Solving Quadratic Equations by Factoring Using the Zero Product Principle

The **Zero Product Principle** states: If a product of two quantities is zero, then one quantity is zero or the other quantity is zero. (This idea extends to a product of more than two quantities as well.)

Read each of the following questions carefully. Fill in the blanks with the appropriate response.

1. If $5x=0$ then $x=$ 0

2. If $xy=0$ then $x=$ 0 { and / or (?) } $y=$ 0

since x, y are different variables, these can be zero at the same time.

3. If $x(x-2)=0$ then $x=$ 0 { and / or (?) } $x=$ 2

$x-2=0$

x cannot be zero and 2 at the same time.

4. If $(x-3)(x-5)=0$ then $x=$ 3 { and / or (?) } $x=$ 5

ZPP step: $x-3=0$ or $x-5=0$

5. If $(x+2)(x-3)=0$ then $x=$ -2 or $x=$ 3

$x+2=0$ or $x-3=0$

6. If $(2x-1)(x-7)=0$ then $x=$ $\frac{1}{2}$ or $x=$ 7

$2x-1=0$ or $x-7=0$

7. If $(3x+5)(4x-1)=0$ then $x=$ $-\frac{5}{3}$ or $x=$ $\frac{1}{4}$

$3x+5=0$ or $4x-1=0$

8. If $x^2-8x+12=0$,

then $(x-6)(x-2)=0$ then $x=$ 6 or $x=$ 2

$x-6=0$ or $x-2=0$

9. If $x^2+x-12=0$

then $(x+4)(x-3)=0$ then $x=$ -4 or $x=$ 3

$x+4=0$ or $x-3=0$

10. If $x^2-3x=2x+6$. First we rearrange to get the standard form:

$x^2-3x-2x-6=0$, then $x^2-5x-6=0$

then $(x-6)(x+1)=0$ then $x=$ 6 or $x=$ -1

$x-6=0$ or $x+1=0$

$x=6$ or $x=-1$