

# Standard 2B: Factoring Review

Name: Key Hr: \_\_\_\_\_

## Factor Completely.

Factor the difference of squares

1.  $m^2 - 36$

$(m+6)(m-6)$

2.  $25b^2 - 4$

$(5b+2)(5b-2)$

Factor out the greatest common factor

3.  $18x^2 - 36xy$

~~$18x^2 - 36xy$~~   
 $18x(x-2y)$

4.  $48r^2 - 4r$

$4r(12r-1)$

Factor by grouping

5.  $3x^3 - x^2 - 12x + 4$

$x^2(3x-1) - 4(3x-1) \quad (3x-1)(x^2-4)$

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

6.  $6x^2 + 2x + 6xy + 2y$

$2(3x^2 + x + 3xy + y)$

$2[x(3x+1) + y(3x+1)]$

$2(3x+1)(x+y)$

Factor the trinomials

7.  $6x^2 + x - 15$

$-90$   
 $10 \wedge 9$

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

8.  $x^2 - 9x - 36$

$-36$   
 $-12 \wedge 3$

$(x-12)(x+3)$

Factor completely

9.  $a^2 - 121$

$(a+11)(a-11)$

10.  $x^2 - 5x - 6$

$-6$   
 $-6 \wedge 1$

$(x-6)(x+1)$

11.  $6x^3 - 10x^2 + 3x - 5$

$2x^2(3x-5) + 1(3x-5)$

$(3x-5)(2x^2+1)$

12.  $2x^2 - 18$

$2(x^2 - 9)$

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

13.  $7x^2 - 112x$

$7x(x-16)$

14.  $2x^2 - 5x - 12$

$-24$   
 $-8 \wedge 3$

$2x^2 - 8x + 3x - 12$

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

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

15.  $4x^3 + 12x^2 - x - 3$

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

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

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

16.  $x^3 + 5x^2 + 6x$

$x(x^2 + 5x + 6)$

$x(x+2)(x+3)$

Solve the quadratic equations below

17.  $4x^2 - 9 = 0$

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

$x = -\frac{3}{2}, \frac{3}{2}$

18. 19.  $3x^2 - 12x = 0$

$3x(x-4) = 0$

$x = 0, 4$

18.  $18x^2 + 9x = -1$

$18x^2 + 9x + 1 = 0$

$(18x^2 + 6x + 3x + 1) = 0$

$6x(3x+1) + 1(3x+1)$

$(3x+1)(6x+1) = 0$

$x = -\frac{1}{3}, -\frac{1}{6}$

20.  $x^2 + 36 = 12x$

$x^2 - 12x + 36 = 0$

$36$   
 $-6 \quad -6$

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

$x = 6, 6$

The area of a rectangle in terms of  $x$  is  $5x^2 + 21x + 4$  and its width is  $5x + 1$ .

21. Find an expression that would represent the length of the rectangle.

$20$   
 $1 \quad 20$

$5x^2 + 20x + x + 4$

$5x(x+4) + 1(x+4)$

$(x+4)(5x+1)$   
length width

length  
 $(x+4)$

$5x^2 + 21x + 4$   $(5x+1)$   
 $(x+4)$

22. Find the dimensions (length and width) when  $x = 10$  feet.

Length:  $10+4 = 14 \text{ ft}$

Width:  $5(10)+1 = 51 \text{ ft}$