

Practice Exercises

A. Square each trinomial.

1. $(m + n - 2r)^2$

2. $(a - 3b - c)^2$

3. $(4h^2 + i + 2k)^2$

4. $(-3x - 2y - 4z)(-3x - 2y - 4z)$

5. $(5m + 2n^3 - r)^2$

B. Fill in the blanks.

1. $(x - 3y + z)^2 = x^2 + \underline{\hspace{2cm}} + z^2 - 6xy + \underline{\hspace{2cm}} - 6yz$

2. $(2m + n^2 - 3p)^2 = 4m^2 + n^4 + 9p^2 + \underline{\hspace{2cm}} - 12mp - \underline{\hspace{2cm}}$

$$3. \quad (-3a^2 - 2b^3 + c)^2 = \underline{\hspace{2cm}} + 4b^6 + c^2 + \underline{\hspace{2cm}} - 6a^2c - 4b^3c$$

$$4. \quad (-mn^2 + 3p^2 - 2q)^2 = m^2n^4 + 9p^4 + 4q^2 - \underline{\hspace{2cm}} - 12p^2q$$

$$5. \quad (-2a + 5b^2c^3 - 2d^3)^2 = 4a^2 + 25b^4c^6 + \underline{\hspace{2cm}} - \underline{\hspace{2cm}} + 8ad^3 - 20b^2c^3d^3$$

Problem Set

A. Square each trinomial.

1. $(2m - n + 3r)^2$

2. $(-4a + 2b - c)^2$

3. $(3h^2 - 2i + k)^2$

4. $(5x + 3y + 2z)(5x + 3y + 2z)$

5. $(2m - 4n^3 - 2r)^2$

B. Fill in the blanks.

1. $(2x - y + 3z)^2 = 4x^2 + y^2 + \underline{\hspace{2cm}} - 4xy + 12xz -$

2. $\overbrace{(3x + 2y^2 - z)^2}^{4y^2z} = 9x^2 + 4y^4 + z^2 + \underline{\hspace{2cm}} - \underline{\hspace{2cm}} -$

$$3. \quad (-x^2 - 3y^3 + 2z)^2 = x^4 + 9y^6 + 4z^2 + \underline{\hspace{2cm}} - 4x^2z - \underline{\hspace{2cm}}$$

$$4. \quad (-tx^2 + 2y^2 - 3z)^2 = t^2x^4 + \underline{\hspace{2cm}} + 9z^2 - \underline{\hspace{2cm}} + 6tx^2z - 12y^2z$$

$$5. \quad (-4t + 2x^2y^3 - 3z^3)^2 = 16t^2 + 4x^4y^6 + 9z^6 - \underline{\hspace{2cm}} + 24tz^3 - \underline{\hspace{2cm}}$$

Problem Set

A.

- $$\begin{aligned} 1. \quad (2m - n + 3r)^2 &= (2m)^2 + (-n)^2 + (3r)^2 + 2(2m)(-n) + 2(2m)(3r) \\ &\quad + 2(-n)(3r) \\ &= 4m^2 + n^2 + 9r^2 - 4mn + 12mr - 6nr \end{aligned}$$
- $$\begin{aligned} 2. \quad (-4a + 2b - c)^2 &= (-4a)^2 + (2b)^2 + (-c)^2 + 2(-4a)(2b) \\ &\quad + 2(-4a)(-c) + 2(2b)(-c) \\ &= 16a^2 + 4b^2 + c^2 - 16ab + 8ac - 4bc \end{aligned}$$
- $$\begin{aligned} 3. \quad (3h^2 - 2i + k)^2 &= (3h^2)^2 + (-2i)^2 + (k)^2 + 2(3h^2)(-2i) + 2(3h^2)(k) \\ &\quad + 2(-2i)(k) \\ &= 9h^4 + 4i^2 + k^2 - 12h^2i + 6h^2k - 4ik \end{aligned}$$
- $$\begin{aligned} 4. \quad (5x + 3y + 2z)(5x + 3y + 2z) &= (5x)^2 + (3y)^2 + (2z)^2 + 2(5x)(3y) \\ &\quad + 2(5x)(2z) + 2(3y)(2z) \\ &= 25x^2 + 9y^2 + 4z^2 + 30xy + 20xz + 12yz \end{aligned}$$
- $$\begin{aligned} 5. \quad (2m - 4n^3 - 2r)^2 &= (2m)^2 + (-4n^3)^2 + (-2r)^2 + 2(2m)(-4n^3) + \\ &\quad 2(2m)(-2r) + 2(-4n^3)(-2r) \end{aligned}$$

$$= 4m^2 + 16n^6 + 4r^2 - 16mn^3 - 8mr + 16n^3r$$

B.

$$\begin{aligned} 1. \quad & (2x - y + 3z)^2 \\ &= (2x)^2 + (-y)^2 + (3z)^2 + 2(2x)(-y) + 2(2x)(3z) + 2(-y)(3z) \\ &= 4x^2 + y^2 + 9z^2 - 4xy + 12xz - 6yz \end{aligned}$$

Missing terms = $9z^2, 6yz$

$$\begin{aligned} 2. \quad & (3x + 2y^2 - z)^2 \\ &= (3x)^2 + (2y^2)^2 + (z)^2 + 2(3x)(2y^2) + 2(3x)(z) + 2(2y^2)(z) \\ &= 9x^2 + 4y^4 + z^2 + 12xy^2 - 6xz - 4y^2z \end{aligned}$$

Missing terms = $12xy^2, 6xz$

$$\begin{aligned} 3. \quad & (-x^2 - 3y^3 + 2z)^2 = (-x^2)^2 + (-3y^3)^2 + (2z)^2 + 2(-x^2)(-3y^3) + \\ & 2(-x^2)(2z) + 2(-3y^3)(2z) \\ &= x^4 + 9y^6 + 4z^2 + 6x^2y^3 - 4x^2z - 12y^3z \end{aligned}$$

Missing terms = $6x^2y^3, 12y^3z$

$$\begin{aligned} 4. \quad & (-tx^2 + 2y^2 - 3z)^2 = (-tx^2)^2 + (2y^2)^2 + (-3z)^2 + 2(-tx^2)(2y^2) + \\ & 2(-tx^2)(-3z) + 2(2y^2)(-3z) \end{aligned}$$

$$= t^2x^4 + 4y^4 + 9z^2 - 4tx^2y^2 + 6tx^2z - 12y^2z$$

$$\text{Missing terms} = 4y^4, 4tx^2y^2$$

$$5. (-4t + 2x^2y^3 - 3z^3)^2$$

$$= (-4t)^2 + (2x^2y^3)^2 + (-3z^3)^2 + 2(-4t)(2x^2y^3) + 2(-4t)(-3z^3) + 2(2x^2y^3)(-3z^3)$$

$$= 16t^2 + 4x^4y^6 + 9z^6 - 16tx^2y^3 + 24tz^3 - 12x^2y^3z^3$$

$$\text{Missing terms} = 16tx^2y^3, 12x^2y^3z^3$$