Contemporary Business Mathematics with Canadian Applications, 9e **(Hummelbrunner)**
Chapter 2 Review of Basic Algebra

1) Simplify: $7m - 2m - 3m$
Answer: $2m$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

2) Simplify: $4x - 3y - 4x - 2y$
Answer: $-5y$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

3) Simplify: $4x - 6y - 4x - 2y$
Answer: $-8y$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

4) Simplify: $x + 0.16x$
Answer: $1.16x$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

5) Simplify: $x - 0.32x$
Answer: $0.68x$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

6) Simplify: $x - 0.62x$
Answer: $0.38x$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

7) Simplify: $3ax - 4x + 1 - 7 + 3x - 4ax$
Answer: $-ax - x - 6$
Diff: 1 Type: SA Page Ref: 42-43
Topic: 2.1 Simplification of Algebraic Expressions

8) Simplify: $-(4 - 6a) - (-4 + 3a)$
Answer: $-4 + 6a + 4 - 3a = 3a$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

9) Simplify: $-(4 - 6a) - (-8 + 6a)$
Answer: $-4 + 6a + 8 - 6a = 4$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

10) Simplify: $-(3m - 6m - 5) - (4 - 7m - 2m)$
Answer: $-3m + 6m + 5 - 4 + 7m + 2m = 12m + 1$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

11) Simplify: $(7a - 7b) - (-3a + 9b) - 11b$
Answer: $7a - 7b + 3a - 9b - 11b = 10a - 27b$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

12) Simplify: $(8a - 7b) - (-3a + 7b) - 11b$
Answer: $8a - 7b + 3a - 7b - 11b = 11a - 25b$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

13) Simplify: $-7(9a)$
Answer: $-63a$
Diff: 1 Type: SA Page Ref: 43
Topic: 2.1 Simplification of Algebraic Expressions

14) Simplify: $-9a(-5b)$
Answer: $45ab$
Diff: 1 Type: SA Page Ref: 43
Topic: 2.1 Simplification of Algebraic Expressions

15) Simplify: $-5a(-5b)$
Answer: $25ab$
Diff: 1 Type: SA Page Ref: 43
Topic: 2.1 Simplification of Algebraic Expressions

16) Simplify: $-6m(-3m)$
Answer: $18m^2$
Diff: 1 Type: SA Page Ref: 43
Topic: 2.1 Simplification of Algebraic Expressions

17) Simplify: $3a(-3b)(-4c)(-1)$
Answer: $-36abc$
Diff: 1 Type: SA Page Ref: 43
Topic: 2.1 Simplification of Algebraic Expressions

18) Simplify: $-2a(-3b)(-4c)(-5)$
Answer: $120abc$
Diff: 1 Type: SA Page Ref: 43
Topic: 2.1 Simplification of Algebraic Expressions

19) Simplify: $5(4x - 2)$
Answer: $20x - 10$
Diff: 2 Type: SA Page Ref: 43-44
Topic: 2.1 Simplification of Algebraic Expressions

20) Simplify: $-3x(4 - 2b - b)$
Answer: $-12x + 6bx + 3bx = -12x + 9bx$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

21) Simplify: $-3x(4 - 2b - 2b)$
Answer: $-12x + 6bx + 6bx = -12x + 12bx$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

22) Simplify: $-5(8a - b) - 2(-6a + 9b)$
Answer: $-40a + 5b + 12a - 18b = -28a - 13b$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

23) Simplify: $8(9y - 4) - 2(y - 1) - (1 - 3y)$
Answer: $72y - 32 - 2y + 2 - 1 + 3y = 73y - 31$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

24) Simplify: $4(9y - 4) - 2(y - 1) - (1 - 3y)$
Answer: $36y - 16 - 2y + 2 - 1 + 3y = 37y - 15$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

25) Simplify: $(5m - 2n)(m - 12n)$
Answer: $5m^2 - 60mn - 2mn + 24n^2 = 5m^2 - 62mn + 24n^2$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

26) Simplify: $(3a - 1)(a - 3a + 1)$
Answer: $3a^2 - 9a^2 + 3a - a + 3a - 1 = -6a^2 + 5a - 1$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

27) Simplify: $(4a - 1)(a - 3a + 1)$
Answer: $4a^2 - 12a^2 + 4a - a + 3a - 1 = -8a^2 + 6a - 1$
Diff: 2 Type: SA Page Ref: pgs 42-44
Topic: 2.1 Simplification of Algebraic Expressions

28) Simplify: $2(a - 1)(7a - 3) - 3(6a - 2)(2a + 1)$
Answer: $2(7a^2 - 3a - 7a + 3) - 3(12a^2 + 6a - 4a - 2)$
$= 14a^2 - 6a - 14a + 6 - 36a^2 - 18a + 12a + 6$
$= -22a^2 - 26a + 12$
Diff: 2 Type: SA Page Ref: 42-44
Topic: 2.1 Simplification of Algebraic Expressions

29) Simplify: $50xy \div (-5x)$
Answer: $-10y$
Diff: 1 Type: SA Page Ref: 45
Topic: 2.1 Simplification of Algebraic Expressions

30) Simplify: $60xy \div (-5xy)$
Answer: -12
Diff: 1 Type: SA Page Ref: 45
Topic: 2.1 Simplification of Algebraic Expressions

31) Simplify: $(-45a^3b) \div 15a^2$
Answer: $-3ab$
Diff: 1 Type: SA Page Ref: 45
Topic: 2.1 Simplification of Algebraic Expressions

32) Simplify: $(-64ab) \div (8ab)$
Answer: -8
Diff: 1 Type: SA Page Ref: 45
Topic: 2.1 Simplification of Algebraic Expressions

33) Simplify: $(-8ab) \div (8a)$
Answer: -b
Diff: 1 Type: SA Page Ref: 45
Topic: 2.1 Simplification of Algebraic Expressions

34) Simplify: $(21x - 36) \div (-3)$
Answer: $-7x + 12$
Diff: 2 Type: SA Page Ref: 45
Topic: 2.1 Simplification of Algebraic Expressions

35) Simplify: $(-a^3 - 11a^2 - 3a) \div (-a)$
Answer: $a^2 + 11a + 3$
Diff: 2 Type: SA Page Ref: 45

Topic: 2.1 Simplification of Algebraic Expressions

36) Simplify: $(-a^3 - 10a^2 - 3a) \div (a)$

Answer: $-a^2 - 10a - 3$

Diff: 2 Type: SA Page Ref: 45

Topic: 2.1 Simplification of Algebraic Expressions

37) Evaluate: $4x^2 - 10xy - 8y^2$ for $x = -3$, $y = 5$

Answer: $4x^2 - 10xy - 8y^2$

$= 4(-3)^2 - 10(-3)(5) - 8(5)^2$

$= 4(9) + 150 - 8(25)$

$= 36 + 150 - 200$

$= -14$

Diff: 2 Type: SA Page Ref: 45-46

Topic: 2.1 Simplification of Algebraic Expressions

38) Evaluate y: $y = \frac{1}{2}(3x^2 - x - 1) - \frac{1}{4}(5 - 2x - x^2)$ for $x = -3$

Answer: $\frac{1}{2}(3x^2 - x - 1) - \frac{1}{4}(5 - 2x - x^2)$

$= \frac{1}{2}[3(-3)^2 - (-3) - 1] - \frac{1}{4}[5 - 2(-3) - (-3)^2]$

$= \frac{1}{2}(27 + 3 - 1) - \frac{1}{4}(5 + 6 - 9)$

$= \frac{1}{2}(29) - \frac{1}{4}(2)$

$= 14.5 - 0.5$

$= 14.0$

Diff: 2 Type: SA Page Ref: 45-46

Topic: 2.1 Simplification of Algebraic Expressions

39) Evaluate R: $R = \frac{I}{PT}$ for I = 83, P = 845, T = $\frac{216}{360}$

Answer: $\frac{I}{PT} = \frac{83}{845 * \frac{216}{360}} = \frac{83}{845 * 6} = \frac{83}{507} = .163708$

Diff: 3 Type: SA Page Ref: 45-46

Topic: 2.1 Simplification of Algebraic Expressions

40) Evaluate r: $r = \frac{I}{PT}$, where I = 116, P = 1760, $t = \frac{150}{365}$

Answer: $r = \frac{116}{1760 * \frac{160}{365}} = \frac{116}{1760 * .4109589} = \frac{116}{723.28767} = .1603788$

Diff: 3 Type: SA Page Ref: 45-46

Topic: 2.1 Simplification of Algebraic Expressions

41) Evaluate r: $r = \frac{I}{PT}$, where I = 200, P = 800, $t = \frac{150}{365}$

Answer: $r = \frac{200}{800 * \frac{160}{365}} = \frac{200}{800 * .4109589} = \frac{200}{32876712} = .6083333$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

42) Evaluate K: $K = \frac{2NC}{P(n+1)}$ for N = 32, C = 20, P = 1859, $n = 26$

Answer: $\frac{2NC}{P(n+1)} = \frac{2 * 32 * 20}{1859(26+1)} = \frac{1280}{1859(27)} = \frac{1280}{50193} = .0255$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

43) Evaluate P: P = A(1 - RT) for A = 1400, R = 0.185, $T = \frac{252}{360}$

Answer: $A(1 - RT) = 1400\left[1 - 0.185 * \frac{252}{360}\right] = 1400\ [1 - .185 * 7]$

$= 1400[1 - .1295] = 1400[.8705] = 1218.7$

Diff: 2 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

44) Evaluate P: P = A(1 - RT) for A = 700, R = 0.185, $T = \frac{180}{360}$

Answer: $A(1 - RT) = 700\left[1 - 0.185 * \frac{180}{360}\right] = 1400\ [1 - .185 * 7]$

$= 700[1 - .0925] = 700[.9075] = 635.25$

Diff: 2 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

45) Evaluate p: $p = s\left[1 - r * \frac{t}{360}\right]$, where $s = 3120$, $r = 0.123$, $t = 295$

Answer: $p = 3120\left[1 - .123\left(\frac{295}{360}\right)\right] = 3120[1 - .123 * .8194444]$

$= 3120[1 - .1007917] = 3120[.8992083] = 2805.53$

Diff: 2 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

46) Evaluate P: $P = \frac{A}{1 + RT}$ for A = 752, R = 0.145, $T = \frac{225}{360}$

Answer: $\frac{A}{1 + RT} = \frac{752}{1 + .145 * .625} = \frac{752}{1 + .090625} = \frac{752}{1.090625} = 689.5129$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

47) Evaluate s: $s = \dfrac{p}{\left(1 + r * \dfrac{t}{360}\right)}$, where $p = 3411.50$, $r = 0.0925$, $t = 75$

Answer: $s = \dfrac{3411.50}{1 + .0925 * .0208333} = \dfrac{3411.50}{1 + .00192708} = \dfrac{3411.50}{1.0192708} = 3347.001$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

48) Evaluate the value of FV, if $FV = PMT\left[\dfrac{(1 + i)^n - 1}{i}\right]$, PMT = \$750, i = 0.025, and n = 10.

Answer: $FV = 750\left[\dfrac{(1 + 0.025)^{10} - 1}{0.025}\right] = \$8402.54$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

49) Evaluate: 1^6
Answer: 1
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

50) Evaluate: $(-1)^{14}$
Answer: 1
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

51) Evaluate: $(-1)^{13}$
Answer: -1
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

52) Evaluate: $\left[\dfrac{-1}{8}\right]^5$
Answer: $-\dfrac{1}{32768}$
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

53) Evaluate: $(-0.1)^7$
Answer: -0.0000001
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

54) Evaluate: $(-0.1)^4$
Answer: 0.0001
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

55) Evaluate: m^0
Answer: 1
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

56) Evaluate: $(-5)^{-2}$
Answer: $\frac{1}{25}$ or .04
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

57) Evaluate: $(-5)^{-3}$
Answer: $-\frac{1}{125}$ or -.008
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

58) Evaluate: $\left[\frac{2}{3}\right]^{-3}$
Answer: $\frac{27}{8}$ or 3.375
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

59) Evaluate: $(1.05)^0$
Answer: 1
Diff: 1 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

60) Evaluate: $-(288888)^0$
Answer: -1
Diff: 1 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

61) Evaluate: $(3)^2(3)^4$
Answer: $(3)^2(3)^4 = 3^6 = 729$
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

62) Simplify: $(-4)^4 * (-4)$
Answer: $(-4)^{4+1} = (-4)^5 = -1024$
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

63) Simplify: $(-4)^3 * (-4)$
Answer: $(-4)^{3+1} = (-4)^4 = 256$
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

64) Simplify: $(-3)^7 \div (-3)^4$
Answer: $(-3)^{7-4} = (-3)^3 = -27$
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

65) Simplify: $(m^4)^5$
Answer: $(m^4)^5 = m^{4\times5} = m^{20}$
Diff: 1 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

66) Simplify: $(m^5)^5$
Answer: $(m^5)^5 = m^{5\times5} = m^{25}$
Diff: 1 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

67) Simplify: $[(-4)^4]^3$
Answer: $(-4)^{4\times3} = (-4)^{12} = 16777216$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

68) Simplify: $m^{13} \div m^6$
Answer: $m^{13-6} = m^7$
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

69) Simplify: $(-1)^4(-1)^2(-1)^5$
Answer: $(-1)^{4+2+5} = (-1)^{11} = -1$
Diff: 1 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

70) Simplify: $\frac{(x^3)(x^5)}{x^4}$

Answer: $x^{3+5-4} = x^4$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

71) Simplify: $\frac{(x^{16})(x^4)}{x^2}$

Answer: $x^{16+4-2} = x^{18}$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

72) Simplify: $\left[\frac{1}{9}\right]^8 \div \left[\frac{1}{9}\right]^3$

Answer: $[1/9]^{8-3} = [1/9]^5 = 1/59049$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

73) Simplify: $\left[\frac{-3}{5}\right]^9 \div \left[\frac{-3}{5}\right]^4$

Answer: $[-3/5]^{9-4} = [-3/5]^5 = -243/3125 = -.07776$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

74) Simplify: $1.005^{240} \div 1.005^{160}$

Answer: $1.005^{240-160} = 1.005^{80} = 1.4903386$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

75) Simplify: $\left[\left(\frac{-3}{8}\right)^6\right]^3$

Answer: $[-3/8]^{6\times 3} = [-3/8]^{18} = (-3)^{18}/8^{18}$ or .0000000215062
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

76) Simplify: $(1 - r)^2(1 - r)^3(1 - r)$

Answer: $(1 - r)^6$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

77) Simplify: $(1 - r)^3(1 - r)^4(1 - r)$

Answer: $(1 - r)^8$
Diff: 2 Type: SA Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

78) Simplify: $[(1 - r)^{51}]^2$
Answer: $(1 - r)^{51 \times 2} = (1 - r)^{102}$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

79) Simplify: $(2xy)^5$
Answer: $2^5x^5y^5 = 32x^5y^5$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

80) Simplify: $\left[\frac{a^5b^6}{x}\right]^3$
Answer: $\frac{a^{5\times3}b^{6\times3}}{x^{1\times3}} = \frac{a^{15}b^{18}}{x^3}$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

81) Simplify: $\left[\frac{a^6b^8}{x}\right]^2$
Answer: $\frac{a^{6\times2}b^{8\times2}}{x^{1\times2}} = \frac{a^{12}b^{16}}{x^2}$
Diff: 2 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

82) Simplify: $5^7 \div 5^{-3}$
Answer: $5^{7-(-3)} = 5^{10}$
Diff: 3 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

83) Simplify: $\left[\frac{1 + i}{i}\right]^n$
Answer: $\frac{(1 + i)^n}{i^n}$
Diff: 3 Type: SA Page Ref: 49-56
Topic: 2.2 Integral Exponents

84) Compute: $\sqrt{205.9225}$
Answer: $\sqrt{205.9225} = 14.35$
Diff: 1 Type: SA Page Ref: pgs 56-59
Topic: 2.3 Fractional Exponents

85) Compute: $\sqrt[12]{1.126825}$
Answer: 1.01
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

86) Compute: $\sqrt[3]{1.092727}$
Answer: 1.03
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

87) Compute: $\sqrt[11]{.000488281}$
Answer: .5
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

88) Compute: $\sqrt[14]{1.159}$
Answer: 1.010595566
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

89) Compute: $\sqrt[5]{1.418519112}$
Answer: 1.06
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

90) Compute: $1956^{2/5}$
Answer: 20.727529
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

91) Compute: $32.5^{3/4}$
Answer: 13.611705
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

92) Compute: $32^{3/4}$
Answer: 13.45434264
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

93) Compute: $\sqrt[7]{4.5689}$
Answer: 1.2423925
Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

94) Compute: $1.28^{-5/14}$
Answer: .9156104
Diff: 3 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

95) Compute: $\frac{1 - 1.15^{-41}}{0.05}$

Answer: $\frac{1 - .0032463}{.05} = \frac{.9967537}{.05} = 19.935074$

Diff: 3 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

96) Compute the value of $\frac{1 - 1.025^{-25}}{0.0295}$

Answer: $\frac{1 - .5393906}{.0295} = \frac{.4606094}{.0295} = 15.61388$

Diff: 3 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

97) Compute the value of $\frac{1 - 1.02^{-10}}{0.02}$

Answer: $\frac{1 - .820348299}{.02} = \frac{.1796517001}{.02} = 8.982585006$

Diff: 3 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

98) Evaluate: $50.00\left(\frac{(1 + .02)^{40} - 1}{0.02}\right)$

Answer: $50.00\left(\frac{(1 + .02)^{40} - 1}{0.02}\right)$

$= 50\left(\frac{(1.02)^{40} - 1}{0.02}\right)$

$= 50\left(\frac{2.208039664 - 1}{0.02}\right)$

$= 50\left(\frac{1.208039664}{0.02}\right)$

$= 50(60.40198318)$

$= 3020.10$

Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

99) Express in logarithmic form: $3^9 = 19683$
Answer: $9 = \log_3 19683$
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

100) Express in logarithmic form: $5^6 = 19683$
Answer: $6 = \log_5 15625$
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

101) Express in logarithmic form: $10^{-4} = 0.0001$
Answer: $\log_{10} .0001 = -4$
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

102) Express in logarithmic form: $e^{-3x} = 12$
Answer: $e^{-3x} = 12$, $-3x = \log_e 12$, or $\ln 12 = -3x$
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

103) Express in exponential form: $\log_3 \frac{1}{81} = -4$

Answer: $\log_3 \frac{1}{81} = -4$, $3^{-4} = \frac{1}{81}$

Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

104) Express in exponential form: $\log_{10} \frac{1}{100} = -2$

Answer: $\log_{10} \frac{1}{100} = -2$, $10^{-2} = \frac{1}{100}$

Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

105) Express in exponential form: $\ln e^5 = 5$
Answer: $e^5 = e^5$
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

106) Evaluate: ln 300
Answer: ln 300 = 5.703782
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

107) Evaluate: ln 60
Answer: ln 60 = 4.094344562
Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

108) Evaluate: $\ln[400(1.17^7)]$

Answer: $\ln[400(1.17^7)] = \ln 400 + \ln 1.17^7$
$= \ln 400 + 7(\ln 1.17)$
$= 5.9914645 + 7(.1570038)$
$= 5.9914645 + 1.0990262 = 7.090491$

Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

109) $\ln\left(\frac{1-(1+0.0625)^{-12}}{0.0625}\right)$

Answer: $\ln\left(\frac{1-(1+0.0625)^{-12}}{0.0625}\right)$

$= \ln\left(\frac{1-0.0625^{-12}}{0.0625}\right)$

$= \ln\left(\frac{1-0.483117462}{0.0625}\right)$

$= \ln\left(\frac{0.516882538}{0.0625}\right)$

$= \ln 8.270120604$

$= 2.112649092$

Diff: 2 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

110) Solve: $8x = 40$

Answer: $x = \frac{40}{8} = 5$

Diff: 3 Type: SA Page Ref: pgs 68-73
Topic: 2.1 Simplification of Algebraic Expressions

111) Solve: $2x = 40$

Answer: $x = \frac{40}{2} = 20$

Diff: 3 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

112) Solve: $-5x = 35$

Answer: $x = \frac{35}{-5} = -7$

Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

113) Solve: $-\frac{2}{3}x = 48$

Answer: $-\frac{2}{3}x = 48$, $x = -72$

Diff: 2 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

114) Solve: $0.04x = 37$

Answer: $x = \frac{37}{.04} = 925$

Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

115) Solve: $\frac{x}{4} = 0.24$

Answer: $x = 0.24(4) = 0.96$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

116) Solve: $\frac{x}{8} = 0.3$

Answer: $x = 0.3(8) = 2.4$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

117) Solve: $-\frac{1}{8}x = 15$

Answer: $x = 15 * -8$, $x = -120$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

118) Solve: $-\frac{4}{3}x = -49$

Answer: $x = -49 * \frac{-3}{4} = \frac{147}{4} = 36.75$

Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

119) Solve: $-3x = 9 - 6x$
Answer: $3x = 9$, $x = 3$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

120) Solve: $3x = 9 + 12x$
Answer: $-9x = 9$, $x = -1$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

121) Solve: $2x + 17 = 7x - 15$
Answer: $17 + 15 = 7x - 2x$, $32 = 5x$, $6.4 = x$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

122) Solve: $2x + 17 = 8x - 3$
Answer: $17 + 3 = 8x - 2x$, $20 = 6x$, $3.3333 = x$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

123) Solve: $x - 0.23x = 2105$
Answer: $.77x = 2105$, $x = \frac{2105}{.77} = 2733.766$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

124) Solve: $x + 0.307x = 640.20$
Answer: $1.307x = 640.20$, $x = \frac{640.20}{1.307} = 489.824$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

125) Solve: $51 - 14x = -34 - x$
Answer: $51 + 34 = -x + 14x$, $85 = 13x$, $6.538462 = x$
LS: $51 - 14(6.538462) = 51 - 91.53846 = -40.53846$
RS: $-34 - 6.53846 = -40.53846$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

126) Solve: $4x - 8 - 19x = 210 + 7x - 4$
Answer: $4x - 8 - 19x = 210 + 7x - 4$
$-15x - 8 = 206 + 7x$
$-8 - 206 = 7x + 15x$
$-214 = 22x$
$-9.7272727 = x$
LS: $= 4(-9.7272727) - 8 - 19(-9.7272727)$
$= -38.909091 - 8 + 184.81818$
$= 137.90909$
RS: $= 210 + 7(-9.7272727) - 4$
$= 206 - 68.090909$
$= 137.90909$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

127) Solve: $10(3 - x) + 2(x - 2) = 6(2x - 2)$
Answer: $10(3 - x) + 2(x - 2) = 6(2x - 2)$
$30 - 10x + 2x - 4 = 12x - 12$
$-10x + 2x - 12x = -12 - 30 + 4$
$-20x = -38$
$x = 1.9$
Diff: 2 Type: SA Page Ref: 68-73
Topic: 2.6 Equation Solving Involving Algebraic Simplification

128) Solve: $4(2x - 5) + 3 = 3(x - 4)$
Answer: $4(2x - 5) + 3 = 3(x - 4)$
$8x - 20 + 3 = 3x - 12$
$8x - 3x = -12 + 20 - 3$
$5x = 5$
$x = 1$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

129) Solve: $x - \frac{x}{2} = \frac{x}{4} + 1$

Answer: $x - \frac{x}{2} = \frac{x}{4} + 1$

$(4)x - (4)\frac{x}{2} = (4)\frac{x}{4} + (4)1$

$4x - 2x = x + 4$
$4x - 2x - x = 4$
$x = 4$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

130) Solve: $\frac{3}{4} - \frac{x}{8} - \frac{x+2}{6} = 1$

Answer: $\frac{3}{4} - \frac{x}{8} - \frac{x+2}{6} = 1$

$(24)\frac{3}{4} - (24)\frac{x}{8} - (24)\frac{x+2}{6} = (24)1$

$(6)3 - 3x - (4)(x + 2) = 24$
$18 - 3x - 4x - 8 = 24$
$-7x = 14$
$x = -2$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

131) Solve: $5(2x - 4) - 3(1 - 3x) = -64$
Answer: $5(2x - 4) -3(1 - 3x) = -64$
$10x - 20 - 3 + 9x = -64$
$19x = -41$
$x = 2.1578947$
LS: $5[2(-2.1578947) - 4] - 3[1 - 3(-2.1578947)] = -64$
$5[-4.3157895 - 4] - 3[1 - (-6.4736842)] = -64$
$5[-8.3157895] - 3[7.4736842] = -64$
$-41.578948 - 22.421053 = -64$
$-64 = -64$
RS: $= -64$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

132) Solve: $17 - 4(2x - 7) = 15x - 3(2x - 3)$
Answer: $17 - 4(2x - 7) = 15x - 3(2x - 3)$
$17 - 8x + 28 = 15x - 6x + 9$
$45 - 8x = 9x + 9$
$36 = 17x$
$2.117647 = x$
LS: $17 - 4[2(2.117647) - 7]$
$17 - 4(4.2353941 - 7)$
$17 - 4(-2.7647059)$
$17 + 11.058824$
28.058824
RS: $15(2.117647) - 3[2(2.117647) - 3]$
$31.764706 - 3[4.2352941 - 3]$
$31.764706 - 3[1.2352941]$
$31.764706 - 3.7058823 = 28.058824$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

133) Solve: $x + \frac{5}{9}x = 126$

Answer: $x + \frac{5}{9}x = 126$, $\frac{14}{9}x = 126$, $x = 126 \times \frac{9}{14}$, $x = 81$

Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

134) Solve: $\frac{52}{3} - \frac{2}{5}x = \frac{11}{6}x - \frac{1}{30}$

Answer: $\frac{52}{3} - \frac{2}{5}x = \frac{11}{6}x - \frac{1}{30}$, $\frac{52}{3} + \frac{1}{30} = \frac{11}{6}x + \frac{2}{5}x$

$520 + 1 = 55x + 12x$, $521 = 67x$, $7.7761194 = x$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.5 Solving Basic Equations

135) Solve: $2 - \frac{1}{2}x = \frac{2}{3}x + \frac{25}{9}$

Answer: $2 - \frac{1}{2}x = \frac{2}{3}x + \frac{25}{9}$

$36 - 9x = 12x + 50$
$-14 = 21x$
$-\frac{2}{3} = x$

Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

136) Solve: $\frac{14}{5}(4 - 3x) + \frac{23}{40} = \frac{7}{10}x - \frac{3}{8}(2x - 3)$

Answer: $\frac{14}{5}(4 - 3x) + \frac{23}{40} = \frac{7}{10}x - \frac{3}{8}(2x - 3)$

$112(4 - 3x) + 23 = 28x - 15(2x - 3)$
$448 - 336x + 23 = 28x - 30x + 45$
$471 - 336x = -2x + 45$
$426 = 334x$
$1.2754491 = x$
Diff: 3 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

137) Solve: $\frac{4}{3}(5x - 2) - \frac{3}{5}(16x - 3) = \frac{17}{60} + 3x$

Answer: $\frac{4}{3}(5x - 2) - \frac{3}{5}(16x - 3) = \frac{17}{60} + 3x$

$80(5x - 2) - 36(16x - 3) = 17 + 180x$
$400x - 160 - 576x + 108 = 17 + 180x$
$-176x - 52 = 17 + 180x$
$-69 = 356x$
$-.1938202 = x$
Diff: 3 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

138) Solve: $I = Prt$ for r

Answer: $I = Prt$, $r = \frac{I}{Pt}$

Diff: 1 Type: SA Page Ref: 76-77
Topic: 2.6 Equation Solving Involving Algebraic Simplification

139) Solve: $I = Prt$ for t

Answer: $I = Prt$, $t = \frac{I}{Pr}$

Diff: 1 Type: SA Page Ref: 76-77
Topic: 2.6 Equation Solving Involving Algebraic Simplification

140) Solve: $\frac{(R + r)}{r} = \frac{V}{v}$ for V

Answer: $\frac{(R + r)}{r} = \frac{V}{v}$

$v(R + r) = Vr$
$V = \frac{v(R + r)}{r}$

Diff: 2 Type: SA Page Ref: 76-77
Topic: 2.6 Equation Solving Involving Algebraic Simplification

141) Solve: $Q = \frac{p - q}{4}$ for p

Answer: $Q = \frac{p - q}{4}$, $4Q = p - q$, $4Q + q = p$

Diff: 2 Type: SA Page Ref: 76-77
Topic: 2.6 Equation Solving Involving Algebraic Simplification

142) Solve: $P = S(1 + i)^{-n}$ for i

Answer: $P = S(1 + i)^{-n}$, $\frac{P}{S} = (1 + i)^{-n}$,

$\left[\frac{P}{S}\right]^{-1/n} = 1 + i$, $\left[\frac{S}{P}\right]^{1/n} = 1 + i$,

$i = \left[\frac{S}{P}\right]^{1/n} - 1$

Diff: 3 Type: SA Page Ref: 76-77

Topic: 2.6 Equation Solving Involving Algebraic Simplification

143) Solve: $S = P(1 + rt)$ for t

Answer: $S = P(1 + rt)$, $S=P+Prt$, $S-P = Prt$

$t = \frac{S - P}{Pr}$

Diff: 2 Type: SA Page Ref: 76-77

Topic: 2.6 Equation Solving Involving Algebraic Simplification

144) Solve: $D = \frac{1}{E + F}$ for F

Answer: $D = \frac{1}{E + F}$, $\frac{1}{D} = E + F$, $F = \frac{1}{D} - E$

Diff: 3 Type: SA Page Ref: 76-77

Topic: 2.6 Equation Solving Involving Algebraic Simplification

145) Solve: $\frac{a + b}{b} = \frac{c}{d}$ for b

Answer: $\frac{a + b}{b} = \frac{c}{d}$

$d(a + b) = bc$

$ad + bd = bc$

$ad = bc - bd$

$ad = b(c - d)$

$b = \frac{ad}{(c - d)}$

Diff: 2 Type: SA Page Ref: 76-77

Topic: 2.6 Equation Solving Involving Algebraic Simplification

146) Conor had to pay income taxes of $3 440.00 plus 22% of the amount by which his taxable income exceeded $36 000.00. If his tax bill was $3 684.00, calculate his taxable income.
Answer: Let the taxable income (in dollars) be x.
Then x - 36 000 is the amount that his income is greater than $36 000.

$3440 + 0.22(x - 36\,000) = 3684$
$3440 + 0.22x - 7920 = 3684$
$0.22x = 8164$
$x = \$37\,109.09$
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

147) Taylor invests part of her $2 000 savings into a savings account at 6% and part into a GIC at 8% simple interest. If she gets $150 in interest from the two investments, calculate how much she invested at each rate.
Answer: Let the amount invested at 6% be $\$x$.
Then the amount invested at 8% is (2000 - x).

$0.06x + 0.08(2000 - x) = 150$
$0.06x + 160 - 0.08x = 150$
$-0.02x = -10$
$x = \$500.00$ at 6%
2000 - 500= $1500.00 at 8%
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

148) Bow Valley Electronics sold a mini stereo set during a sale for $776. Determine the regular selling price of the set if the price of the set had been reduced by 1/4 of the original regular selling price.
Answer: Let the regular selling price be $\$x$.
Sale price = $\$\left[x - \frac{1}{4}x\right]$
$\therefore \quad x - \frac{1}{4}x = 776$

$4x - x = 3104$
$3x = 3104$
$x = 1034.67$
The regular selling price was $1034.67.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

149) After an increase of 1/9 of his current hourly wage, Pierre will receive a new hourly wage of $12.35. How much is his hourly wage before the increase?
Answer: Let the original hourly wage be $$x$$.
New hourly wage = $$\$\left[x + \frac{1}{9}x\right]$$

$$\therefore \quad x + \frac{1}{9}x = 12.35$$

$$9x + x = 111.15$$
$$10x = 111.15$$
$$x = 11.12$$
The hourly wage before increase was $11.12.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

150) After a reduction of $$\frac{1}{14}$$ of the selling price, a VCR was sold for $470.00. Determine the regular selling price.
Answer: Let the regular price be $$y$$.
Then reduction in price is $$\frac{1}{14}y$$.

$$y - \frac{1}{14}y = 470$$

$$\frac{13}{14}y = 470$$

$$y = \$506.15$$
The regular selling price is $506.15.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

151) A rubber tube 120 cm long is cut into two pieces so that the longer piece is 30 cm longer than twice the length of the shorter piece. What is the length of the longer piece?
Answer: Let the shorter piece be $$x$$ cm.
Length of the longer piece = $$(2x + 30)$$ cm.
Total length = $$(x + 2x + 30)$$ cm.
$$\therefore \quad x + 2x + 30 = 120$$
$$3x = 90$$
$$x = 30$$
The longer piece is 2(30) cm + 15 cm = 75 cm.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

152) A clothing store sells fancy hats at a gross margin of $3.50 each and ordinary hats at a gross margin of $5.00 each. During July, 110 hats were sold for a total gross margin of $460.00. How many fancy hats were sold?
Answer: Let the number of fancy hats be y.
Then the number of ordinary hats = 110 - y.
The total gross margin on fancy hats = \$5(y).
The total gross margin on ordinary hats = \$3.5(110 - y)
$5y + 3.5(110 - y) = 460$
$5y + 385 - 3.5y = 460$
$1.5y = 75$
$y = 50$
The number of fancy hats sold = 50.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

153) An electronics company has been producing 1705 CD Players a day working two shifts. The second shift has produced 95 CD players fewer than four-fifths of the number of CD players produced by the first shift. Determine the number of CD players produced by the second shift.
Answer: Let the number of CD players produced by the first shift be x.
Number of CD players produced by the second shift = $\frac{4}{5}x$ - 95.

Total production = $x + \frac{4}{5}x - 95 = 1705$

$\therefore \quad x + \frac{4}{5}x - 95 = 1705$

$\frac{9}{5}x = 1800$

$x = 1000$

Production by the second shift is $\frac{4}{5}x(1000) - 95 = 705$.

Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

154) A machine requires five hours to make a unit of Product A and six hours to make a unit of Product B. Last month the machine operated for 250 hours producing a total of 60 units. How many units of Product A were produced?
Answer: Let the number of units of product A be x.
Then the number of units of product B is $60 - x$.
The number of hours for product A is $5x$.
The number of hours for product B is $6(60 - x)$.
$\therefore \quad 5x + 6(60 - x) = 350$
$5x + 360 - 6x = 350$
$-x = -10$
$x = 10$
Production of product A is 10 units.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

155) The local amateur soccer club spent $1640 on tickets to a professional hockey game. If the club bought 2.5 times as many eight-dollar tickets than the number of twelve-dollar tickets and four fewer fifteen-dollar tickets than 7/10 the number of twelve dollar tickets, how many of each type of ticket did the club buy?
Answer: Let the number of $12 tickets be x.
Number of $8 tickets = $2.5x$
Number of $15 tickets = $\frac{7}{10}x - 4$
Value of the $12 tickets = $\$12x$
Value of the $8 tickets = $\$8(2.5x)$
Value of the $15 tickets = $\$15(\frac{7}{10}x - 4)$
$\therefore \quad 12x + 8(2.5x) + 15\,(7/10x - 4) = \$1640$
$12x + 20x + 10.5x - 60 = 1640$
$42.5x = 1700$
$x = 40$
Sales were 40 $12 tickets, 100 $8 tickets, and 24 $15 tickets.
Diff: 3 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

156) Evaluate s: $s = ut + \frac{1}{2}at^2$ for u = 15, a = 32, t = 5
Answer: $s = 15(5) + \frac{1}{2}(32)(5)^2$
$= 75 + 400$
$= 475$
Diff: 2 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

157) Evaluate s: $s = ut + \frac{1}{2}at^2$ for u = 20, a = 10, t = 5

Answer:

$s = 20(5) + \frac{1}{2}(10)(5)^2$

$= 100 + 125$

$= 225$

Diff: 2 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

158) Evaluate z: $z = 5x^2 - 5xy - 3y^2$ for $x = -6$, $y = +5$

Answer:

$z = 5(-6)^2 - 5(-6)(5) - 3(5)^2$

$= 5(36) + 150 - 3(25)$

$= 180 + 150 - 75$

$= 255$

Diff: 2 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

159) Evaluate c: $c = 8(7a - 4b) - 4(5a + 3b)$ for $a = \frac{1}{3}$, $b = -\frac{5}{4}$

Answer:

$c = 8\left(7\left(\frac{1}{3}\right) - 4\left(-\frac{5}{4}\right)\right) - 4\left(5\left(\frac{1}{3}\right) + 3\left(-\frac{5}{4}\right)\right)$

$= 8\left(\frac{7}{3} + \frac{20}{4}\right) - 4\left(\frac{5}{3} - \frac{15}{4}\right)$

$= \frac{56}{3} + \frac{160}{4} - \frac{20}{3} + \frac{60}{4}$

$= \frac{36}{3} + \frac{220}{4} = 12 + 55 = 67$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

160) Evaluate K: $K = \frac{2NC}{P(n + 1)}$ for N = 112, C = 250, P = 2450, $n = 24$

Answer:

For N = 12, C = 400, P = 2000, $n = 24$

$K = \frac{2NC}{P(n + 1)} = \frac{2(112)(250)}{2450(24 + 1)} = \frac{56000}{61250} = .914286$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

161) Evaluate T: $T = \frac{I}{Pr}$ for I = 224, P = 6700, $r = 0.11$

Answer:
For I = 324, P = 5400, $r = 0.15$
$T = \frac{I}{Pr} = \frac{224}{6700x.11} = \frac{224}{737} = .3039349$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

162) Evaluate P: $P = S(1 - dt)$ for S = 1886, $d = 0.15$, $t = \frac{249}{365}$

Answer:
$P = 1886\left(1 - .15 \times \frac{249}{365}\right)$
$= 1886(1 - .15 \times .6821918)$
$= 1886(1 - .1023288)$
$= 1886(.8976712)$
$= 1693.01$

Diff: 2 Type: SA Page Ref: pgs 45-46
Topic: 2.1 Simplification of Algebraic Expressions

163) Evaluate P: $P = \frac{S}{1 + rt}$ for S = 1665, $r = 0.14$, $t = \frac{292}{365}$

Answer:
$P = \frac{1665}{1 + .14 \times \frac{292}{365}} = \frac{1665}{1 + .14 \times .8} = \frac{1665}{1 + .112} = \frac{1665}{1.112} = \$1497.30$

Diff: 3 Type: SA Page Ref: pgs 45-46
Topic: 2.1 Simplification of Algebraic Expressions

164) Evaluate P: $P = \frac{S}{1 + rt}$ for S = 1000, $r = 0.1$, $t = \frac{180}{360}$

Answer:
$P = \frac{1000}{1 + .1 \times \frac{180}{360}} = \frac{1000}{1 + .1 \times .5} = \frac{1000}{1 + .05} = \frac{1000}{1.05} = \$952.38$

Diff: 3 Type: SA Page Ref: 45-46
Topic: 2.1 Simplification of Algebraic Expressions

165) Compute: $\sqrt[19]{1.36}$

Answer: $\sqrt[19]{1.36} = 1.016315$

Diff: 2 Type: SA Page Ref: 56-59
Topic: 2.3 Fractional Exponents

166) Compute: $\frac{1 - 1.04^{-35}}{0.05}$

Answer: $\frac{1 - 1.04^{-35}}{.05} = \frac{1 - .2534155}{.05} = \frac{.7465845}{.05} = 14.93169$

Diff: 3 Type: SA Page Ref: 60
Topic: 2.3 Fractional Exponents

167) Compute: $\frac{1 - 1.02^{-40}}{0.02}$

Answer: $\frac{1 - 1.02^{-40}}{.02} = \frac{1 - .4528904152}{.02} = \frac{.5471095848}{.02} = 27.36$

Diff: 3 Type: SA Page Ref: 60
Topic: 2.3 Fractional Exponents

168) Compute: ln 1.257
Answer: ln 1.257 = .228728
Diff: 1 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

169) Compute: $\ln[3.00e^{-.3}]$
Answer: $\ln(3.00e^{-.3})$
$= \ln 3.00 + \ln e^{-.3}$
$= \ln 3.00 - .3 \ln e$
$= 1.0986123 - .3$
$= .7986123$
Diff: 3 Type: SA Page Ref: 61-66
Topic: 2.4 Logarithms-Basic Aspects

170) Solve: $x - 0.26x = 8.96$
Answer: $x - .26x = 8.96$, $.74x = 8.96$, $x = 12.10811$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

171) Solve: $x - 0.75x = 9.00$
Answer: $x - .75x = 9.00$, $.25x = 9.00$, $x = 36.00$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

172) Solve: $0.4x - 4 = 6 - 0.8x$
Answer: $.4x - 4 = 6 - .8x$, $1.2x = 10$, $x = 8.33333333$
Diff: 1 Type: SA Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

173) Solve: $(3 - 5x) - (9x - 1) = 80$
Answer:
$(3 - 5x) - (9x - 1) = 80$
$3 - 5x - 9x + 1 = 80$
$4 - 14x = 80$
$-14x = 76$
$x = -5.42857$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

174) Solve: $5(8x - 2) - 5(3x + 5) = 36$
Answer:
$5(8x - 2) -5(3x + 5) = 36$
$40x - 10 -15x - 25 = 36$
$25x - 35 = 36$
$25x = 71$
$x = 2.84$
Diff: 2 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

175) Solve: $x + \frac{7}{10}x + \frac{1}{2} + x + \frac{4}{5}x + 1 = 256$

Answer:
$x + \frac{7}{10}x + \frac{1}{2} + x + \frac{4}{5}x + 1 = 256$

$x + .7x + 1.8x + 1.5 = 256$
$3.5x = 254.5$
$x = 72.71429$
Diff: 3 Type: SA Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

176) After reducing the regular selling price by 1/7, Moon Electronics sold a TV set for $294. What was the regular selling price?
Answer: Let the regular selling price be $$x$$.
Reduction in price + $$\$\frac{1}{7}x$$

$$x - \frac{1}{7}x = 294$$

$$\frac{6}{7}x = 294$$

$$x = \$343.00$$
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

177) After reducing the regular selling price by 1/8,
Sepaba Inc. sold a Stereo set for $300. What was the regular selling price?
Answer: Let the regular selling price be $$x$$.
Reduction in price + $$\$\frac{1}{8}x$$

$$x - \frac{1}{8}x = 300$$

$$\frac{7}{8}x = 300$$

$$x = \$342.86$$
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

178) The zinc department of a factory occupies 500 square metres more than 2 times the floor space occupied by the copper department. The total floor space is 9500 square metres. Determine the floor space occupied by the cooper department.
Answer: Let the floor space occupied by copper be $$x$$.
Floor space occupied by zinc = $$2x + 500$$
Total floor space = $$x + 2x + 500$$
$$\therefore \quad x + 2x + 500 = 9500$$
$$3x = 9000$$
$$x = 3000$$
The floor space occupied by copper is 3000 square metres.
Diff: 2 Type: SA Page Ref: 78-82
Topic: 2.7 Solving Word Problems

179) A company employs 204 employees. There are three shifts. There are three times as many on the first shift as on the second shift, and four more on the third shift than on the second shift. Determine how many were on each shift.
Answer: Let x be the number on the second shift.
Then $3x$ is the number on the first shift.
And $x + 4$ is the number on the third shift.

$x + 3x + (x + 4) = 204$
$5x = 200$
$x = 40$ on the second shift
$3x = 120$ on the first shift
$x + 4 = 44$ on the third shift
Diff: 2 Type: SA Page Ref: pgs 79-82
Topic: 2.7 Solving Word Problems

180) A machine requires 4 hours to make a unit of Product A and 7 hours to make a unit of Product B. The machine operated for 810 hours producing a total of 150 units. How many units of Product B were produced?
Answer: Let the number of units of Product A be x.
Number of units of Product B = $150 - x$.
Number of hours for Product A = $4x$.
Number of hours for Product B = $7(150 - x)$.
$\therefore$ $4x + 7(150 - x) = 810$
$4x + 1050 - 7x = 810$
$-3x = -240$
$x = 80$
The number of units if Product B is $150 - 80 = 70$.
Diff: 2 Type: SA Page Ref: pgs 79-82
Topic: 2.7 Solving Word Problems

181) Simplify: $\frac{25a^6b^8c^{10}}{5a^2b^4c^5}$

A) $20a^4b^4c^5$
B) $5a^4b^4c^5$
C) $5a^3b^2c^2$
D) $20a^3b^2c^2$
E) $55a^4b^4c^5$
Answer: B
Diff: 1 Type: MC Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

182) Simplify: $(5x - 4)(3x + 1)$
A) $15x^2 - 7x + 4$
B) $15x^2 - 7x - 4$
C) $15x^2 + 7x - 4$
D) $-15x^2 - 7x + 4$
E) $-10x^2 - 7x + 4$
Answer: B
Diff: 1 Type: MC Page Ref: pgs 42-44
Topic: 2.1 Simplification of Algebraic Expressions

183) Simplify: $(3)^2(3)^5$
A) 30
B) 90
C) 59 049
D) 2187
E) 120
Answer: D
Diff: 1 Type: MC Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

184) Simplify: $\left[(2^3)^4\right]^2$
A) 16777216
B) 17666216
C) 12222617
D) 17222167
E) 17333167
Answer: A
Diff: 1 Type: MC Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

185) Compute the value of (four decimal places): $\frac{4^{-7}}{3^{-6}}$

A) .0045
B) .5449
C) .4459
D) .0445
E) 0.044946
Answer: E
Diff: 1 Type: MC Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

186) Simplify: $(m^2)^6$
A) m^{12}
B) m^{-4}
C) m^8
D) m^3
E) m^2
Answer: A
Diff: 1 Type: MC Page Ref: pgs 49-56
Topic: 2.2 Integral Exponents

187) Calculate the following: $\ln\left[1.67 \times \left(\frac{2.13^{-15}}{.0034}\right)\right]$
A) 5.145
B) 1.545
C) -5.145
D) -1.545
E) -5.145
Answer: E
Diff: 1 Type: MC Page Ref: pgs 61-66
Topic: 2.4 Logarithms-Basic Aspects

188) Simplify: $[(3^3) - 6^2]^3$
A) 279
B) -279
C) 729
D) -729
E) 972
Answer: D
Diff: 1 Type: MC Page Ref: 49-56
Topic: 2.2 Integral Exponents

189) Solve the following equation: $5x - 4 + 9 = -3x - 2 - 13$
A) 2.5
B) -2.5
C) 20
D) -20
E) -25
Answer: B
Diff: 1 Type: MC Page Ref: 68-73
Topic: 2.5 Solving Basic Equations

190) Solve the following and check your solutions: $12x + 5(9 - x) = 429$
A) 58.86
B) -58.86
C) 54.14
D) -54.14
E) -5.14
Answer: A
Diff: 1 Type: MC Page Ref: 73-76
Topic: 2.6 Equation Solving Involving Algebraic Simplification

191) You have a lotto ticket with three numbers between zero and 49. The total of the three numbers is 93. One number is twice as large plus two as the lowest number. The second number is $\frac{4}{3}$ the size of the smaller number. What are the values of each of the numbers?

A) 1-44, 2-28, 3-21
B) 1-41, 2-31, 3-21
C) 1-44, 2-25, 3-24
D) 1-44, 2-20, 3-15
E) 1-44, 2-15, 3-20
Answer: A
Diff: 3 Type: MC Page Ref: 79-82
Topic: 2.7 Solving Word Problems

192) Simplify: $11.5784^{3/7}$
A) 3.857
B) 4.857
C) 2.857
D) 2.587
E) 4.785
Answer: C
Diff: 1 Type: MC Page Ref: 56-59
Topic: 2.3 Fractional Exponents

193) You have three colors of candies a jar - yellow, red and blue. There are 4 times plus 3 as many yellow candies as there are blue candies. There is 5/8 as many minus 6 red candies as there are blue. There are a total of 402 candies in the jar. How many of yellow, blue and red candies are there?
A) y-290, b-73, r-39
B) y-291, b-73, r-38
C) y-291, b-72, r-39
D) y-292, b-72, r-38
E) y-292, b-72, r-37
Answer: C
Diff: 3 Type: MC Page Ref: pgs 79-82
Topic: 2.7 Solving Word Problems