

Factoring and Solving Practice

Name: Key

Hr: _____

Factor Completely.

1. $x^2 - 12x + 36$

$(x-6)(x-6)$
or
 $(x-6)^2$

2. $6x^2 + x - 15$

$6x^2 + 9x - 10x - 15$
 $3x(2x+3) - 5(2x+3)$
 $(2x+3)(3x-5)$

3. $2x^2 - 18$

$2(x^2 - 9) =$
 $2(x+3)(x-3)$

4. $x^2 - 23x + 102$

$(x-17)(x-6)$

5. $21x^3 - 35xy^2$

$7x(3x^2 - 5y^2)$

6. $3x^3 - x^2 - 12x + 4$

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

7. $6ax^2 + 11ax - 10a$

$a(6x^2 + 11x - 10)$
 $a(6x^2 - 4x + 15x - 10)$
 $2x(3x-2) + 5(3x-2)$
 $a(2x+5)(3x-2)$

8. $3x^2 - 12$

$3(x^2 - 4)$
 $3(x+2)(x-2)$

9. $6x^2 - 10x - 4$

$2(3x^2 - 5x - 2)$
 $2(3x^2 - 6x + 1x - 2)$
 $2[3x(x-2) + 1(x-2)]$
 $2(x-2)(3x+1)$

Solve for x.

10. $15x^2 - x - 2 = 0$

$15x^2 - x - 2 = 0$
 $15x^2 - 6x + 5x - 2 = 0$
 $3x(5x-2) + 1(5x-2) = 0$
 $(5x-2)(3x+1) = 0$
 $x = \frac{2}{5}, -\frac{1}{3}$

11. $4x^3 + 12x^2 - x - 3 = 0$

$4x^2(x+3) - 1(x+3)$
 $(x+3)(4x^2-1)$
 $(x+3)(2x+1)(2x-1) = 0$

$x+3=0 \Rightarrow x=-3$
 $2x+1=0 \Rightarrow x=-\frac{1}{2}$
 $2x-1=0 \Rightarrow x=\frac{1}{2}$

12. $3x^2 = 9x$

$3x^2 - 9x = 0$
 $3x(x-3) = 0$
 $3x=0 \quad x-3=0$
 $x=0, 3$

13. $x^2 + 4x - 21 = 0$

$(x-3)(x+7) = 0$
 $x-3=0 \quad x+7=0$
 $x=3, -7$