56. The model makes sense for $x > 3$; When factored completely, the volume is $V = (x - 1)(x - 3)(3x - 5)$. For all three dimensions of the cage to have positive lengths, the value of x must be greater than 3.

57. $a^4(a + 6)(a - 5)$; A common monomial can be factored out to obtain a factorable trinomial in quadratic form.

58. $(2m - 7)(4m^2 + 14m + 49)$; The difference of two cubes pattern can be used because the expression is of the form $a^3 - b^3$.

59. $(z - 3)(z + 3)(z - 7)$; Factoring by grouping can be used because the expression contains pairs of monomials that have a common factor. Difference of two squares can be used to factor one of the resulting binomials.

60. $2p^2(p^3 - 2)(p^3 - 4)$; A common monomial can be factored out to obtain a factorable trinomial in quadratic form where $u = p^3$.

61. $(4r + 9)(16r^2 - 36r + 81)$; The sum of two cubes pattern can be used because the expression is of the form $a^3 + b^3$.

62. $5x^3(x - 4)(x + 2)$; A common monomial can be factored out to obtain a factorable trinomial in quadratic form.

63. $(4n^2 + 1)(2n - 1)(2n + 1)$; The difference of two squares pattern can be used to factor the original expression and one of the resulting binomials.

64. $(3k^2 + 1)(3k - 8)$; Factoring by grouping can be used because the expression contains pairs of monomials that have a common factor.

65. **a.** no; $7z^4(2z + 3)(z - 2)$
b. no; $n(2 - n)(n + 6)(3n - 11)$
c. yes

66. 1 million

67. 0.7 million