

# What Factoring Am I?

## What Factoring Am I?

#	Expression in Simplified/Expanded Form	Factoring Type	Expression in Factored Form
1.	$2a + 2b$	COMMON FACTOR	$2(a + b)$
2.	$3x^2 - 6x + 9$		$3(x^2 - 2x + 3)$
3.	$3m^2 - 7m$		$m(3m - 7)$
4.	$x^2 - x - 6$	SIMPLE TRINOMIAL	$(x + 2)(x - 3)$
5.	$x^2 - 6x + 8$		$(x - 2)(x - 4)$
6.	$x^2 + 8x - 48$		$(x - 4)(x + 12)$
7.	$8x^2 + 26x - 7$ <span style="margin-left: 20px;"><math>\frac{56}{2 \cdot 28}</math></span>	COMPLEX TRINOMIALS	$\frac{(8x-2)(2x+7)}{8} = \frac{2(4x-1)4(2x+7)}{8} = (4x-1)(2x+7)$
8.	$12a^2 - 7a - 10$ <span style="margin-left: 20px;"><math>\frac{120}{-15 \cdot 8}</math></span>		$= 12a^2 - 15a + 8a - 10 = 3a(4a-5) + 2(4a-5) = (4a-5)(3a+2)$
9.	$2m^2 + 7m - 4$ <span style="margin-left: 20px;"><math>-1, +8</math></span>		$= \frac{(2m-1)(2m+8)}{2} = (2m-1)(m+4)$
10.	$m^2 - 4$	DIFFERENCE OF SQUARES	$= (m - 2)(m + 2)$
11.	$4x^2 - 25$		$= (2x - 5)(2x + 5)$
12.	$16a^2 - 9b^2$		$= (4a - 3b)(4a + 3b)$
13.	$14m - 7n - 6m + 3n$ <span style="margin-left: 20px;"><math>\frac{6CF=7}{7} \quad \frac{6CF=-3}{-3}</math></span>	GROUP FACTORING	$= 7(2m - n) - 3(2m - n)$ $= (2m - n)(7 - 3)$
14.	$2x^2 + 8x - x - 4$		$= 2x(x + 4) - (x + 4)$ $= (x + 4)(2x - 1)$
15.	$4x^3 + 10x^2 - 10x - 25$		$= 2x^2(2x + 5) - 5(2x + 5)$ $= (2x + 5)(2x^2 - 5)$
16.	$3t^2 - 9t + 6$ <span style="margin-left: 20px;"><math>\rightarrow GCF=3</math></span>	MIX Always check your GCF	$= 3(t^2 - 3t + 2)$ $= 3(t - 1)(t - 2)$
17.	$-7x^2y + 28y$ <span style="margin-left: 20px;"><math>\rightarrow GCF=-7y</math></span>		$= -7y\left(\frac{-7x^2y}{-7y} + \frac{28y}{-7y}\right) = -7y(x^2 - 4) = -7y(x-2)(x+2)$
18.	$x^4 - 81$		$= (x^2 + 9)(x^2 - 9)$ $= (x^2 + 9)(x + 3)(x - 3)$

## Check Your Understanding:

#	Expression in Simplified/Expanded Form	Factoring Type	Expression in Factored Form
19.	$3x^2 - 2x - 1$	COMPLEX	$= (3x + 1)(x - 1)$
20.	$x^2 - 25$	D.O.S	$= (x + 5)(x - 5)$
21.	$3a - 18b$	Common Factor	$= 3(a - 6b)$
22.	$6x^2 - 5x - 4$	COMPLEX	$= \frac{(6x+3)(6x-8)}{6} = \frac{-3(2x+1)(2)(3x-4)}{6} = (2x+1)(3x-4)$
23.	$2x^2 + 15x - 27$ $\frac{M}{-54} \mid \frac{A}{+15} \mid \frac{N}{3+18}$	COMPLEX	$= \frac{(2x-3)(2x+18)}{2} = (2x-3)(x+9)$
24.	$20x^2 - 40x + 20$	COMMON FACTOR SIMPLE TRINOMIAL	$= 20(x^2 - 2x + 1)$ $= 20(x-1)(x-1)$
25.	$-3x^2 + 18x - 15$	COMMON FACTOR SIMPLE TRI	$= -3(x^2 - 6x + 5)$ $= -3(x-1)(x-5)$
26.	$2x^2 - 2xy - ax + ay$	GROUP	$= 2x(x-y) - a(x-y)$ $= (x-y)(2x-a)$
27.	$y^2 - 49$	D.O.S	$= (y-7)(y+7)$
28.	$81x^4 - 16$	D.O.S	$= (9x^2 - 4)(9x^2 + 4) = (3x-2)(3x+2)(9x^2 + 4)$
29.	$x^2 - 9x + 14$	SIMPLE	$= (x-2)(x-7)$
30.	$6z^2 + 5z - 4$ $\frac{M}{-24} \mid \frac{A}{+5} \mid \frac{N}{-3, 8}$	COMPLEX	$= 6z^2 - 3z + 8z - 4$ $= 3z(2z-1) + 4(2z-1) \rightarrow (2z-1)(3z+4)$
31.	$w^2 + 8w + 16$	SIMPLE	$= (w+4)(w+4)$
32.	$3p^2 + 3p - 6$	MIX $\rightarrow$ CF $\rightarrow$ SIMPLE	$= 3(p^2 + p - 2) = 3(p-1)(p+2)$
33.	$c^2 - 36$	D.O.S	$= (c-6)(c+6)$
34.	$4x^2 - 3x + 8x - 6$	GROUP	$= x(4x-3) + 2(4x-3)$ $= (4x-3)(x+2)$
35.	$x^4 - 3x^2 - 4$	SIMPLE	$= (x^2+1)(x^2-4)$
36.	$15a^2b^3 + 10a^2b^2 - 5ab^3$	GCF = $5ab^2$	$= 5ab^2(3ab + 2a - b)$
37.	$z^2 + 16$	N/A	
38.	$(x+3)^2 - (2x-1)^2$	D.O.S	$= [(x+3)+(2x-1)][(x+3)-(2x-1)]$ $= (3x+2)(-x+4)$
39.	$2\pi r^2 + 2\pi rh$	COMMON FACTOR	$= 2\pi r(r+h)$
40.	$3x(x-4) - 2(x-4)$	GROUP FACTOR	$= (x-4)(3x-2)$





