

# Simplifying Quadratic Expressions (A)

Simplify each expression by combining like terms.

1.  $-8 - 9 + 9s^2 + 9s^2 - 3s - 5 - 1 + 7s^2 + 9 + 4s$

2.  $-5z - 8z^2 + 2z^2 - 4z + 9z + 7z^2 + 1 - z + 6z^2 - 5$

3.  $2n^2 - 2n + 7n^2 - 1 + 9n^2 + 6n^2 - 4n + 5n^2 - 2 - 1$

4.  $-9 + 8q^2 + 8 - 8q - 7q^2 + 5q - q^2 + 2q + 3q + 3q^2$

5.  $6q - 8q^2 - 7q - 9q^2 + 2 - q^2 - q^2 - 8q - 2q^2 + 8q$

6.  $6q^2 + 7q - 5q^2 - 4q^2 + 8q^2 + 6q + 3q^2 - 4q + 5 - 4$

7.  $4 + 6v^2 - 8v^2 - 5v^2 + 5v^2 + 3v^2 + 5 + 8 - 6v^2 - 2v$

8.  $f^2 - 7f + 5f + 8f^2 + 7f^2 - 5f + 9f + 5f - 3 - 7$

9.  $-8z - 7z^2 - 5 + 7z + 5 + 7z^2 - 2z^2 + 5 + 3z^2 - 4z^2$

10.  $-3 + 3 + 3 + 2 + 8f + 2f^2 - 5f + 9 - 9f + 3f^2$

# Simplifying Quadratic Expressions (A) Answers

Simplify each expression by combining like terms.

$$1. -8 - 9 + 9s^2 + 9s^2 - 3s - 5 - 1 + 7s^2 + 9 + 4s \\ = 25s^2 + s - 14$$

$$2. -5z - 8z^2 + 2z^2 - 4z + 9z + 7z^2 + 1 - z + 6z^2 - 5 \\ = 7z^2 - z - 4$$

$$3. 2n^2 - 2n + 7n^2 - 1 + 9n^2 + 6n^2 - 4n + 5n^2 - 2 - 1 \\ = 29n^2 - 6n - 4$$

$$4. -9 + 8q^2 + 8 - 8q - 7q^2 + 5q - q^2 + 2q + 3q + 3q^2 \\ = 3q^2 + 2q - 1$$

$$5. 6q - 8q^2 - 7q - 9q^2 + 2 - q^2 - q^2 - 8q - 2q^2 + 8q \\ = -21q^2 - q + 2$$

$$6. 6q^2 + 7q - 5q^2 - 4q^2 + 8q^2 + 6q + 3q^2 - 4q + 5 - 4 \\ = 8q^2 + 9q + 1$$

$$7. 4 + 6v^2 - 8v^2 - 5v^2 + 5v^2 + 3v^2 + 5 + 8 - 6v^2 - 2v \\ = -5v^2 - 2v + 17$$

$$8. f^2 - 7f + 5f + 8f^2 + 7f^2 - 5f + 9f + 5f - 3 - 7 \\ = 16f^2 + 7f - 10$$

$$9. -8z - 7z^2 - 5 + 7z + 5 + 7z^2 - 2z^2 + 5 + 3z^2 - 4z^2 \\ = -3z^2 - z + 5$$

$$10. -3 + 3 + 3 + 2 + 8f + 2f^2 - 5f + 9 - 9f + 3f^2 \\ = 5f^2 - 6f + 14$$

## Simplifying Quadratic Expressions (B)

Simplify each expression by combining like terms.

1.  $-5x^2 + 2 + 9x^2 + 6x^2 + 7x^2 + 4 + 3x + 2x + 4x + 3x$

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

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

4.  $-3j - j^2 - 4j - 8 + 8 + 6j^2 + 4j + 3 - j^2 - 5j$

5.  $-7v - 9v^2 - 1 + v^2 - 4 - 2 + 8 - 6v + 7v + 4v$

6.  $7y + 9y^2 + 8y^2 + 4y + 7y^2 + 9y^2 - 6y + 6 - 7y^2 + 4y^2$

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

8.  $-4 - 5z - 7z^2 + 5z^2 - 6 - 2 + 3 + 8 + 9z^2 - 4z^2$

9.  $p^2 - 4p^2 - 1 - 2 - 6 - 4 + 9p - 4 + 9p^2 - 8p^2$

10.  $6p - 9p^2 + 7p^2 + 7 - 4p^2 - 6p + 7 + 6 - 3 + 3p^2$

# Simplifying Quadratic Expressions (B) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & -5x^2 + 2 + 9x^2 + 6x^2 + 7x^2 + 4 + 3x + 2x + 4x + 3x \\ & = 17x^2 + 12x + 6 \end{aligned}$$

$$\begin{aligned} 2. & -3 + 4 + 9s - 4s - 3s^2 - 8 + 8 + 4s - 2 + 5s^2 \\ & = 2s^2 + 9s - 1 \end{aligned}$$

$$\begin{aligned} 3. & 7 - 8w^2 - 4w^2 + 8w^2 + 8w^2 - 9w^2 - w^2 - 7w - 2 + 5 \\ & = -6w^2 - 7w + 10 \end{aligned}$$

$$\begin{aligned} 4. & -3j - j^2 - 4j - 8 + 8 + 6j^2 + 4j + 3 - j^2 - 5j \\ & = 4j^2 - 8j + 3 \end{aligned}$$

$$\begin{aligned} 5. & -7v - 9v^2 - 1 + v^2 - 4 - 2 + 8 - 6v + 7v + 4v \\ & = -8v^2 - 2v + 1 \end{aligned}$$

$$\begin{aligned} 6. & 7y + 9y^2 + 8y^2 + 4y + 7y^2 + 9y^2 - 6y + 6 - 7y^2 + 4y^2 \\ & = 30y^2 + 5y + 6 \end{aligned}$$

$$\begin{aligned} 7. & 3x^2 - 3 - 2x^2 - 4x^2 - 2x^2 + 9x^2 + 2 - 3 + 9 - 2x^2 \\ & = 2x^2 + 5 \end{aligned}$$

$$\begin{aligned} 8. & -4 - 5z - 7z^2 + 5z^2 - 6 - 2 + 3 + 8 + 9z^2 - 4z^2 \\ & = 3z^2 - 5z - 1 \end{aligned}$$

$$\begin{aligned} 9. & p^2 - 4p^2 - 1 - 2 - 6 - 4 + 9p - 4 + 9p^2 - 8p^2 \\ & = -2p^2 + 9p - 17 \end{aligned}$$

$$\begin{aligned} 10. & 6p - 9p^2 + 7p^2 + 7 - 4p^2 - 6p + 7 + 6 - 3 + 3p^2 \\ & = -3p^2 + 17 \end{aligned}$$

## Simplifying Quadratic Expressions (C)

Simplify each expression by combining like terms.

1.  $9 + 8f^2 + f^2 - 5f^2 + 8 - 9 + 5f - 4f^2 + 8f - f$

2.  $9f^2 + 5f^2 - 5f^2 + 7f - 4f - 9f^2 - 5f^2 + 9f^2 + 7f^2 - 4f^2$

3.  $-3r^2 - 4r^2 - 4 + 6r + 2r^2 - 1 + 7r + 2r + 5r + 2r$

4.  $-2q^2 + 3q - 8 + 9q^2 - 2 - 4 - 3q - 3 - 3q^2 - 5$

5.  $-3z^2 + 4 - 7 + 7z - 1 - 1 + 7 - 2 - 7z + 9$

6.  $p + 5 + 5p^2 + 7p^2 + 4p - 9 - 6p^2 + 4p^2 + 3 + 7p$

7.  $5k^2 - 3k + 7k^2 + 2k - 3 - 9k + 4k^2 + 6 + 2k + 6k$

8.  $4c + 7c^2 - 8 + 2 + 4 - 6c^2 + 2c^2 - 1 + 7c^2 - 4c$

9.  $3 + d^2 + 4d + 7 - 7 - d^2 + 3d - 6d - 6d^2 - 2$

10.  $-1 - 8 - 4a^2 - 5a^2 - 2a - 9a^2 + 3 + 9 - 8 + 7a^2$

# Simplifying Quadratic Expressions (C) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & 9 + 8f^2 + f^2 - 5f^2 + 8 - 9 + 5f - 4f^2 + 8f - f \\ & = 12f + 8 \end{aligned}$$

$$\begin{aligned} 2. & 9f^2 + 5f^2 - 5f^2 + 7f - 4f - 9f^2 - 5f^2 + 9f^2 + 7f^2 - 4f^2 \\ & = 7f^2 + 3f \end{aligned}$$

$$\begin{aligned} 3. & -3r^2 - 4r^2 - 4 + 6r + 2r^2 - 1 + 7r + 2r + 5r + 2r \\ & = -5r^2 + 22r - 5 \end{aligned}$$

$$\begin{aligned} 4. & -2q^2 + 3q - 8 + 9q^2 - 2 - 4 - 3q - 3 - 3q^2 - 5 \\ & = 4q^2 - 22 \end{aligned}$$

$$\begin{aligned} 5. & -3z^2 + 4 - 7 + 7z - 1 - 1 + 7 - 2 - 7z + 9 \\ & = -3z^2 + 9 \end{aligned}$$

$$\begin{aligned} 6. & p + 5 + 5p^2 + 7p^2 + 4p - 9 - 6p^2 + 4p^2 + 3 + 7p \\ & = 10p^2 + 12p - 1 \end{aligned}$$

$$\begin{aligned} 7. & 5k^2 - 3k + 7k^2 + 2k - 3 - 9k + 4k^2 + 6 + 2k + 6k \\ & = 16k^2 - 2k + 3 \end{aligned}$$

$$\begin{aligned} 8. & 4c + 7c^2 - 8 + 2 + 4 - 6c^2 + 2c^2 - 1 + 7c^2 - 4c \\ & = 10c^2 - 3 \end{aligned}$$

$$\begin{aligned} 9. & 3 + d^2 + 4d + 7 - 7 - d^2 + 3d - 6d - 6d^2 - 2 \\ & = -6d^2 + d + 1 \end{aligned}$$

$$\begin{aligned} 10. & -1 - 8 - 4a^2 - 5a^2 - 2a - 9a^2 + 3 + 9 - 8 + 7a^2 \\ & = -11a^2 - 2a - 5 \end{aligned}$$

## Simplifying Quadratic Expressions (D)

Simplify each expression by combining like terms.

1.  $-2c^2 - 3c + 8 - 4c^2 - 8 + 6 + 6 + 7 - 3c^2 - 3c$

2.  $q^2 - 2q^2 + 4 - 2q^2 + 9q - q + q^2 - 7 + 3q - 5q^2$

3.  $-8h^2 - 6h - 6h^2 - 5h^2 - 7h + 8h + h^2 - 8 + 4 + 7h^2$

4.  $-5b - 1 - 6 + 7b + 8b^2 + 5b^2 - 6b^2 - 9 + 8b^2 - 4b^2$

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

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

7.  $-7f^2 - 9f^2 + 3f - 6f^2 + 5f + 7 + 8f + 2f - 8 - 7f$

8.  $b^2 - 6 - 2b - b^2 - 5 - 9 + 6b^2 + 3b^2 + 2b + 2b^2$

9.  $-8z^2 + 2z^2 - 3z + 4z + 5z - 3z + 8 + 3z^2 - 8z^2 - 9$

10.  $5h^2 - 6h - h^2 + 9h + 4h^2 + 6h^2 - 8h^2 - 3h + h^2 - 5$

## Simplifying Quadratic Expressions (D) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & -2c^2 - 3c + 8 - 4c^2 - 8 + 6 + 6 + 7 - 3c^2 - 3c \\ & = -9c^2 - 6c + 19 \end{aligned}$$

$$\begin{aligned} 2. & q^2 - 2q^2 + 4 - 2q^2 + 9q - q + q^2 - 7 + 3q - 5q^2 \\ & = -7q^2 + 11q - 3 \end{aligned}$$

$$\begin{aligned} 3. & -8h^2 - 6h - 6h^2 - 5h^2 - 7h + 8h + h^2 - 8 + 4 + 7h^2 \\ & = -11h^2 - 5h - 4 \end{aligned}$$

$$\begin{aligned} 4. & -5b - 1 - 6 + 7b + 8b^2 + 5b^2 - 6b^2 - 9 + 8b^2 - 4b^2 \\ & = 11b^2 + 2b - 16 \end{aligned}$$

$$\begin{aligned} 5. & 4b^2 + 9b + 3 - 8 + 4b^2 - 5b^2 + 2 - 2b^2 - 4 - 3 \\ & = b^2 + 9b - 10 \end{aligned}$$

$$\begin{aligned} 6. & -5 + a^2 - 8a^2 - 3a + 4a - 4 - 3 - 6a^2 - 3 - 2a^2 \\ & = -15a^2 + a - 15 \end{aligned}$$

$$\begin{aligned} 7. & -7f^2 - 9f^2 + 3f - 6f^2 + 5f + 7 + 8f + 2f - 8 - 7f \\ & = -22f^2 + 11f - 1 \end{aligned}$$

$$\begin{aligned} 8. & b^2 - 6 - 2b - b^2 - 5 - 9 + 6b^2 + 3b^2 + 2b + 2b^2 \\ & = 11b^2 - 20 \end{aligned}$$

$$\begin{aligned} 9. & -8z^2 + 2z^2 - 3z + 4z + 5z - 3z + 8 + 3z^2 - 8z^2 - 9 \\ & = -11z^2 + 3z - 1 \end{aligned}$$

$$\begin{aligned} 10. & 5h^2 - 6h - h^2 + 9h + 4h^2 + 6h^2 - 8h^2 - 3h + h^2 - 5 \\ & = 7h^2 - 5 \end{aligned}$$



## Simplifying Quadratic Expressions (E)

Simplify each expression by combining like terms.

1.  $3 + 8 + 8n^2 - 7 - 1 + 9 - 6 - 3n^2 - 3n - 5n^2$

2.  $4v^2 - 6v^2 - 2 + 6v + 9v^2 + 2v^2 + 1 + v^2 - 7 - 5v$

3.  $8 + 3 - 8 - 8q^2 + q - 2q - 8q^2 - 7 + 2 - 6q^2$

4.  $4x^2 - 5x + 6x^2 - 3x^2 + 2x^2 - 2x + 4x - 6x^2 - x - 8x^2$

5.  $-8 - a - 8 - 2a^2 + 9a + 3a + 4a^2 + 8a^2 + 9a - 5$

6.  $-2v^2 - 2v + 2v + 9 - 1 - 5v - 7 - 6v^2 - 8v + 3$

7.  $-4s - 9 + s^2 + 6s^2 + 5s^2 + 2s^2 + 7 + 3s - 1 + 2s^2$

8.  $-6k^2 + 4k^2 + 6 - 1 + 8 + 8k - 3k + 5k^2 - 8k + 4$

9.  $-8n - 3n^2 - 9 - 5n + 3 - 2n^2 + 7 + 2n^2 + 7n^2 + n$

10.  $5j^2 - j - 2j + 5j + 5 - 3j - 9j + 5j + j^2 - 2j$

# Simplifying Quadratic Expressions (E) Answers

Simplify each expression by combining like terms.

$$1. 3 + 8 + 8n^2 - 7 - 1 + 9 - 6 - 3n^2 - 3n - 5n^2 \\ = -3n + 6$$

$$2. 4v^2 - 6v^2 - 2 + 6v + 9v^2 + 2v^2 + 1 + v^2 - 7 - 5v \\ = 10v^2 + v - 8$$

$$3. 8 + 3 - 8 - 8q^2 + q - 2q - 8q^2 - 7 + 2 - 6q^2 \\ = -22q^2 - q - 2$$

$$4. 4x^2 - 5x + 6x^2 - 3x^2 + 2x^2 - 2x + 4x - 6x^2 - x - 8x^2 \\ = -5x^2 - 4x$$

$$5. -8 - a - 8 - 2a^2 + 9a + 3a + 4a^2 + 8a^2 + 9a - 5 \\ = 10a^2 + 20a - 21$$

$$6. -2v^2 - 2v + 2v + 9 - 1 - 5v - 7 - 6v^2 - 8v + 3 \\ = -8v^2 - 13v + 4$$

$$7. -4s - 9 + s^2 + 6s^2 + 5s^2 + 2s^2 + 7 + 3s - 1 + 2s^2 \\ = 16s^2 - s - 3$$

$$8. -6k^2 + 4k^2 + 6 - 1 + 8 + 8k - 3k + 5k^2 - 8k + 4 \\ = 3k^2 - 3k + 17$$

$$9. -8n - 3n^2 - 9 - 5n + 3 - 2n^2 + 7 + 2n^2 + 7n^2 + n \\ = 4n^2 - 12n + 1$$

$$10. 5j^2 - j - 2j + 5j + 5 - 3j - 9j + 5j + j^2 - 2j \\ = 6j^2 - 7j + 5$$

## Simplifying Quadratic Expressions (F)

Simplify each expression by combining like terms.

1.  $8q - 8q^2 - 9q^2 - q^2 + 7 + 2 + 5 - 6q^2 + 3q^2 + 7q^2$

2.  $3 - 8j - 9j^2 + 2j + 6j + j^2 + j - 9j^2 - 2 - 6j^2$

3.  $7c^2 + 8c - 5c^2 - 2 - 3c - 8c + 8 + c^2 - c^2 - 5$

4.  $-8r^2 - 8r^2 - 8 + 8 - 7 + 9r^2 + 1 - 7r^2 - 4r + 5r$

5.  $3b^2 + 1 + 5 - 7b^2 + 2 - 8b - 9b^2 + 5b^2 - 8 + 7b^2$

6.  $4n^2 + 1 + 9n^2 + 1 - 8n + 4 - 8n - 8 + 7n^2 + 9n$

7.  $-1 + 8c^2 + 8c + c^2 + 8c^2 + 9c + 6c - c^2 + 8c^2 - 4c^2$

8.  $-1 + 5h^2 - 3 - 8h^2 - h + 2h^2 + 9 + 2h^2 - h + h^2$

9.  $-5 + 2r + 5r + 2 - 7r^2 + r^2 - 5r^2 - r^2 + 3r^2 + 4r^2$

10.  $6 - 6 - 8y^2 + 9 - 9y + 2 + 6 + 2y^2 + 5y^2 - y^2$

# Simplifying Quadratic Expressions (F) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & 8q - 8q^2 - 9q^2 - q^2 + 7 + 2 + 5 - 6q^2 + 3q^2 + 7q^2 \\ & = -14q^2 + 8q + 14 \end{aligned}$$

$$\begin{aligned} 2. & 3 - 8j - 9j^2 + 2j + 6j + j^2 + j - 9j^2 - 2 - 6j^2 \\ & = -23j^2 + j + 1 \end{aligned}$$

$$\begin{aligned} 3. & 7c^2 + 8c - 5c^2 - 2 - 3c - 8c + 8 + c^2 - c^2 - 5 \\ & = 2c^2 - 3c + 1 \end{aligned}$$

$$\begin{aligned} 4. & -8r^2 - 8r^2 - 8 + 8 - 7 + 9r^2 + 1 - 7r^2 - 4r + 5r \\ & = -14r^2 + r - 6 \end{aligned}$$

$$\begin{aligned} 5. & 3b^2 + 1 + 5 - 7b^2 + 2 - 8b - 9b^2 + 5b^2 - 8 + 7b^2 \\ & = -b^2 - 8b \end{aligned}$$

$$\begin{aligned} 6. & 4n^2 + 1 + 9n^2 + 1 - 8n + 4 - 8n - 8 + 7n^2 + 9n \\ & = 20n^2 - 7n - 2 \end{aligned}$$

$$\begin{aligned} 7. & -1 + 8c^2 + 8c + c^2 + 8c^2 + 9c + 6c - c^2 + 8c^2 - 4c^2 \\ & = 20c^2 + 23c - 1 \end{aligned}$$

$$\begin{aligned} 8. & -1 + 5h^2 - 3 - 8h^2 - h + 2h^2 + 9 + 2h^2 - h + h^2 \\ & = 2h^2 - 2h + 5 \end{aligned}$$

$$\begin{aligned} 9. & -5 + 2r + 5r + 2 - 7r^2 + r^2 - 5r^2 - r^2 + 3r^2 + 4r^2 \\ & = -5r^2 + 7r - 3 \end{aligned}$$

$$\begin{aligned} 10. & 6 - 6 - 8y^2 + 9 - 9y + 2 + 6 + 2y^2 + 5y^2 - y^2 \\ & = -2y^2 - 9y + 17 \end{aligned}$$

## Simplifying Quadratic Expressions (G)

Simplify each expression by combining like terms.

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

2.  $-7 - 6j^2 + 9j + 2j^2 - 6j^2 + 3j^2 - 2 + 7j^2 + 5j^2 - 5j^2$

3.  $9 - 8d - 8d - 8 + d + 3d^2 + 5d^2 - 5d^2 + 3d^2 + 5d$

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

5.  $-8 + 7p - 8 + 6p^2 - 4p^2 + 5 - p + p - 4p - 6$

6.  $-7h^2 - 8 - 7h^2 + 7h - 2h^2 - h - 4 - 1 + 6h - 6h$

7.  $-7h^2 - 7h + 7h - 8h^2 + 2h + 4h^2 + h^2 - 4 + 2h - 3$

8.  $-6m - 6 + 9m - 7 - 2 - 6m^2 - 7m^2 + m + 8 - 1$

9.  $-1 - 3b^2 - 5b^2 + 6 + 9 - 3b^2 + 9 + 6b - 8 + 7b^2$

10.  $-2x^2 + 3x^2 - 9x + 4x - 4x - 8 + 6x^2 + 4x^2 + 1 + 9x^2$

# Simplifying Quadratic Expressions (G) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & -4f^2 + 7f + 2 + 3f + 2f + f^2 + 6f + 1 - 5f^2 - 2 \\ & = -8f^2 + 18f + 1 \end{aligned}$$

$$\begin{aligned} 2. & -7 - 6j^2 + 9j + 2j^2 - 6j^2 + 3j^2 - 2 + 7j^2 + 5j^2 - 5j^2 \\ & = 9j - 9 \end{aligned}$$

$$\begin{aligned} 3. & 9 - 8d - 8d - 8 + d + 3d^2 + 5d^2 - 5d^2 + 3d^2 + 5d \\ & = 6d^2 - 10d + 1 \end{aligned}$$

$$\begin{aligned} 4. & 4m - 5m^2 - 7 + 8m^2 + 8m + 2 + 8m^2 - 3m + 7m - 2m^2 \\ & = 9m^2 + 16m - 5 \end{aligned}$$

$$\begin{aligned} 5. & -8 + 7p - 8 + 6p^2 - 4p^2 + 5 - p + p - 4p - 6 \\ & = 2p^2 + 3p - 17 \end{aligned}$$

$$\begin{aligned} 6. & -7h^2 - 8 - 7h^2 + 7h - 2h^2 - h - 4 - 1 + 6h - 6h \\ & = -16h^2 + 6h - 13 \end{aligned}$$

$$\begin{aligned} 7. & -7h^2 - 7h + 7h - 8h^2 + 2h + 4h^2 + h^2 - 4 + 2h - 3 \\ & = -10h^2 + 4h - 7 \end{aligned}$$

$$\begin{aligned} 8. & -6m - 6 + 9m - 7 - 2 - 6m^2 - 7m^2 + m + 8 - 1 \\ & = -13m^2 + 4m - 8 \end{aligned}$$

$$\begin{aligned} 9. & -1 - 3b^2 - 5b^2 + 6 + 9 - 3b^2 + 9 + 6b - 8 + 7b^2 \\ & = -4b^2 + 6b + 15 \end{aligned}$$

$$\begin{aligned} 10. & -2x^2 + 3x^2 - 9x + 4x - 4x - 8 + 6x^2 + 4x^2 + 1 + 9x^2 \\ & = 20x^2 - 9x - 7 \end{aligned}$$

# Simplifying Quadratic Expressions (H)

Simplify each expression by combining like terms.

1.  $9j^2 + 1 - 4j^2 + j^2 + 9 + 8j^2 + 9j^2 - 6j^2 + 2j^2 + 3$

2.  $6a^2 + 3 + 4a - 2a + 1 + 5a - 3a - a^2 - 8 + 1$

3.  $5 - 2d + 5d^2 - 2 + 8d - d - d + d^2 - 6d^2 - 5d^2$

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

5.  $6 - 9f + 8 + 7f^2 - 9f^2 - f^2 + 3f - 9f - 9f^2 - 5f$

6.  $9c^2 + 2c - 2 + 9c - c^2 - 8c^2 + 9c^2 + 6c^2 + 7c - 8c$

7.  $4f^2 - 7 + 2f - 9f^2 + 6 + 6f^2 + 6f^2 - 7f - 8f^2 - 3f^2$

8.  $2g - 9g - 2g^2 - 4 - 5 - 4g - 6g - 3 - 2g^2 - 9g$

9.  $3 + 7n^2 + 4n - 3n^2 + 4n^2 - 9 + 9 + 6n^2 - 8n^2 - 4$

10.  $-3t^2 + 7t + 6t + 2t^2 - 9 - 2t - 2t - 9t + 7 - 8t$

# Simplifying Quadratic Expressions (H) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & 9j^2 + 1 - 4j^2 + j^2 + 9 + 8j^2 + 9j^2 - 6j^2 + 2j^2 + 3 \\ & = 19j^2 + 13 \end{aligned}$$

$$\begin{aligned} 2. & 6a^2 + 3 + 4a - 2a + 1 + 5a - 3a - a^2 - 8 + 1 \\ & = 5a^2 + 4a - 3 \end{aligned}$$

$$\begin{aligned} 3. & 5 - 2d + 5d^2 - 2 + 8d - d - d + d^2 - 6d^2 - 5d^2 \\ & = -5d^2 + 4d + 3 \end{aligned}$$

$$\begin{aligned} 4. & 4 + 5b^2 - 8 - 5b + 2b^2 - 8b - 3 - 7 - 7 + b^2 \\ & = 8b^2 - 13b - 21 \end{aligned}$$

$$\begin{aligned} 5. & 6 - 9f + 8 + 7f^2 - 9f^2 - f^2 + 3f - 9f - 9f^2 - 5f \\ & = -12f^2 - 20f + 14 \end{aligned}$$

$$\begin{aligned} 6. & 9c^2 + 2c - 2 + 9c - c^2 - 8c^2 + 9c^2 + 6c^2 + 7c - 8c \\ & = 15c^2 + 10c - 2 \end{aligned}$$

$$\begin{aligned} 7. & 4f^2 - 7 + 2f - 9f^2 + 6 + 6f^2 + 6f^2 - 7f - 8f^2 - 3f^2 \\ & = -4f^2 - 5f - 1 \end{aligned}$$

$$\begin{aligned} 8. & 2g - 9g - 2g^2 - 4 - 5 - 4g - 6g - 3 - 2g^2 - 9g \\ & = -4g^2 - 26g - 12 \end{aligned}$$

$$\begin{aligned} 9. & 3 + 7n^2 + 4n - 3n^2 + 4n^2 - 9 + 9 + 6n^2 - 8n^2 - 4 \\ & = 6n^2 + 4n - 1 \end{aligned}$$

$$\begin{aligned} 10. & -3t^2 + 7t + 6t + 2t^2 - 9 - 2t - 2t - 9t + 7 - 8t \\ & = -t^2 - 8t - 2 \end{aligned}$$



# Simplifying Quadratic Expressions (I)

Simplify each expression by combining like terms.

1.  $6z^2 - 8z - 4z^2 - 5 + 7z^2 - 3 + 7z - 4 + 9 - 9z^2$

2.  $9a - 7a + 3a + 5a^2 + 4a^2 + 4 - 4a - 7a - 4a^2 - 6$

3.  $4v^2 - 2 + 9v^2 + 6v^2 + 4 - 4v - v^2 + 7v + 3v + 3$

4.  $6y + y - 9y - 8y + 2y^2 - 7y + 1 + 4y^2 + 9y^2 - 8y^2$

5.  $8z - 5z + 3 + 9z^2 + 6z^2 - 3z - 8z^2 + 5z^2 + 4z - 5z$

6.  $-9f - 4f^2 + f^2 + 8f^2 + 5 - 9f^2 - 4f^2 - 8f^2 + 5 + 1$

7.  $8b - 4b^2 - 4 - 5b + b^2 + b^2 + 3b^2 - 6b + 8 + 3b$

8.  $5z^2 - 8z + 3z^2 + 6z^2 + 8 + 5z^2 - 5z - 9z^2 + 7z + z^2$

9.  $9 + 3 + 5 + 6b + 9b^2 - 1 + 9b^2 - b - 6b^2 - 7$

10.  $5 - 3w^2 - w + 7w - 4w^2 + 7w^2 + 3w^2 + 9w - w^2 - 4$

# Simplifying Quadratic Expressions (I) Answers

Simplify each expression by combining like terms.

$$\begin{aligned} 1. & 6z^2 - 8z - 4z^2 - 5 + 7z^2 - 3 + 7z - 4 + 9 - 9z^2 \\ & = -z - 3 \end{aligned}$$

$$\begin{aligned} 2. & 9a - 7a + 3a + 5a^2 + 4a^2 + 4 - 4a - 7a - 4a^2 - 6 \\ & = 5a^2 - 6a - 2 \end{aligned}$$

$$\begin{aligned} 3. & 4v^2 - 2 + 9v^2 + 6v^2 + 4 - 4v - v^2 + 7v + 3v + 3 \\ & = 18v^2 + 6v + 5 \end{aligned}$$

$$\begin{aligned} 4. & 6y + y - 9y - 8y + 2y^2 - 7y + 1 + 4y^2 + 9y^2 - 8y^2 \\ & = 7y^2 - 17y + 1 \end{aligned}$$

$$\begin{aligned} 5. & 8z - 5z + 3 + 9z^2 + 6z^2 - 3z - 8z^2 + 5z^2 + 4z - 5z \\ & = 12z^2 - z + 3 \end{aligned}$$

$$\begin{aligned} 6. & -9f - 4f^2 + f^2 + 8f^2 + 5 - 9f^2 - 4f^2 - 8f^2 + 5 + 1 \\ & = -16f^2 - 9f + 11 \end{aligned}$$

$$\begin{aligned} 7. & 8b - 4b^2 - 4 - 5b + b^2 + b^2 + 3b^2 - 6b + 8 + 3b \\ & = b^2 + 4 \end{aligned}$$

$$\begin{aligned} 8. & 5z^2 - 8z + 3z^2 + 6z^2 + 8 + 5z^2 - 5z - 9z^2 + 7z + z^2 \\ & = 11z^2 - 6z + 8 \end{aligned}$$

$$\begin{aligned} 9. & 9 + 3 + 5 + 6b + 9b^2 - 1 + 9b^2 - b - 6b^2 - 7 \\ & = 12b^2 + 5b + 9 \end{aligned}$$

$$\begin{aligned} 10. & 5 - 3w^2 - w + 7w - 4w^2 + 7w^2 + 3w^2 + 9w - w^2 - 4 \\ & = 2w^2 + 15w + 1 \end{aligned}$$

# Simplifying Quadratic Expressions (J)

Simplify each expression by combining like terms.

1.  $4h - 8h^2 + 3 - 2h^2 - h^2 + 6 - 6h^2 - 2h^2 + 4h^2 + 7h^2$

2.  $9s - 8 - 7 - 1 + 9s - 9s^2 - 9s - 7s^2 - 2 - 2$

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

4.  $2t - 6t^2 - 2t + t^2 - 2 - 6t^2 - 6 + 3t + 6 + 3t$

5.  $-p^2 + 6p^2 + 4p + 6p^2 + 2p^2 + 8p - 9p - 7p^2 + 4p + 5p^2$

6.  $-2j + 6 + j - 6j^2 - 9j^2 - 9 + 5j^2 + 1 + 3j^2 + 5$

7.  $5d^2 + 6d + 5d^2 + 5 + 5d + 7 - 3 + 2d^2 - 9d + 8$

8.  $-5 - 2 - 9r^2 - 9 + 6r + 8r^2 - 2r^2 - 9r^2 - 4r + 8r$

9.  $-v^2 + 1 + 4v - 6 - 4v^2 - 4v + 3v - 3 - 5 - 5v^2$

10.  $8 - 5 - 3r + 7r + 4 - r^2 + 7 + 3 - 8 + 6r^2$

# Simplifying Quadratic Expressions (J) Answers

Simplify each expression by combining like terms.

$$1. 4h - 8h^2 + 3 - 2h^2 - h^2 + 6 - 6h^2 - 2h^2 + 4h^2 + 7h^2 \\ = -8h^2 + 4h + 9$$

$$2. 9s - 8 - 7 - 1 + 9s - 9s^2 - 9s - 7s^2 - 2 - 2 \\ = -16s^2 + 9s - 20$$

$$3. 6f^2 + f - 4f + 9f^2 - f^2 - 7f^2 - 1 + 4 - 6f^2 + 7f \\ = f^2 + 4f + 3$$

$$4. 2t - 6t^2 - 2t + t^2 - 2 - 6t^2 - 6 + 3t + 6 + 3t \\ = -11t^2 + 6t - 2$$

$$5. -p^2 + 6p^2 + 4p + 6p^2 + 2p^2 + 8p - 9p - 7p^2 + 4p + 5p^2 \\ = 11p^2 + 7p$$

$$6. -2j + 6 + j - 6j^2 - 9j^2 - 9 + 5j^2 + 1 + 3j^2 + 5 \\ = -7j^2 - j + 3$$

$$7. 5d^2 + 6d + 5d^2 + 5 + 5d + 7 - 3 + 2d^2 - 9d + 8 \\ = 12d^2 + 2d + 17$$

$$8. -5 - 2 - 9r^2 - 9 + 6r + 8r^2 - 2r^2 - 9r^2 - 4r + 8r \\ = -12r^2 + 10r - 16$$

$$9. -v^2 + 1 + 4v - 6 - 4v^2 - 4v + 3v - 3 - 5 - 5v^2 \\ = -10v^2 + 3v - 13$$

$$10. 8 - 5 - 3r + 7r + 4 - r^2 + 7 + 3 - 8 + 6r^2 \\ = 5r^2 + 4r + 9$$