

Chapter 1: Factoring Polynomials

Lesson 3: Factoring Trinomials When a is Not 1

Ⓢ Question #1: Factor of a Polynomial

Reference Q.14751

Which of the following is not a factor of $3m^2 - 27m + 54$?

- A. $m - 3$
- B. $m - 6$
- C. $m - 9$
- D. 3

Ⓢ Question #2: Factor

Reference Q.14748

Factor.

- a. $2x^2 + 14x + 24$
- b. $4x^2 - 28x - 32$
- c. $5x^2 - 20x + 15$
- d. $-2a^2 + 2a + 220$
- e. $b^2x^2 - 4b^2x - 45b^2$
- f. $2x^3 + 2x^2 - 40x$

Ⓢ Question #3: Factoring Trinomials

Reference Q.14747

Factor.

- a. $2x^2 + 6x + 4$
- b. $4x^2 - 48x + 128$
- c. $-2a^2 - 30a - 108$
- d. $5x^2 - 20x + 15$
- e. $ax^2 - 14ax + 45a$
- f. $-10a^4 + 100a^3 - 240a^2$

Ⓢ Question #4: Determine Factors

Reference Q.15080

Which of the following are factors of $5x^2 - 10x - 15$?

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

Ⓢ Question #5: Factor

Reference Q.14749

Consider the following in which each letter represents a whole number.

$$\begin{aligned}x^2 + 4x - 5 &= (x + A)(x - O) \\x^2 - 3x - 54 &= (x - E)(x + I) \\x^3 + 2x^2 - 8x &= x(x - Y)(x + P) \\3x^2 - 48x + 192 &= T(x - R)^2 \\-5x^2 + 20x + 105 &= -5(x + T)(x - H)\end{aligned}$$

Determine the value of each letter and hence name the fictional character represented by the following code.

(7) (5) (8) (8) (2) (4) (1) (3) (3) (9) (8)

Ⓢ Question #6: Factoring Trinomials

Reference Q.14750

Consider the following in which each letter represents a whole number.

- a. $x^2 + 5x + 6 = (x + A)(x + B)$ $x^2 + 10x + 21 = (x + B)(x + G)$
- b. $x^2 - 9x + 20 = (x - T)(x - L)$ $2x^2 - 16x + 32 = 2(x - T)^2$
- c. $x^3 + 10x^2 + 9x = x(x + S)(x + E)$ $6x^2 - 54x + 48 = 6(x - I)(x - S)$
- d. Determine the value of each letter and hence name the famous person represented by the following code.
(3) (8) (5) (5) (7) (2) (4) (9) (1)

Ⓢ Question #7: Factor

Reference Q.14978

Factor.

- a. $6x^2 + 5x - 6$
- b. $2x^2 + x - 1$
- c. $3x^2 - 2x - 1$
- d. $8y^2 + 2y - 3$
- e. $9t^2 - 24t + 16$
- f. $12m^2 - 11m - 5$
- g. $12p^2 + 13p - 4$
- h. $9x^2 - x - 10$

Ⓢ Question #8: Factor Each Expression

Reference Q.14977

Factor the following expressions.

- a. $10x^2 + 17x + 3$
- b. $9x^2 + 6x + 1$
- c. $3x^2 + 14x + 15$
- d. $3a^2 - 23a - 8$
- e. $3a^2 + a - 2$
- f. $5x^2 - 23x - 10$
- g. $2p^2 - 19p + 9$
- h. $6x^2 - 13x + 6$

Ⓢ Question #9: Factor The Following

Reference Q.14980

Factor the following expressions.

- a. $12 + 8x + x^2$
- b. $6 - 7x - 20x^2$
- c. $3 + a - 10a^2$
- d. $10a^2 + 25a - 15$
- e. $12z^2 + 66z + 30$
- f. $4x^3 - 7x^2 - 2x$

Ⓐ **Question #10: Factor**

Reference Q.15051

Factor.

- a. $8x^2 + 22xy + 5y^2$
- b. $6x^2 + 11xy - 7y^2$
- c. $4a^2 - 9ab - 9b^2$
- d. $2m^2 - 19mn + 9n^2$
- e. $9x^2 + xy - 10y^2$
- f. $8x^2 + 7xy - 15y^2$

Ⓐ **Question #11: Determine A Factor**

Reference Q.15052

One factor of $12x^2 + 10x - 8$ is

- A. $3x + 4$
- B. $3x - 4$
- C. $2x + 1$
- D. $6x - 1$

Ⓐ **Question #12: Find The Common Factor**

Reference Q.15053

The polynomials $4x^2 + 8x - 5$ and $12x^2 - 3$ have in common a factor of

- A. $4x + 1$
- B. $4x - 1$
- C. $2x + 1$
- D. $2x - 1$

Ⓐ **Question #13: Determine The Values Of The Variables**

Reference Q.15055

The factored form of $3x^2 + 19x - 14$ is $(x + a)(bx + c)$ where a, b , and c are integers. The value of b^c , to the nearest hundredth, is ____.

Ⓐ **Question #14: Determine The Values Of The Variables**

Reference Q.15056

The expression $15x^2 + 11x - 56$ can be written in the form $(ax - b)(cx + d)$ where a, b, c , and d are all positive integers. Determine the values of a, b, c , and d .

Ⓐ **Question #15: Consider The Following**

Reference Q.15049

Consider the following in which each letter represents a whole number.

- a. $10x^2 + 13x - 3 = (Ax + M)(Cx - P)$
- b. $7x^2 + 64x + 9 = (x + S)(Ox + P)$
- c. $24x^2 - 90x + 54 = B(x - M)(Kx - M)$
- d. $64x^2 - 1 = (Lx - 1)(Lx + 1)$
- e. Determine the value of each letter and hence name the place in Canada represented by the following code. (4) (2) (3) (8) (7) (7) (1) (9) (6) (5)

Ⓐ **Question #16: Factoring Quadratics**

Reference Q.19114

When $(4x - 7y)^2 - (4x - 7y) - 12$ is factored completely, one of the factors will be:

- A. $4x - 7y + 4$
- B. $4x - 7y - 3$
- C. $4x - 7y + 3$
- D. $4x + 7y - 4$

Ⓐ **Question #17: Factoring Quadratics**

Reference Q.19115

When $-(3x - 2)^2 - 2(3x - 2) + 35$ is factored completely, one of the factors will be:

- A. $-5 - 3x$
- B. $5 - 3x$
- C. $7 + 3x$
- D. $-7 - 3x$

Ⓐ **Question #18: A Rectangular Garden**

Reference Q.14979

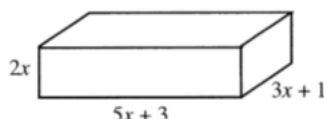
A rectangular garden has an area of $(2a^2 + 3a - 5)$ meters squared.

- a. Write the area as the product of two binomials.
- b. The garden is to be completely enclosed by a path 1m wide. Find and simplify an expression for the area of the path.
- c. The path is concrete, poured to a depth of 12 cm. Calculate the volume (in m^3) of concrete used if $a = 7$.

Ⓐ **Question #19: Rectangular Prism Tank**

Reference Q.15050

A tank in the shape of a rectangular prism has dimensions $2x, 3x + 1$, and $5x + 3$ meters. A wooden block is dropped into the tank and the tank is then filled with water, covering the wooden block. The volume of water is $22x^3 + 18x^2 + 3x$ cubic meters.



- a. Determine a polynomial expression for the volume of the wooden block.
- b. Factor the expression in a) to determine the dimensions of the wooden block.