Chapter 2 Quadratic Expressions and Equations

A Form the quadratic expressions by multiply the following linear expressions.

1. $(x + 1)(x + 3)$
   =

2. $(x + 2)(x + 4)$
   =

3. (n +2)$(n + 3)$
   =

4. $(p – 2)(p + 3)$
   =

5. $(x + 4)(x - 1)$
   =

6. $(x – 4)(x + 3)$
   =

7. $(x – 2)(x – 3)$
   =

8. $(m – 2)(m – 5)$
   =

9. $(x – 2)(x – 4)$
   =

10. $(2x + 1)(x + 3)$
    =

11. $(m + 4)(2m + 2)$
    =

12. $(3x + 1)(x + 2)$
    =

13. $(3p – 2)(p + 1)$
    =

14. $(x – 4)(2x + 1)$
    =

15. $(2x – 1)(x + 5)$
    =

16. $(x – 5)(4x – 1)$
    =

17. $(4x – 3)(x – 1)$
    =

18. $(2h – 1)(2h – 1)$
    =

B Factorise the following quadratic expressions.

1. $2x^2 + 2$
   $= 2(x^2) + 2(1)$
   $= 2(x^2 + 1)$

2. $2x^2 + 4$
   =

3. $4x^2 - x$
   $= x(4x) - x(1)$
   $= x(4x - 1)$

4. $x^2 - 9$
   =

5. $4a^2 - 9$
   =

6. $5m^2 - 5$
   =

7. $3n^2 - 6$
   =

8. $3p^2 + p$
   =

9. $h^2 - 16$
   =

10. $4b^2 - 1$
    =

11. $x^2 + 3x + 2$
    $= (x + 1)(x + 2)$

12. $x^2 + 5x - 6$
    =

13. $x^2 + x - 2$
    =

14. $x^2 - x - 6$
    =

15. $x^2 - 5x + 6$
    =

16. $x^2 - 6x + 8$
    $= (x - 4)(x - 2)$

$(x - 4)$
$(x - 2)$

x	-4	$-4x$
x	-2	$-2x$
x^2	$+8$	$-6x$

+

17. $x^2 + 4x + 3$
    =

18. $x^2 + 8x + 15$
    =

19. $x^2 - 2x - 8$
    =

20. $x^2 - 7x + 12$
    =

21. $x^2 + 3x - 4$
    =

22. $x^2 - 2x - 15$
    =

23. $x^2 + 7x + 10$
    =

24. $x^2 + 9x + 20$
    =

C Express the following quadratic equation in general form, $ax^2 + bx + c$.

1. $2(3 - x^2) = 4x$

2. $4x(x - 2) = 5$

3. $p(p + 1) - 12 = 0$

4. $5 - 23x = x + 5x^2$

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

6. $(y - 4)^2 = 2y - 5$

7. $(x - 5)^2 = 9$

8. $\frac{4x - 2}{7x} = x$

9. $\frac{2n^2 + 5n}{n + 1} = 2$

10. $\frac{5k + 2}{3} = k^2$

11. $x^2 - x - 2 = 4(x - 2)$

12. $(2p + 1)(2p + 2) = 6$

13. $\frac{1}{2}(4x + 6) = 2x^2$

14. $(3 - 7x)^2 = 1$

15. $9x(2x - 1) = 10$

16. $2x^2 = (3 - x)^2$

17. $\frac{(x + 2)^2}{5} = \frac{1}{4}$

18. $3 + 2x = 7x^2 - 9x$

D Solve the following quadratic equations.

1. $x^2 + 6x + 8 = 0$

2. $x^2 + 6x + 5 = 0$

3. $m^2 + 5m = -6$

4. $x^2 + 3x - 4 = 0$

5. $p^2 = 6 - p$

6. $x^2 - 6x + 8 = 0$

7. $n^2 + 15 = 8n$

8. $2x^2 + 5x - 3 = 0$

9. $2x^2 + 3x + 1 = 0$

10. $2x^2 - x - 1 = 0$

11. $2x^2 + 3x - 2 = 0$

12. $x^2 - x = 12$

13. $\frac{n^2 + 20}{3} = 3n$

14. $p^2 = \frac{3p}{2} + 1$

15. $x^2 = \frac{5x - 3}{2}$