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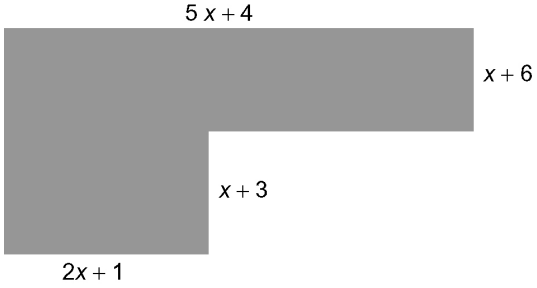
Chapter 5 Review

5.1 Expand Binomials, pages 234-341

1. Expand and simplify.
a) $(x + 6)(x – 2)$
b) $(x – 3)(x + 3)$
c) $(3x + 4)(2x – 1)$
d) $(2x + 1)^2$

2. Write an expression, in simplified form, for the area of the figure.



5.2 Change Quadratic Relations From Vertex Form to Standard Form, pages 242-247

3. Write each relation in standard form.
a) $y = 3(x – 6)^2 + 4$
b) $y = –2(x + 1)^2 – 3$
c) $y = 1.5(x – 4)^2 + 1$
d) $y = –0.6(x + 2)^2 – 5$

4. Find the y-intercept of each relation in question 3.

5. For each quadratic relation, write an equation in standard form.
a) $a = 3$, vertex at (1, 4)
b) $a = –6$, minimum of 10 at $x = 4$

5.3 Factor Trinomials of the Form $x^2 + bx + c$, pages 248-255

6. Factor.
a) $x^2 – 13x$ **b)** $x^2 – 9$
c) $x^2 + 11x + 30$ **d)** $x^2 + 2x – 48$
e) $x^2 – 11x + 28$ **f)** $x^2 + 12x + 27$
g) $–2x^2 + 8x$ **h)** $x^2 + 14x + 45$

7. The area of a rectangular garden can be represented by the relation $A = x^2 + 9x + 14$.
a) Find expressions for the length and the width of the garden.
b) If the area of the garden is 84m^2, find its dimensions.

5.4 Factor Trinomials of the Form $ax^2 + bx + c$, pages 256-263

8. Factor fully.
a) $2x^2 + 4x – 48$
b) $–3x^2 + 18x + 21$
c) $–4x^2 – 20x + 96$
d) $0.5x^2 – 0.5$
e) $–2x^2 + 24x – 54$
f) $10x^2 + 30x – 280$

9. The height of a water balloon thrown from the top of a building can be modelled by the relation $h = –5t^2 + 15t + 20$, where h is the height in metres and t is the time after the balloon was thrown in seconds.
a) Factor the expression for the height of the water balloon.
b) What is the height of the balloon after 4 s? Explain.

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5.5 The x–Intercepts of a Quadratic Relation, pages 264-275

10. Find the zeros of each quadratic relation.
a) $y = x^2 - 7x$
b) $y = x^2 - 9$
c) $y = 3x^2 - 6x - 144$

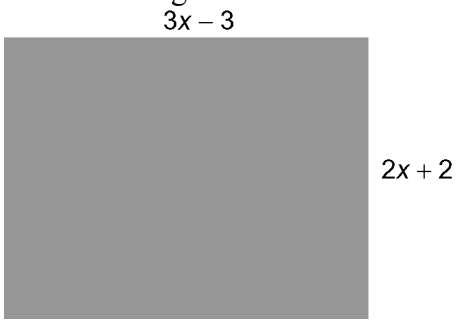
11. Write each quadratic relation in standard form, then find the zeros.
a) $y = 2(x + 1)^2 - 50$
b) $y = -3(x - 1)^2 + 48$

12. The path of a flare can be modelled by the relation $h = -4.9t^2 + 29.4t$, where h is the height in metres and t is the time in seconds.
a) Write the relation in intercept form.
b) Use the intercept form. Make a table of values for times from 0.5 s to 3.5 s in 0.5 s increments.
c) Use the intercept form of the relation to find the zeros.
d) Graph the relation.
e) After how long did the flare hit the ground?

5.6 Solve Problems Involving Quadratic Relations, pages 276-285

13. Find the zeros and the minimum or maximum for each relation.
a) $y = x^2 + 2x - 24$
b) $y = 2x^2 - 32$
c) $y = -3x^2 - 12x + 63$
d) $y = -4x^2 + 8x + 60$

14. **a)** Write an expression for the area of this rectangle.



b) For what value of x does the rectangle have area 594 m^2?

15. **a)** Write three different relations, in standard form, with zeros at $x = 3$ and $x = -5$.
b) Graph each relation from part a).
c) Write a relation with the same zeros that passes through the point (–1, 4).