

EXTRA PRACTICE 22
Solving Quadratic Equations by Factoring
Use after Section 5.7

Name _____

The Principle of Zero Products

An equation $ab = 0$ is true if and only if $a = 0$ is true or $b = 0$ is true, or both are true.
(A product is 0 if and only if one or both of the factors is 0.)

Examples: Solve: $(x + 5)(x - 1) = 0$

$$\begin{aligned}x + 5 = 0 & \text{ or } x - 1 = 0 \\x = -5 & \text{ or } x = 1\end{aligned}$$

The solutions are -5 and 1 .

Solve: $x^2 + 7x = 0$

$$\begin{aligned}x(x + 7) &= 0 \\x = 0 & \text{ or } x + 7 = 0 \\x = 0 & \text{ or } x = -7\end{aligned}$$

The solutions are 0 and -7 .

Solve: $9x^2 = 25$

$$\begin{aligned}9x^2 - 25 &= 0 \\(3x - 5)(3x + 5) &= 0 \\3x - 5 = 0 & \text{ or } 3x + 5 = 0 \\x = \frac{5}{3} & \text{ or } x = -\frac{5}{3}\end{aligned}$$

The solutions are $\frac{5}{3}$ and $-\frac{5}{3}$.

Solve.

1. $(x + 6)(x - 5) = 0$ _____

2. $(x - 19)(x + 52) = 0$ _____

3. $(x - 15)(x + 12) = 0$ _____

4. $x(x - 9) = 0$ _____

5. $x(x + 11) = 0$ _____

6. $(3x + 2)(5x - 1) = 0$ _____

7. $6x(x - 19) = 0$ _____

8. $\left(\frac{1}{4} + 3x\right)\left(\frac{1}{5} + 2x\right) = 0$ _____

EXTRA PRACTICE 22 (continued)
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9. $3x(x+1)(x-5)=0$ _____
10. $(x+6)(x-19)(x+1)=0$ _____
11. $x^2+7x+12=0$ _____
12. $x^2-5x-6=0$ _____
13. $x^2-3x-54=0$ _____
14. $x^2=81$ _____
15. $9x^2-49=0$ _____
16. $x^2-15x=0$ _____
17. $x^2=144$ _____
18. $0=12x+x^2+36$ _____
19. $0=49+x^2-14x$ _____
20. $x^2+25=10x$ _____
21. $8x^2=7x$ _____
22. $9x^2-9x=28$ _____
23. $12x^2=5-17x$ _____
24. $100x^2=121$ _____
25. $36x^2=81$ _____
26. $x^2+17x=2x-56$ _____
27. $2x^2+5x=28+6x$ _____
28. $10x^2+x=3$ _____
29. $12x^2=29x+8$ _____
30. $18x^2-23x+7=0$ _____