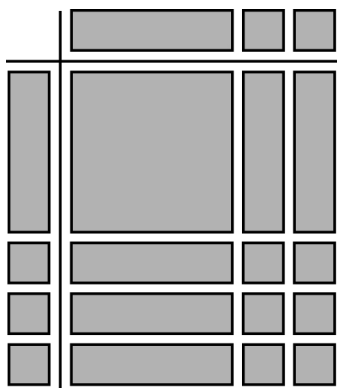


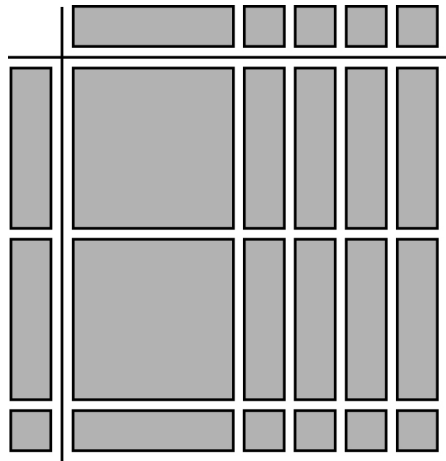
Chapter 5 Practice Test

1. What binomial product does each diagram represent?

a)



b)



2. Expand and simplify.

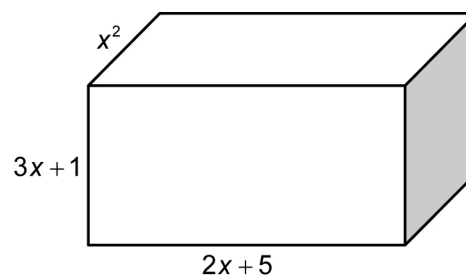
- a) $-2x^3(4x^2 + 2x + 4)$
 b) $-xy(6x^2 + xy + 1) - 2(x^3y + 4xy)$

3. Expand and simplify.

- a) $(x - 3)(x - 9)$
 b) $(2x + 3)(2x - 1)$
 c) $-3(x - 4)^2 + 2(x - 3)(x + 3)$
 d) $(3c + d)^2 + 2c(c - d)$
 e) $2(x - 1)(x - 6) - 3(2x - 1)^2$
 f) $(2c + 3d)^2 - 3(c + 1)^2$

4. If it is possible to remove a common factor from the expression $2x^2 + ky + 4$, where k is an integer, what can you state about the possible values of k ? Explain.

5. a) Write an algebraic expression for the volume of this rectangular prism.



- b) Expand and simplify the expression.
 c) Find the volume if $x = 2$.

6. Factor fully.

- a) $x^2 + 10x + 25$
 b) $25r^2 - 20rs + 4s^2$
 c) $5x^2 - 5$
 d) $1 - 49m^2$
 e) $5m^2 + 17m + 6$
 f) $m^2 - 9mn + 14n^2$

7. Factor, if possible.

- a) $3y^3 - 7y^2 + 2y$
 b) $4m^2 + 16$
 c) $6y^2 + y - 1$
 d) $x(m - 2) - 4(m - 2)$
 e) $y^2 + 2x + 2y + xy$
 f) $9t - 4t^3$

8. A ball is thrown into the air and its path is given by $h = -5t^2 + 20t + 25$, where h is the height, in metres, above the ground and t is the time, in seconds.

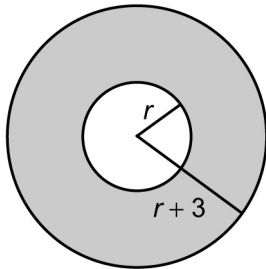
- a) Factor the right side of the equation fully.
 b) When does the ball hit the ground?
 c) Find the height of the ball 2 s after it is thrown.

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9. Determine two values of k so that each expression can be factored over the integers.
- $x^2 + kx + 36$
 - $3x^2 - 8x + k$
 - $36x^2 - kxy + 49y^2$
 - $49x^2 - ky^2$
10. Write and simplify an algebraic expression for the area of the shaded region.



11. The volume of a rectangular prism is represented by the equation $V = 12x^3 - 3x$.
- Factor the right side of the equation fully.
 - Draw a diagram of the prism.
 - If x represents 6 cm, what are the dimensions of the prism?
12. The face of a Canadian \$20 bill has an area that can be represented by the expression $10x^2 + 9x - 40$.
- Factor $10x^2 + 9x - 40$ to find expressions to represent the dimensions of the bill.
 - If x represents 32 mm, what are the dimensions of the bill, in millimetres?
13. Describe the steps needed to determine whether the expression $ax^3 + bx^2 + cx$ can be factored over the integers.
14. Factor to evaluate each difference.
- $23^2 - 22^2$
 - $25^2 - 23^2$
 - $81^2 - 77^2$
 - $154^2 - 150^2$
15. a) Two numbers that differ by 2 can be multiplied by squaring their average and then subtracting 1. For example, $14 \times 16 = 15^2 - 1$, which is $225 - 1$, or 224. How does the product of the sum and difference $(x - 1)(x + 1)$ explain the method?
- Develop a similar method for multiplying two numbers that differ by 4.
 - Show how the product of a sum and a difference explains your method from part b).