

Additional Exercises Answers

7.1 Form I

1. $5x$
2. $4y^2$
3. $8a^2$
4. $3x^2$
5. $5(x^2 + 4)$
6. $6a^2(a + 3)$
7. $y(3y^2 + 5y + 6)$
8. $6x(4x^3 + 3x - 2)$
9. $4xy(4x^3y^2 - 5x^2y + 3)$
10. $2x^3y^2(2x^2 + 5xy^2 - 7y)$
11. $(y + 14)(x + 6)$
12. $(b - 7)(a - 3)$
13. $(x + 10)(11 - y)$
14. $(x + 4)(y + 2)$
15. $(a + 3)(b - 6)$
16. $(x - 5)(y + 1)$
17. $(x - 2)(x^2 + 2)$
18. $(3a + 1)(2b + 3)$
19. $(5x + 2)(y - 2)$
20. $(x^3 + 2)(x - 1)$

7.1 Form II

1. $4x$
2. $9xy$
3. $8a^5b^2$
4. $6m^3n^2$
5. $7x^2(2x + 3)$
6. $x^5(6 - 5x^2)$
7. $3a^3(8a^6 - 10a^2 + 5)$
8. $4x^3y^3(5x^3 - 11x^2y + 9y^3)$
9. $4x^3y^4(10x^5y^4 - 4y^2 - 5x^3)$
10. $5x^2y^3(3x^4y^2 - 5x^2 + 11xy - 12y)$
11. $(y - 7)(x - 2)$
12. $(b + 3)(a^2 + 4)$
13. $(8 + b)(4a - 1)$
14. $(x - 2)(x^2 - 3)$
15. $(x + 5)(y + 4)$
16. $(b + 2a)(b^2 + 4)$
17. $(3x + 2)(2y + 5)$
18. $(7y - 1)(2x - 3)$
19. $(x - 2)(4x^3 - 3)$
20. $(5a^2 - 4b^2)(4a + 3b)$

7.1 Form III

1. $4x^2$
2. $3x^4$
3. $6x^5y^2$
4. $3y(7y^2 - 3y + 4)$
5. $8x(4x^4 + 3x^2y - 12y^3)$
6. $5a(4a^2 - 3a + 1)$
7. $8x^4y^3(6x^4y^6 + 5x^2y^3 + 8)$
8. $16mn(m^2n^2 - 3m - 4n)$
9. $(x - 3)(x^2 + 6)$
10. $(x + 7)(y - 1)$
11. $(2x - 7)(6x^2 + 1)$
12. $(x - 3)(x^3 - 4x)$
13. $(a - 4b)(b + 6)$
14. $(5x + 8)(2y - 1)$
15. $(3m + 1)(2n - 9)$
16. $(3x^2 + 5)(3x - 2)$
17. $(5x^3 + 3x)(4x - 5)$
18. $(4a^2 - 3)(3a - 4)$
19. $2x + 4y$
20. $4x^3 + 2x^2y - 10x - 5y$

7.2 Form I

1. $(x + 4)(x + 1)$
2. $(x + 3)(x + 4)$
3. $(y + 2)(y + 6)$
4. $(a - 4)(a - 2)$
5. $(x - 5)(x - 3)$
6. $(y - 7)(y - 1)$
7. $(a + 3)(a - 2)$
8. $(x + 5)(x - 8)$
9. $(m + 1)(m - 4)$
10. $(x + 2y)(x + 5y)$
11. $(a + 7b)(a - 3b)$
12. $(x + 3y)(x - 9y)$
13. $(a - 5)(a - 6)$
14. $(x + 7)(x + 4)$
15. $2(x + 1)(x - 3)$
16. $3(a - 2)(a - 3)$
17. $x(x + 6)(x + 1)$
18. $xy(x + 7)(x - 5)$
19. $4(x - 2)(x - 6)$
20. $8a(a + 3)(a + 4)$

7.2 Form II

1. $(x + 8)(x + 2)$
2. $(x - 4)(x - 6)$
3. $(x + 5)(x - 6)$
4. $(a + 3)(a + 7)$
5. $(y + 12)(y - 3)$
6. $(x - 6)(x - 9)$
7. $(x + 9)(x - 4)$
8. $(a + 11)(a + 3)$
9. Prime
10. $(x - 1)(x - 10)$
11. $(y + 7)(y - 6)$
12. $(a + 5)(a + 4)$
13. Prime
14. $(y - 8)(y - 4)$
15. $5(x + 3)(x - 1)$
16. $4(x + 4)(x + 3)$
17. $x^2(x - 6)(x + 8)$
18. $2a(a + 4)(a + 5)$
19. $xy^2(x - 5)(x + 8)$
20. $6y(y + 4)(y + 7)$

7.2 Form III

1. $(x+9)(x+5)$
2. $(a-8)(a+3)$
3. $(y+7)(y+2)$
4. $(x-16)(x-2)$
5. $(x-1)(x-12)$
6. $(y+8)(y-11)$
7. $(a-b)(a+16b)$
8. Prime
9. $(y-13)(y-3)$
10. $(a-17)(a-8)$
11. $(x+18y)(x+3y)$
12. $(y-6)(y-2)$
13. Prime
14. $(x-15y)(x+4y)$
15. $4x(x^2-2x+4)$
16. $5(x-8)(x+2)$
17. $3a(a+4)(a+5)$
18. $x^2y(x+6)(x-4)$
19. $6y(y-9)(y+4)$
20. $8x(x^2+7xy+12y^2)$

7.3 Form I

1. $(x+4)(2x+1)$
2. $(3x+1)(x+5)$
3. $(4a+3)(a+2)$
4. $(x+8)(3x-2)$
5. $(2y+5)(y-3)$
6. $(3x+1)(x-5)$
7. $(4a-5)(a-2)$
8. $(6x-1)(x-3)$
9. $(2y-3)(3y-2)$
10. $(4x+1)(2x+1)$
11. $(5x-1)(2x-3)$
12. $(6y+5)(2y-1)$
13. $(8a+3)(2a-5)$
14. $2(3x+1)(x+4)$
15. $3(4x-1)(2x-5)$
16. $a^2(5a-2)(2a+1)$
17. $4y(2y+3)(y+2)$
18. $x^2(3x+2)(x-2)$
19. $2a(4a+3)(a-3)$
20. $5(2x+5)(x+2)$

7.3 Form II

1. $(3x+1)(2x+3)$
2. $(4x+3)(x+2)$
3. $(2x+5)(5x+1)$
4. $(4x-5)(2x-1)$
5. $(3x-4)(4x-3)$
6. $(5x+8)(2x-3)$
7. $(8x+1)(x+4)$
8. $(7x-2)(2x+3)$
9. $(6x+5)(x-2)$
10. $(4x-5)(4x+3)$
11. $(2x+9y)(6x-y)$
12. $(8x-3)(2x+5)$
13. $(3x+7y)(x-4y)$
14. $4(2a+1)(a+1)$
15. $6(3a-1)(a+4)$
16. $5(4y+1)(y-2)$
17. $6x(2x^2+3x+4)$
18. $3a(2a+3)(2a-5)$
19. $2y(8y-3)(2y+5)$
20. $8(3x-4)(2x+1)$

7.3 Form III

1. $(7x+11)(x+1)$
2. $(2a+7)(a-4)$
3. Prime
4. $(3x+2)(5x+6)$
5. $(9x-4)(x+2)$
6. $(2a-3)(5a+4)$
7. $(8y-1)(3y+4)$
8. $(5x+2y)(3x-y)$
9. $x^2(x+6)(x+1)$
10. $(5b-2)(3b+4)$
11. $(5x+9)(4x-3)$
12. $2(2x+y)(x-4y)$
13. Prime
14. $7(2x+3)(3x-2)$
15. $(4a+1)(3a+4)$
16. $6(3y+2)(y-5)$
17. $5(4x+y)(3x+y)$
18. $(4x-5)(2x-5)$
19. $xy^4(4x+5y)^2$
20. $6x+5$

7.4 Form I

1. $(x+8)(x-8)$
2. $(a+1)(a-1)$
3. $(y+10)(y-10)$
4. $(2x+5)(2x-5)$
5. $(x+5)^2$
6. $(y+3)^2$
7. $(a-4)^2$
8. $(a-10)^2$
9. $(x-1)(x^2+x+1)$
10. $(y+4)(y^2-4y+16)$
11. $(x-2y)(x^2+2xy+4y^2)$
12. $(a+3b)(a^2-3ab+9b^2)$
13. $2(x+1)(x-1)$
14. $3(x-4)^2$
15. $x(x+4)(x-4)$
16. $5(y+2)^2$
17. $7(x+2)(x-2)$
18. $100(x+2y)(x-2y)$
19. $4(a-5)^2$
20. $8(x+3)^2$

7.4 Form II

1. $(x+11)(x-11)$
2. $(2a+9)(2a-9)$
3. $(4y+13)(4y-13)$
4. $(x+15)(x-15)$
5. $(x-2)^2$
6. Prime
7. $(x-5y)^2$
8. $(2x+3)^2$
9. $(x-10)(x^2+10x+100)$
10. $(a+2b)(a^2-2ab+4b^2)$
11. $(y-3)(y^2+3y+9)$
12. $(5x+3y)^2$
13. $5(x+2)(x-2)$
14. $3(2x+5)^2$
15. Prime
16. $ab^2(b+8a)(b-8a)$
17. $9y(y+1)(y-1)$
18. $3x(2x+7)^2$
19. $(x^2+4)(x+2)(x-2)$
20. $5(2x+5)(2x-5)$

7.4 Form III

1. $(7x+8)(7x-8)$
2. Prime
3. $(x-6)^2$
4. $18(a+2)(a-2)$
5. $(3x-5)^2$
6. $2(4x+3)^2$
7. $(a+5b)(a^2-5ab+25b^2)$
8. $(7x+1)^2$
9. $(2x-9y)^2$
10. $(2-m)(4+2m+m^2)$
11. $2(4x+7)(4x-7)$
12. $16(x^2+4y^2)$
13. $5(2x+5y)^2$
14. $2x(3x+4y)(9x-12xy+16y^2)$
15. Prime
16. $2(2a-3b)(4a^2+6ab+9b^2)$
17. $(9m+13n)^2$
18. $(x^3+9y^2)(x^3-9y^2)$
19. $(x+6)(x+10)$
20. $25(a-3)^2$

7.5 Form I

1. $(x+8)(x-8)$
2. $(2x+3)(4x-1)$
3. $(a-7)^2$
4. $3(x^2-6)$
5. $(5x+1)(2x+3)$
6. $(x+7)(x+2)$
7. $x^2(x+6)(x-2)$
8. $(x+5)(y-4)$
9. $2(a+1)^2$
10. $y(y+3)(y-8)$
11. $(3m+4)(2m+3)$
12. $4(x+4)(x-4)$
13. $(x^2+4)(x-8)$
14. $7(x-3)(2x+5)$
15. $2(y-2)(y^2+2y+4)$
16. Prime
17. $4x^3(x^2-2)$
18. $3xy(2x+1)(5x-4)$
19. $5(2x-1)(4x^2+2x+1)$
20. $4(y^2-8)(x^2+4)$

7.5 Form II

1. $(y-4)(y^2+4y+16)$
2. $3(x+5)(x-5)$
3. $4(2x+3)(2x-5)$
4. $(x^2+6)(y-4)$
5. $(7x-8)(3x-4)$
6. $(6x+5y)(6x-5y)$
7. $4(a+4)(a^2-4a+16)$
8. $xy(5x^2-4y)$
9. $6(x+7)^2$
10. $(3x+8)(4x+3)$
11. $6(2y-1)(4y^2+2y+1)$
12. $3(2x+5)(3y-2)$
13. Prime
14. $ab^2(a+b)^2$
15. $(12x+5)(4x-7)$
16. Prime
17. $3(a-5b)(a^2+5ab+25b^2)$
18. $(4x^2+9)(2x+3)(2x-3)$
19. $2x(3x+1)^2$
20. $x(y^3+4)(x^2-3)$

7.5 Form III

1. $(a^2+9)(a+3)(a-3)$
2. $(6x-7)(3x+5)$
3. $(2y-5)(4y^2+10y+25)$
4. $(3x^2-2)(4y^2+3)$
5. $11(2a+3)(2a-1)$
6. $(8y+5)(8y-5)$
7. $xy(5x-6)(x+4)$
8. $2a(4a-5b)(5b+4)$
9. $(6y-7)^2$
10. $(9x^2+25)(3x+5)(3x-5)$
11. $5(3a-4)^2$
12. Prime
13. $xy^2(9x+10y)(2x-5y)$
14. $2(3a+2)(9a^2-6a+4)$
15. $25(y+2)(y-2)$
16. $(5x+12)(2x-9)$
17. $(x+y)(x^2-xy+y^2)(x-y)(x^2+xy+y^2)$
18. $9(x+4)(5x-2)$
19. $(a^2-2b^2)(a^4+2a^2b^2+4b^4)$
20. Prime

7.6 Form I

1. $\{-7, 9\}$ 2. $\{-12, -8\}$ 3. $\left\{-\frac{1}{3}, \frac{1}{2}\right\}$ 4. $\{0, 5\}$ 5. $\left\{-3, 0, \frac{4}{5}\right\}$ 6. $\{1, 4\}$
 7. $\left\{-\frac{2}{3}, 4\right\}$ 8. $\{-4, 5\}$ 9. $\{-6, 2\}$ 10. $\left\{-\frac{2}{3}, \frac{1}{2}\right\}$ 11. $\{-7, 7\}$ 12. $\{4, 5\}$
 13. $\left\{-\frac{5}{2}, 6\right\}$ 14. $\{-1, 6\}$ 15. $\left\{0, \frac{5}{3}\right\}$ 16. $\left\{\frac{2}{3}\right\}$ 17. width: 4 meters; length: 10 meters
 18. 5 seconds

7.6 Form II

1. $\{7, 10\}$ 2. $\{-12, -4\}$ 3. $\left\{-9, \frac{4}{5}\right\}$ 4. $\{-6, 0, 7\}$ 5. $\left\{-3, 0, \frac{7}{4}\right\}$ 6. $\{1, 8\}$
 7. $\left\{-4, \frac{3}{4}\right\}$ 8. $\left\{-\frac{2}{5}, 5\right\}$ 9. $\left\{-\frac{5}{2}, \frac{5}{2}\right\}$ 10. $\left\{-\frac{1}{3}, 7\right\}$ 11. $\left\{-\frac{7}{2}, \frac{1}{4}\right\}$ 12. $\left\{-\frac{10}{3}, 8\right\}$
 13. $\left\{-\frac{3}{5}, -\frac{2}{5}\right\}$ 14. $\left\{-\frac{7}{4}, 0\right\}$ 15. $\{0, 3, 5\}$ 16. $\left\{0, \frac{1}{2}, 4\right\}$
 17. width: 9 inches; length 10 inches 18. 2 seconds

7.6 Form III

1. $\left\{-\frac{4}{7}, 2\right\}$ 2. $\left\{\frac{10}{3}, 8\right\}$ 3. $\{-5, 0\}$ 4. $\{-17, 0\}$ 5. $\left\{0, \frac{1}{5}, 8\right\}$ 6. $\left\{-1, \frac{9}{5}\right\}$ 7. $\{-1, 25\}$
 8. $\left\{0, \frac{6}{13}\right\}$ 9. $\left\{-\frac{5}{4}, \frac{5}{4}\right\}$ 10. $\left\{\frac{5}{2}\right\}$ 11. $\left\{-\frac{5}{2}, 0, \frac{3}{4}\right\}$ 12. $\left\{-\frac{7}{3}, 4\right\}$ 13. $\left\{-2, \frac{2}{5}\right\}$
 14. $\{-5, 0, 5\}$ 15. $\left\{-8, \frac{9}{2}\right\}$ 16. $\left\{-\frac{2}{5}, 6\right\}$ 17. width: 12 feet; length: 18 feet
 18. 6 meters 19. $2\frac{1}{2}$ seconds 20. 9 minutes