

## Multiplying Two Binomials by a Trinomial (A)

Simplify each expression.

1.  $(-8m^3 + 2m^2)(-5m^4 - 3m^3)(-6m^5 + 9m^4 - m^3)$

2.  $(-4p^5 - 5p^4)(-4p - 7)(8p^5 + p^4 + 9p^3)$

3.  $(-4g^2 + g)(6g^2 - 6g)(3g^3 + 3g^2 + 7g)$

4.  $(6f^4 + 7f^3)(-6f^4 + 7f^3)(-5f^2 + 2f - 1)$

5.  $(-b - 5)(-7b^2 + 4b)(8b^3 - 9b^2 - 4b)$

## Multiplying Two Binomials by a Trinomial (A) Answers

Simplify each expression.

$$\begin{aligned} 1. & (-8m^3 + 2m^2)(-5m^4 - 3m^3)(-6m^5 + 9m^4 - m^3) \\ & = -240m^{12} + 276m^{11} + 122m^{10} - 68m^9 + 6m^8 \end{aligned}$$

$$\begin{aligned} 2. & (-4p^5 - 5p^4)(-4p - 7)(8p^5 + p^4 + 9p^3) \\ & = 128p^{11} + 400p^{10} + 472p^9 + 467p^8 + 315p^7 \end{aligned}$$

$$\begin{aligned} 3. & (-4g^2 + g)(6g^2 - 6g)(3g^3 + 3g^2 + 7g) \\ & = -72g^7 + 18g^6 - 96g^5 + 192g^4 - 42g^3 \end{aligned}$$

$$\begin{aligned} 4. & (6f^4 + 7f^3)(-6f^4 + 7f^3)(-5f^2 + 2f - 1) \\ & = 180f^{10} - 72f^9 - 209f^8 + 98f^7 - 49f^6 \end{aligned}$$

$$\begin{aligned} 5. & (-b - 5)(-7b^2 + 4b)(8b^3 - 9b^2 - 4b) \\ & = 56b^6 + 185b^5 - 467b^4 + 56b^3 + 80b^2 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (B)

Simplify each expression.

1.  $(5f^4 - 6f^3)(7f^4 - 5f^3)(9f^3 + 7f^2 + 3f)$

2.  $(9d^2 + 8d)(7d + 7)(-5d^2 + 6d - 5)$

3.  $(9t^2 - 3t)(-t^4 + 9t^3)(7t^4 + 6t^3 + 4t^2)$

4.  $(6w^4 + 7w^3)(-w^3 + 4w^2)(9w^2 + 3w + 3)$

5.  $(4x + 2)(-4x^3 + 7x^2)(3x^3 + 9x^2 + 9x)$

## Multiplying Two Binomials by a Trinomial (B) Answers

Simplify each expression.

$$\begin{aligned} 1. & (5f^4 - 6f^3)(7f^4 - 5f^3)(9f^3 + 7f^2 + 3f) \\ & = 315f^{11} - 358f^{10} - 94f^9 + 9f^8 + 90f^7 \end{aligned}$$

$$\begin{aligned} 2. & (9d^2 + 8d)(7d + 7)(-5d^2 + 6d - 5) \\ & = -315d^5 - 217d^4 + 119d^3 - 259d^2 - 280d \end{aligned}$$

$$\begin{aligned} 3. & (9t^2 - 3t)(-t^4 + 9t^3)(7t^4 + 6t^3 + 4t^2) \\ & = -63t^{10} + 534t^9 + 279t^8 + 174t^7 - 108t^6 \end{aligned}$$

$$\begin{aligned} 4. & (6w^4 + 7w^3)(-w^3 + 4w^2)(9w^2 + 3w + 3) \\ & = -54w^9 + 135w^8 + 285w^7 + 135w^6 + 84w^5 \end{aligned}$$

$$\begin{aligned} 5. & (4x + 2)(-4x^3 + 7x^2)(3x^3 + 9x^2 + 9x) \\ & = -48x^7 - 84x^6 + 78x^5 + 306x^4 + 126x^3 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (C)

Simplify each expression.

1.  $(z^2 - 5z)(-5z^2 + 7z)(7z^3 + 9z^2 - 2z)$

2.  $(3v^3 - 5v^2)(v^5 + 7v^4)(3v^4 + 9v^3 + 2v^2)$

3.  $(-3g^4 - 8g^3)(4g^5 - 7g^4)(-3g^4 + 6g^3 - 5g^2)$

4.  $(-7x^4 - 4x^3)(-x^4 + 2x^3)(-3x^2 + 2x - 9)$

5.  $(5h^4 + 6h^3)(2h^2 + 5h)(-2h^2 + 7h - 9)$

## Multiplying Two Binomials by a Trinomial (C) Answers

Simplify each expression.

$$\begin{aligned} 1. & (z^2 - 5z)(-5z^2 + 7z)(7z^3 + 9z^2 - 2z) \\ & = -35z^7 + 179z^6 + 53z^5 - 379z^4 + 70z^3 \end{aligned}$$

$$\begin{aligned} 2. & (3v^3 - 5v^2)(v^5 + 7v^4)(3v^4 + 9v^3 + 2v^2) \\ & = 9v^{12} + 75v^{11} + 45v^{10} - 283v^9 - 70v^8 \end{aligned}$$

$$\begin{aligned} 3. & (-3g^4 - 8g^3)(4g^5 - 7g^4)(-3g^4 + 6g^3 - 5g^2) \\ & = 36g^{13} - 39g^{12} - 174g^{11} + 391g^{10} - 280g^9 \end{aligned}$$

$$\begin{aligned} 4. & (-7x^4 - 4x^3)(-x^4 + 2x^3)(-3x^2 + 2x - 9) \\ & = -21x^{10} + 44x^9 - 59x^8 + 74x^7 + 72x^6 \end{aligned}$$

$$\begin{aligned} 5. & (5h^4 + 6h^3)(2h^2 + 5h)(-2h^2 + 7h - 9) \\ & = -20h^8 - 4h^7 + 109h^6 - 123h^5 - 270h^4 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (D)

Simplify each expression.

1.  $(-4w^3 + 4w^2)(-4w^3 + 8w^2)(2w^2 - 7w - 7)$

2.  $(-7c^4 - c^3)(2c^3 + 4c^2)(5c^3 - 8c^2 - 4c)$

3.  $(3m^4 + 7m^3)(9m^3 + m^2)(-m^5 + 3m^4 + 8m^3)$

4.  $(6p^4 - p^3)(-5p + 2)(-9p^5 - 6p^4 + 8p^3)$

5.  $(-5m^5 + 6m^4)(-3m + 3)(5m^2 - 8m - 9)$

## Multiplying Two Binomials by a Trinomial (D) Answers

Simplify each expression.

$$\begin{aligned} 1. & (-4w^3 + 4w^2)(-4w^3 + 8w^2)(2w^2 - 7w - 7) \\ & = 32w^8 - 208w^7 + 288w^6 + 112w^5 - 224w^4 \end{aligned}$$

$$\begin{aligned} 2. & (-7c^4 - c^3)(2c^3 + 4c^2)(5c^3 - 8c^2 - 4c) \\ & = -70c^{10} - 38c^9 + 276c^8 + 152c^7 + 16c^6 \end{aligned}$$

$$\begin{aligned} 3. & (3m^4 + 7m^3)(9m^3 + m^2)(-m^5 + 3m^4 + 8m^3) \\ & = -27m^{12} + 15m^{11} + 407m^{10} + 549m^9 + 56m^8 \end{aligned}$$

$$\begin{aligned} 4. & (6p^4 - p^3)(-5p + 2)(-9p^5 - 6p^4 + 8p^3) \\ & = 270p^{10} + 27p^9 - 324p^8 + 148p^7 - 16p^6 \end{aligned}$$

$$\begin{aligned} 5. & (-5m^5 + 6m^4)(-3m + 3)(5m^2 - 8m - 9) \\ & = 75m^8 - 285m^7 + 219m^6 + 153m^5 - 162m^4 \end{aligned}$$



## Multiplying Two Binomials by a Trinomial (E)

Simplify each expression.

1.  $(5q^5 + q^4)(-6q^4 + 3q^3)(3q^3 - 8q^2 - q)$

2.  $(-2x^4 + 3x^3)(-x^5 + 7x^4)(-6x^4 - 3x^3 - 3x^2)$

3.  $(-7z^2 - 4z)(5z^5 - 5z^4)(4z^5 + 9z^4 - 6z^3)$

4.  $(5g^4 - 6g^3)(-6g^4 - 5g^3)(-6g^4 + g^3 + 8g^2)$

5.  $(-7h + 6)(-4h + 2)(8h^2 - 8h + 2)$

## Multiplying Two Binomials by a Trinomial (E) Answers

Simplify each expression.

$$\begin{aligned} 1. & (5q^5 + q^4)(-6q^4 + 3q^3)(3q^3 - 8q^2 - q) \\ & = -90q^{12} + 267q^{11} - 33q^{10} - 33q^9 - 3q^8 \end{aligned}$$

$$\begin{aligned} 2. & (-2x^4 + 3x^3)(-x^5 + 7x^4)(-6x^4 - 3x^3 - 3x^2) \\ & = -12x^{13} + 96x^{12} - 81x^{11} - 12x^{10} - 63x^9 \end{aligned}$$

$$\begin{aligned} 3. & (-7z^2 - 4z)(5z^5 - 5z^4)(4z^5 + 9z^4 - 6z^3) \\ & = -140z^{12} - 255z^{11} + 425z^{10} + 90z^9 - 120z^8 \end{aligned}$$

$$\begin{aligned} 4. & (5g^4 - 6g^3)(-6g^4 - 5g^3)(-6g^4 + g^3 + 8g^2) \\ & = 180g^{12} - 96g^{11} - 409g^{10} + 118g^9 + 240g^8 \end{aligned}$$

$$\begin{aligned} 5. & (-7h + 6)(-4h + 2)(8h^2 - 8h + 2) \\ & = 224h^4 - 528h^3 + 456h^2 - 172h + 24 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (F)

Simplify each expression.

1.  $(5w^2 + 2w)(-7w^5 - 5w^4)(-w^5 - 7w^4 - w^3)$

2.  $(-8n^2 + 6n)(7n^5 + 8n^4)(-2n^2 + 2n - 3)$

3.  $(m - 2)(3m - 1)(-8m^2 + 9m - 7)$

4.  $(9d^4 + 7d^3)(d^2 - 9d)(-8d^4 + 3d^3 - 7d^2)$

5.  $(2q^2 + 2q)(-3q + 1)(-7q^3 + 2q^2 + 3q)$

## Multiplying Two Binomials by a Trinomial (F) Answers

Simplify each expression.

$$\begin{aligned} 1. & (5w^2 + 2w)(-7w^5 - 5w^4)(-w^5 - 7w^4 - w^3) \\ & = 35w^{12} + 284w^{11} + 318w^{10} + 109w^9 + 10w^8 \end{aligned}$$

$$\begin{aligned} 2. & (-8n^2 + 6n)(7n^5 + 8n^4)(-2n^2 + 2n - 3) \\ & = 112n^9 - 68n^8 + 28n^7 + 162n^6 - 144n^5 \end{aligned}$$

$$\begin{aligned} 3. & (m - 2)(3m - 1)(-8m^2 + 9m - 7) \\ & = -24m^4 + 83m^3 - 100m^2 + 67m - 14 \end{aligned}$$

$$\begin{aligned} 4. & (9d^4 + 7d^3)(d^2 - 9d)(-8d^4 + 3d^3 - 7d^2) \\ & = -72d^{10} + 619d^9 + 219d^8 + 329d^7 + 441d^6 \end{aligned}$$

$$\begin{aligned} 5. & (2q^2 + 2q)(-3q + 1)(-7q^3 + 2q^2 + 3q) \\ & = 42q^6 + 16q^5 - 40q^4 - 8q^3 + 6q^2 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (G)

Simplify each expression.

1.  $(3t^2 - 7t)(6t^4 + 8t^3)(-4t^2 + 8t - 7)$

2.  $(8b + 9)(b^5 + 5b^4)(8b^3 - 8b^2 + 5b)$

3.  $(8s^2 + 4s)(-8s^3 + 5s^2)(7s^3 + 9s^2 - 2s)$

4.  $(5s^3 - s^2)(2s^3 + 4s^2)(-9s^5 + 2s^4 + 8s^3)$

5.  $(2x^2 - 3x)(-5x^3 - 8x^2)(7x^4 - 8x^3 + 4x^2)$

## Multiplying Two Binomials by a Trinomial (G) Answers

Simplify each expression.

$$\begin{aligned} 1. & (3t^2 - 7t)(6t^4 + 8t^3)(-4t^2 + 8t - 7) \\ & = -72t^8 + 216t^7 - 46t^6 - 322t^5 + 392t^4 \end{aligned}$$

$$\begin{aligned} 2. & (8b + 9)(b^5 + 5b^4)(8b^3 - 8b^2 + 5b) \\ & = 64b^9 + 328b^8 + 8b^7 - 115b^6 + 225b^5 \end{aligned}$$

$$\begin{aligned} 3. & (8s^2 + 4s)(-8s^3 + 5s^2)(7s^3 + 9s^2 - 2s) \\ & = -448s^8 - 520s^7 + 340s^6 + 164s^5 - 40s^4 \end{aligned}$$

$$\begin{aligned} 4. & (5s^3 - s^2)(2s^3 + 4s^2)(-9s^5 + 2s^4 + 8s^3) \\ & = -90s^{11} - 142s^{10} + 152s^9 + 136s^8 - 32s^7 \end{aligned}$$

$$\begin{aligned} 5. & (2x^2 - 3x)(-5x^3 - 8x^2)(7x^4 - 8x^3 + 4x^2) \\ & = -70x^9 + 73x^8 + 136x^7 - 196x^6 + 96x^5 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (H)

Simplify each expression.

1.  $(8p^2 - 9p)(6p^3 - 9p^2)(-8p^5 - 7p^4 - 6p^3)$

2.  $(-2w^2 + 3w)(-3w^5 - 9w^4)(-8w^5 - w^4 + w^3)$

3.  $(5v + 9)(5v^2 - v)(-8v^2 - v + 6)$

4.  $(6q + 4)(-8q^5 + 3q^4)(-6q^4 + 2q^3 - 8q^2)$

5.  $(-2f^4 - 9f^3)(6f^2 + 3f)(6f^2 - 8f + 2)$

## Multiplying Two Binomials by a Trinomial (H) Answers

Simplify each expression.

$$\begin{aligned} 1. & (8p^2 - 9p)(6p^3 - 9p^2)(-8p^5 - 7p^4 - 6p^3) \\ & = -384p^{10} + 672p^9 - 54p^8 + 189p^7 - 486p^6 \end{aligned}$$

$$\begin{aligned} 2. & (-2w^2 + 3w)(-3w^5 - 9w^4)(-8w^5 - w^4 + w^3) \\ & = -48w^{12} - 78w^{11} + 213w^{10} + 36w^9 - 27w^8 \end{aligned}$$

$$\begin{aligned} 3. & (5v + 9)(5v^2 - v)(-8v^2 - v + 6) \\ & = -200v^5 - 345v^4 + 182v^3 + 249v^2 - 54v \end{aligned}$$

$$\begin{aligned} 4. & (6q + 4)(-8q^5 + 3q^4)(-6q^4 + 2q^3 - 8q^2) \\ & = 288q^{10} - 12q^9 + 284q^8 + 136q^7 - 96q^6 \end{aligned}$$

$$\begin{aligned} 5. & (-2f^4 - 9f^3)(6f^2 + 3f)(6f^2 - 8f + 2) \\ & = -72f^8 - 264f^7 + 294f^6 + 96f^5 - 54f^4 \end{aligned}$$



## Multiplying Two Binomials by a Trinomial (I)

Simplify each expression.

1.  $(4k^5 - 9k^4)(-2k^4 + 9k^3)(5k^2 + 8k + 2)$

2.  $(-6a - 8)(-a^4 - 5a^3)(4a^3 + 6a^2 - 4a)$

3.  $(-8t^5 - 8t^4)(-2t^4 + 3t^3)(-9t^2 - 6t - 7)$

4.  $(8a^3 - 5a^2)(3a + 8)(-7a^4 - 6a^3 - a^2)$

5.  $(-9z^3 + 2z^2)(-6z^5 + 7z^4)(-7z^2 + 4z + 5)$

## Multiplying Two Binomials by a Trinomial (I) Answers

Simplify each expression.

$$\begin{aligned} 1. & (4k^5 - 9k^4)(-2k^4 + 9k^3)(5k^2 + 8k + 2) \\ & = -40k^{11} + 206k^{10} + 11k^9 - 540k^8 - 162k^7 \end{aligned}$$

$$\begin{aligned} 2. & (-6a - 8)(-a^4 - 5a^3)(4a^3 + 6a^2 - 4a) \\ & = 24a^8 + 188a^7 + 364a^6 + 88a^5 - 160a^4 \end{aligned}$$

$$\begin{aligned} 3. & (-8t^5 - 8t^4)(-2t^4 + 3t^3)(-9t^2 - 6t - 7) \\ & = -144t^{11} - 24t^{10} + 152t^9 + 200t^8 + 168t^7 \end{aligned}$$

$$\begin{aligned} 4. & (8a^3 - 5a^2)(3a + 8)(-7a^4 - 6a^3 - a^2) \\ & = -168a^8 - 487a^7 - 38a^6 + 191a^5 + 40a^4 \end{aligned}$$

$$\begin{aligned} 5. & (-9z^3 + 2z^2)(-6z^5 + 7z^4)(-7z^2 + 4z + 5) \\ & = -378z^{10} + 741z^9 - 128z^8 - 319z^7 + 70z^6 \end{aligned}$$

## Multiplying Two Binomials by a Trinomial (J)

Simplify each expression.

1.  $(-5s^4 - 6s^3)(6s - 2)(s^5 - 9s^4 - 3s^3)$

2.  $(4b + 3)(3b^3 - 8b^2)(-b^5 - 2b^4 + 5b^3)$

3.  $(5h + 6)(8h^2 + 3h)(-4h^3 + 3h^2 + 2h)$

4.  $(-3q - 1)(-q^4 + 3q^3)(q^3 + 9q^2 + q)$

5.  $(7w^2 + 8w)(-9w^4 + 9w^3)(5w^3 + 9w^2 + 9w)$

## Multiplying Two Binomials by a Trinomial (J) Answers

Simplify each expression.

- $(-5s^4 - 6s^3)(6s - 2)(s^5 - 9s^4 - 3s^3)$   
 $= -30s^{10} + 244s^9 + 336s^8 - 30s^7 - 36s^6$
- $(4b + 3)(3b^3 - 8b^2)(-b^5 - 2b^4 + 5b^3)$   
 $= -12b^9 - 1b^8 + 130b^7 - 67b^6 - 120b^5$
- $(5h + 6)(8h^2 + 3h)(-4h^3 + 3h^2 + 2h)$   
 $= -160h^6 - 132h^5 + 197h^4 + 180h^3 + 36h^2$
- $(-3q - 1)(-q^4 + 3q^3)(q^3 + 9q^2 + q)$   
 $= 3q^8 + 19q^7 - 72q^6 - 35q^5 - 3q^4$
- $(7w^2 + 8w)(-9w^4 + 9w^3)(5w^3 + 9w^2 + 9w)$   
 $= -315w^9 - 612w^8 - 288w^7 + 567w^6 + 648w^5$