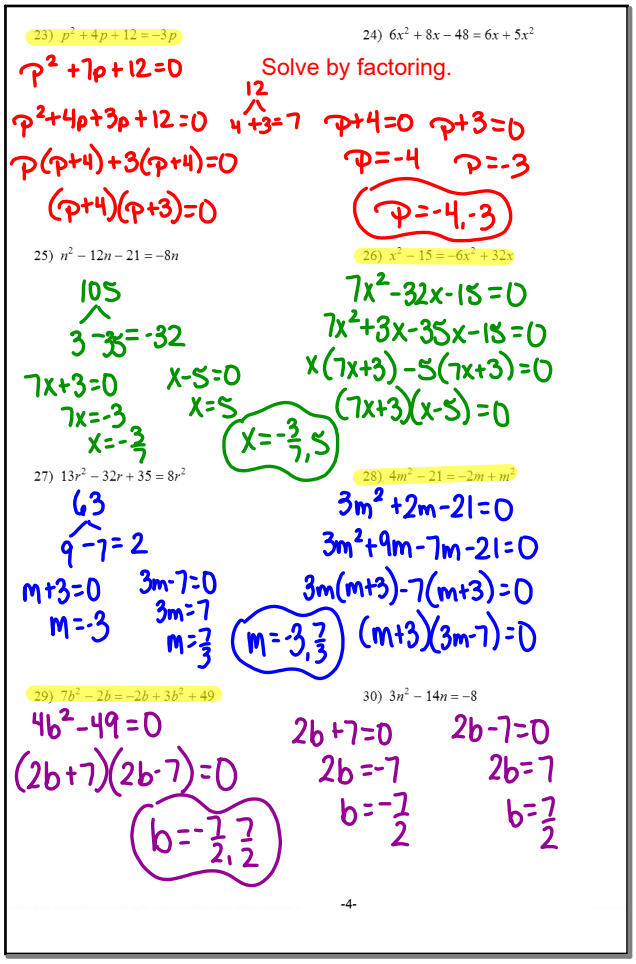
Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.





23) $p^2 + 4p + 12 = -3p$

$p^2 + 7p + 12 = 0$

$p^2 + 4p + 3p + 12 = 0$ (12: $4 + 3 = 7$)

$p(p+4) + 3(p+4) = 0$

$(p+4)(p+3) = 0$

$p+4=0$ $p+3=0$

$p=-4$ $p=-3$

$p=-4,-3$

Solve by factoring.

24) $6x^2 + 8x - 48 = 6x + 5x^2$

25) $n^2 - 12n - 21 = -8n$

105: $3 - 35 = -32$

$7x+3=0$ $x-5=0$

$7x=-3$ $x=5$

$x=-\frac{3}{7}$

26) $x^2 - 15 = -6x^2 + 32x$

$7x^2 - 32x - 15 = 0$

$7x^2 + 3x - 35x - 15 = 0$

$x(7x+3) - 5(7x+3) = 0$

$(7x+3)(x-5) = 0$

$x=-\frac{3}{7}, 5$

27) $13r^2 - 32r + 35 = 8r^2$

63: $9 - 7 = 2$

$m+3=0$ $3m-7=0$

$m=-3$ $3m=7$

$m=\frac{7}{3}$

28) $4m^2 - 21 = -2m + m^2$

$3m^2 + 2m - 21 = 0$

$3m^2 + 9m - 7m - 21 = 0$

$3m(m+3) - 7(m+3) = 0$

$(m+3)(3m-7) = 0$

$m=-3, \frac{7}{3}$

29) $7b^2 - 2b = -2b + 3b^2 + 49$

$4b^2 - 49 = 0$

$(2b+7)(2b-7) = 0$

$b=-\frac{7}{2}, \frac{7}{2}$

30) $3n^2 - 14n = -8$

$2b+7=0$ $2b-7=0$

$2b=-7$ $2b=7$

$b=-\frac{7}{2}$ $b=\frac{7}{2}$

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Methods for Solving Quadratic Equations:

- Factoring
- Square Root Property
- Completing the Square

$$ax^2 + bx + c = 0$$

Completing the Square:

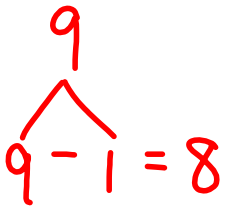
- Quadratic equation must be in the form $x^2 + bx = c$
- If the leading coefficient is NOT "1", divide everything by the number
- Take half of the linear term, square it, and add it to both sides

$$x^2 + bx + \left(\frac{b}{2}\right)^2 = c + \left(\frac{b}{2}\right)^2$$

- Factor the perfect square trinomial
- Solve using the square root property

Solve by factoring.

$$x^2 + 8x - 9 = 0$$



$x^2 + 9x - x - 9 = 0$

$x(x+9) - 1(x+9) = 0$

$(x+9)(x-1) = 0$

$x+9=0 \quad x-1=0$

$x=-9 \quad x=1$

$x=-9, 1$

Solve by completing the square.

$x^2+8x-9=0$

$\frac{8}{2}=4^2=16$

$x^2+8x+16=9+16$

$\sqrt{(x+4)^2}=\pm\sqrt{25}$

$x+4=5,-5$

$x=1,-9$

Solve by completing the square.

$r^2-4r-21=0$

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

$r^2-4r+4=21+4$

$\sqrt{(r-2)^2}=\pm\sqrt{25}$

$r-2=5,-5$

$r=7,-3$

Solve by completing the square.

$x^2 - 4x = 32$

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

$x^2 - 4x + 4 = 32 + 4$

$(x-2)^2 = \pm\sqrt{36}$

$x - 2 = 6, -6$

$x = 8, -4$

Solve by completing the square.

$x^2 + 16x = -60$

$\frac{16}{2} = 8^2 = 64$

$x^2 + 16x + 64 = -60 + 64$

$(x+8)^2 = \pm\sqrt{4}$

$x + 8 = 2, -2$

$x = -6, -10$

Solve by completing the square.

$$2x^2 - 4x - 70 = 0$$

$\frac{2}{2} = 1^2 = 1$

$\frac{2x^2}{2} - \frac{4x}{2} = \frac{70}{2}$

$x^2 - 2x + 1 = 35 + 1$

$\sqrt{(x-1)^2} = \pm\sqrt{36}$

$x - 1 = 6, -6$

$x = 7, -5$

Assignment:

Completing the Square

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