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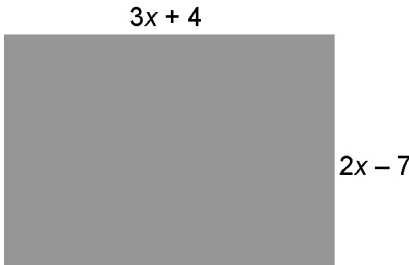
Chapter 5 Test

1. Answer true (T) or false (F) for each statement.
   a) The x-intercepts is another term for the zeros.
   b) The greatest common factor of $6x^2 + 15x + 18$ is 6.
   c) The y-intercept of $y = x^2 + 6x + 5$ is 5.
   d) The relation $y = 5(x - 4)^2 + 6$ is written in vertex form.
   e) The relation $y = 2(x - 3)(x + 4)$ is written in standard form.

For questions 2 to 7, choose the best answer.

2. Which expression is equivalent to $(2x + 4)(x - 7)$?
   A $2x^2 - 28$
   B $2x^2 - 10x + 11$
   C $2x^2 - 10x - 28$
   D $x^2 - 10x - 28$

3. Which expression is the result of expanding and simplifying $(x + 14)^2$?
   A $x^2 + 196$
   B $x^2 + 28x + 196$
   C $x^2 + 14x + 196$
   D $x^2 - 196$

4. What are the zeros of the relation $y = 3x^2 - 15x + 12$?
   A 4 and 1   B 0 and 1
   C –4 and–1   D –4

5. Which is the equation for the axis of symmetry for the relation $y = (x - 2)(x + 6)$?
   A $x = 2$ B $x = -2$
   C $x = -6$ D $x = -8$

6. Which expression is the factored form of $2x^2 - 50x + 300$?
   A $y = 2(x - 15)(x - 10)$
   B $y = 2(x + 15)(x - 10)$
   C $y = 2(x - 15)(x + 10)$
   D $y = 2(x + 15)(x + 10)$

7. Which expression is the factored form of $6x^2 - 54$?
   A $6(x - 3)(x - 3)$
   B $6(x + 3)^2$
   C $6(x - 3)(x + 3)$
   D $6(x - 3)^2$

8. a) Write a simplified expression for the area of the rectangle.

   3x + 4

   2x – 7

   b) Determine the area if $x = 16$ cm.

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9. Write an equation for each quadratic relation in standard form.
   a) $y = -2x^2 + bx + c$ with a vertex at $(-3, 4)$
   b) $a = 6$, and a minimum value of 12 at $x = 4$

10. Find the zeros of each relation.
    a) $y = x^2 - 16x + 48$
    b) $y = -3x^2 + 12x + 63$
    c) $y = 0.5x^2 - 1.5x - 2$

11. A square-based box with an open top is to be made from a square piece of cardboard with side length 50 cm. The sides of the box are made by removing 4 squares, each of side length x cm, from the corners and folding the sides up. The height of the box is x.
    a) Write an expression for the surface area of the open box.
    b) If the surface area of the box is 2100 cm^2, find the height of the box.

12. Marcel dives off of a springboard at the pool. His height, h, in metres, above the surface of the water can be modelled by the relation $h = -d^2 + 3d + 4$ where d is the horizontal distance from the end of the board, in metres.
    a) Factor the relation.
    b) Determine the zeros of the relation.
    c) What is the height of the springboard?
    d) What is Marcel's horizontal distance from the board when he enters the water?