

Factoring – Special Cases

When factoring quadratics, there are two types of special cases.

Difference of Two Squares $(x^2 - a^2) = (x + a)(x - a)$

Perfect Square Trinomials $((ax)^2 + 2abx + b^2) = (ax + b)^2$

$$((ax)^2 - 2abx + b^2) = (ax - b)^2$$

When factoring quadratics that are special cases, you can still factor in the same way that we have previously done. The only difference is that you may have to add a 0 term in your expression or change the way you write final answer.

1) $x^2 + 12x + 36$

2) $x^2 - 9$

3) $4x^2 - 25$

4) $4x^2 - 16x + 16$

5) $x^2 + 20x + 100$

6) $9x^2 - 16y^2$

Factoring Matching Worksheet

Directions: Match the polynomials below to the correct factors. Write the letter of the correct answer in the blank next to the question number. Do all work on scratch paper and staple it to this sheet.

_____ 1) $81x^2 - 16$

A: $(x + 4)(x + 5)$

_____ 2) $x^2 - 2x - 8$

B: $(5x + 3)(5x - 3)$

_____ 3) $x^2 + 9x + 20$

C: $(x^2 + 3)(2x - 1)$

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

D: $(x + 3)(x + 7)$

_____ 5) $2x^3 - x^2 + 6x - 3$

E: $(2x^2 + 3)(5x + 1)$

_____ 6) $x^2 + x - 42$

F: $(9x + 4)(9x - 4)$

_____ 7) $49x^2 - 4$

G: $(x + 2)(x + 7)$

_____ 8) $10x^3 + 2x^2 + 15x + 3$

H: $(3x^2 + 2)(x - 1)$

_____ 9) $x^2 + 10x + 21$

I: $(10x + 1)(10x - 1)$

_____ 10) $x^3 - x^2 + 4x - 4$

J: $(x - 4)(x + 2)$

_____ 11) $25x^2 - 9$

K: $(3x^2 + 4)(2x - 5)$

_____ 12) $6x^3 - 15x^2 + 8x - 20$

L: $(7x - 2)(7x + 2)$

_____ 13) $100x^2 - 1$

M: $(x + 12)(x - 12)$

_____ 14) $x^2 + 9x + 14$

N: $(x^2 + 4)(x - 1)$

_____ 15) $x^2 - 144$

O: $(x - 6)(x + 7)$

What Happened When the Boarding House Blew Up?

Factor each trinomial below. Find one of the factors in **each** column on binomials. Notice the letter next to one factor and the number next to the other. Write the letter in the box at the bottom of the page that contains the matching number

1) $3x^2 + 7x + 2$	5. $(5u + 3)$	Y. $(3u - 2)$
2) $2x^2 + 5x + 3$	3. $(x - 1)$	E. $(x - 5)$
3) $3x^2 - 16x + 5$	8. $(3x + 1)$	G. $(8u - 1)$
4) $7x^2 - 9x + 2$	14. $(3u - 1)$	O. $(7x - 2)$
5) $6u^2 + 5u + 1$	6. $(2u + 3)$	R. $(5u + 1)$
6) $8u^2 - 9u + 1$	15. $(x + 1)$	W. $(x + 2)$
7) $10u^2 + 17u + 3$	9. $(5u + 6)$	L. $(7x + 2)$
8) $9u^2 - 9u + 2$	11. $(3x - 1)$	I. $(2x + 3)$
9) $5u^2 + 11u + 6$	7. $(2u + 1)$	E. $(u + 1)$
	17. $(u - 1)$	S. $(3u + 1)$
10) $3n^2 + 2n - 1$	12. $(3t - 1)$	N. $(n + 3)$
11) $5n^2 - 4n - 1$	5. $(n - 1)$	R. $(t - 1)$
12) $2n^2 + 5n - 3$	4. $(3t + 1)$	P. $(2t + 1)$
13) $7n^2 - 13n - 2$	10. $(n - 2)$	O. $(n + 1)$
14) $3t^2 + 14t - 5$	13. $(t + 1)$	F. $(t + 5)$
15) $4t^2 - 11t + 7$	2. $(3n - 1)$	E. $(5n + 1)$
16) $6t^2 + 5t - 1$	16. $(2n - 1)$	M. $(t - 7)$
17) $3t^2 - 20t - 7$	4. $(3t - 7)$	R. $(7n + 1)$
	1. $(4t - 7)$	L. $(6t - 1)$

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.
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Factoring Matching Worksheet

Factor each quadratic expression below and match it to one of the answer choices.

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

B: $4x(x - 3)$

C: $2(x + 2)(x + 4)$

D: $(5x - 3)(x - 2)$

E: $(5x - 6)(x - 5)$

F: $(x - 2)^2$

G: $(4x + 1)(4x - 1)$

H: $3(x + 2)^2$

I: $2(x + 2)^2$

J: $(x + 2)(x - 2)$

K: $(2x - 5)(3x - 2)$

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

M: $(5x - 1)^2$

N: $(4x + 1)^2$

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

P: $(2x + 3)(x + 5)$

Q: $(3x + 2)(2x + 1)$

R: $6x(x - 6)$

1) $3x^2 + 12x + 12$

2) $16x^2 - 1$

3) $6x^2 - 19x + 10$

4) $3x^2 + 6x - 24$

5) $2x^2 + 8x + 8$

6) $6x^2 - 36x$

7) $18x^2 - 2$

8) $x^2 - 4x + 4$

9) $27x^2 - 12$

10) $x^2 - 4$

11) $16x^2 + 8x + 1$

12) $2x^2 + 13x + 15$