Name: _____   Date: _____

Unit 3 Review

For questions 1 and 2, choose the correct answer: A, B, C, or D

1. The greatest common factor of 36, 20, and 40 is:
    A. 360   **B.** 4   **C.** 2   **D.** 1

2. Which polynomial is a perfect square trinomial?
    A. $9x^2 + 49$ **B.** $9x^2 + 16x + 49$
    C. $9x^2 - 49$ **D.** $9x^2 - 42x + 49$

3. a) Determine the cube root of 5832.
    b) Determine the square root of 256.
    c) Determine the least common multiple of the roots in parts a and b.

5. Expand and simplify.

    a) $(4r + 6)(3r - 6)$ **b)** $(2x - y)(x^2 - 6xy - y^2)$
    c) $(3a + 2b)(a - b) - (2a + b)(2a - 3b)$

6. Factor each polynomial. Verify by multiplying the factors.

    a) $8a^2b - 4ab^2$ **b)** $8h^2 - 18k^2$
    c) $16f^2 + 8f + 1$ **d)** $6m^2 - m - 2$
    e) $10x^2 - 29xy + 10y^2$ **f)** $r^2 - 2r - 15$

7. Find and correct the error in this factorization: $3a^2 - 7a - 6 = (3a - 2)(a + 3)$

8. A right rectangular prism has dimensions r by $3r + 1$ by $2r + 2$.

    a) Write and simplify a polynomial for the surface area
        of the prism.
    b) The prism is cut in half along the broken line shown.
        Write and simplify a polynomial for the surface area
        of each smaller prism.
    c) Factor each trinomial in parts a and b.
        Why is the surface area in part a not two times
        the surface area in part b?

$3r + 1$ $2r + 2$

r
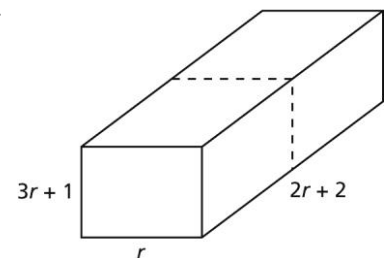
Answers

1. B   **2.** D

3. a) 18   **b)** 16   **c)** 144

   c) I can substitute a number for the variable in both the binomial product and the trinomial. If both expressions are equal, the multiplication sentence is correct.

5. a) $12r^2 - 6r - 36$
   b) $2x^3 - 13x^2y + 4xy^2 + y^3$
   c) $-a^2 + 3ab + b^2$

6. a) $4ab(2a - b)$ **b)** $2(2h - 3k)(2h + 3k)$
   c) $(4f + 1)^2$ **d)** $(3m - 2)(2m + 1)$
   e) $(2x - 5y)(5x - 2y)$ **f)** $(r - 5)(r + 3)$

7. When the factors are expanded, the middle term of the trinomial is positive, not negative. So, the signs in the binomial factors should be reversed.
   $3a^2 - 7a - 6 = (3a + 2)(a - 3)$

8. a) $22r^2 + 22r + 4$
   b) $14r^2 + 12r + 2$
   c) $2(11r^2 + 11r + 2)$; $2(7r^2 + 6r + 1)$; when a prism is cut in half, its surface area is not halved because two more faces are formed when the prism is cut.

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