Bell Ringer - Solve the equations by factoring.

1. $x^2 + x = 6$

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$x^2 + x - 6 = 0$

$(x+3)(x-2) = 0$

$x = -3$ and 2

2. $x^2 - 4x - 8 = 4$

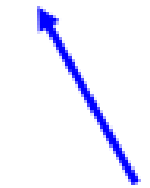
$x^2 - 4x - 12 = 0$

$(x-6)(x+2) = 0$

$x = 6$ and -2

Factoring $ax^2 + bx + c$ when $a = 1$

Factoring quadratics is only possible if the discriminant is a perfect square.



$b^2 - 4ac$

Determine if the quadratic can be factored with integers by finding the discriminant. If yes, then factor. If no, explain why.

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discriminant $b^2 - 4ac$

$-4^2 - 4(1)(-5)$

Factor

$(x-5)(x+1)=0$ $16 + 20 = 36$ perfect sq.

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Determine if the quadratic can be factored with integers by finding the discriminant. If yes, then factor. If no, explain why.

2. $x^2 - 4x - 6 = 0$

discriminant

$b^2 - 4ac$

$-4^2 - 4(1)(-6)$

$16 + 24 = 40$

not a perfect square

Cannot be factored

3. Write a quadratic equation that has solutions of -13 and 5.

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* need to work backwards

$$(x+13)(x-5)=0$$

Foil $x^2 - 5x + 13x - 65 = 0$

Combine terms $x^2 + 8x - 65 = 0$

4. Write a quadratic equation that has solutions of 3 and -8.

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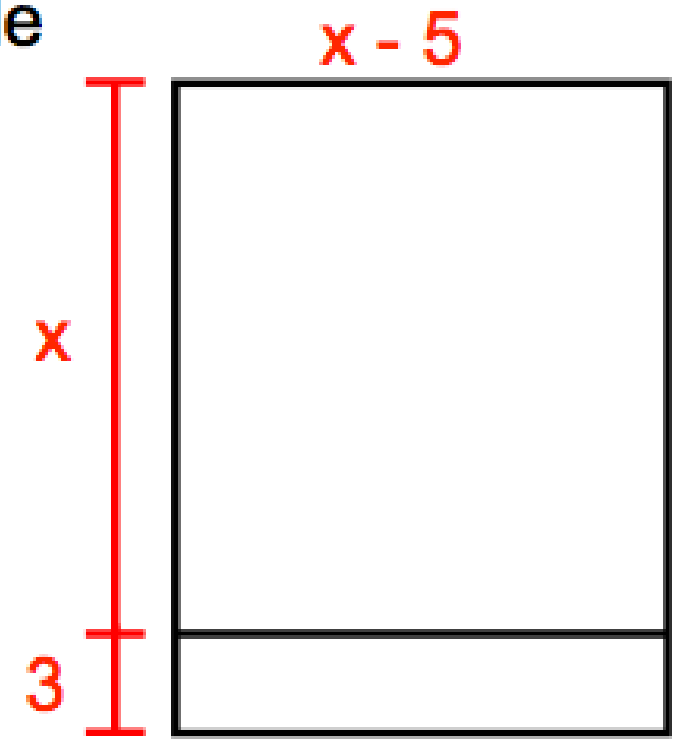
$$(x-3)(x+8)=0$$

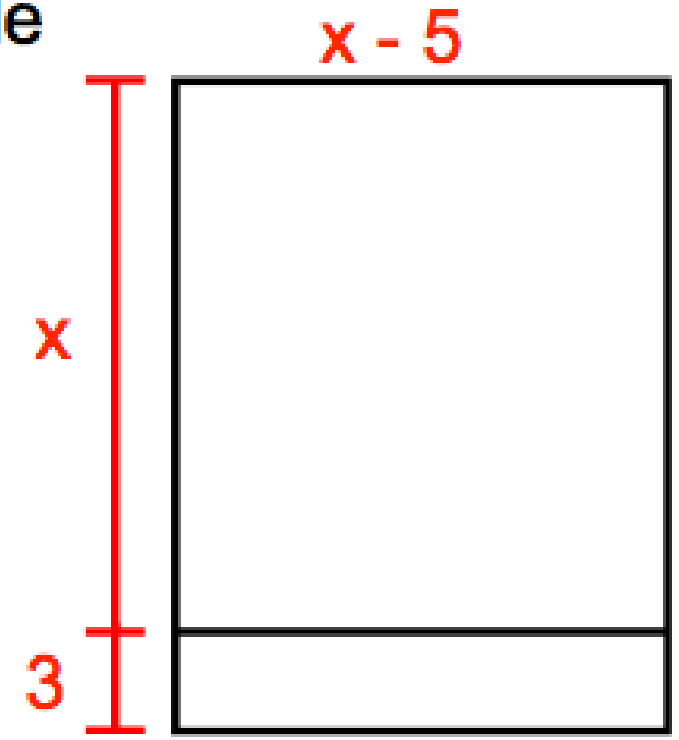
$$x^2+8x-3x-24=0$$

$$x^2+5x-24=0$$

5. Find the dimensions of the rectangle if the area is 33 square feet.



5. Find the dimensions of the rectangle if the area is 33 square feet.



$\text{Area} = l \cdot w$

$33 = (x+3)(x-5)$

$33 = x^2 - 5x + 3x - 15$

$0 = x^2 - 2x - 48$

$0 = (x-8)(x+6)$

$x = 8$ and -6

Only the value of 8 works.

Substitute 8 for x.

$l = x + 3$

$= 11$

$w = x - 5$

$= 3$

Rectangle is 11 ft by 3 ft.