

Answer Key

Challenge: Skills and Applications

1. $2x^2 + 4x + 34$ 2. $-4x - 20$

3. $3x^2 - 10x - 8$ 4. $-19x^2 - 7x - 67$

5. $(a + b + c)^2 = (a + b + c)(a + b + c) =$
 $a(a + b + c) + b(a + b + c) +$
 $c(a + b + c) = a^2 + ab + ac + ab + b^2 +$
 $bc + ac + bc + c^2 = a^2 + b^2 + c^2 +$
 $2ab + 2ac + 2bc$

6. $x^2 + 9y^2 + 4z^2 - 6xy + 4xz - 12yz$

7. $x^4 + 8x^3 + 6x^2 - 40x + 25$

8. a. $x^3 - 125$ b. $x^3 - 8$

c. $(x - a)(x^2 + ax + a^2) = x^3 - a^3$

9. a. $x^4 - 625$

b. $(x - a)(x^3 + ax^2 + a^2x + a^3) = x^4 - a^4$

10. $(2)(3)(4)(5) + 1 = 121 = 11^2$

11. $(3)(4)(5)(6) + 1 = 361 = 19^2$

12. $n^4 + 2n^3 - n^2 - 2n + 1$

13. Using the results from Exercise 5 you get the following:

$$(n^2 + n - 1)^2 = (n^2)^2 + n^2 + (-1)^2 +$$

$$2(n^2)(n) + 2(n^2)(-1) + 2(n)(-1) =$$

$$n^4 + n^2 + 1 + 2n^3 - 2n^2 - 2n =$$

$$n^4 + 2n^3 - n^2 - 2n + 1$$