

## Chapter 2 Review of Basic Algebra

1) Simplify:  $7m - 2m - 3m$

Answer:  $2m$

Diff: 1 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

2) Simplify:  $4x - 3y - 4x - 2y$

Answer:  $-5y$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

3) Simplify:  $4x - 6y - 4x - 2y$

Answer:  $-8y$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

4) Simplify:  $x + 0.16x$

Answer:  $1.16x$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

5) Simplify:  $x - 0.32x$

Answer:  $0.68x$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

6) Simplify:  $x - 0.62x$

Answer:  $0.38x$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

7) Simplify:  $3ax - 4x + 1 - 7 + 3x - 4ax$

Answer:  $-ax - x - 6$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

8) Simplify:  $-(4 - 6a) - (-4 + 3a)$

Answer:  $-4 + 6a + 4 - 3a = 3a$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

9) Simplify:  $-(4 - 6a) - (-8 + 6a)$

Answer:  $-4 + 6a + 8 - 6a = 4$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

10) Simplify:  $-(3m - 6m - 5) - (4 - 7m - 2m)$

Answer:  $-3m + 6m + 5 - 4 + 7m + 2m = 12m + 1$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

11) Simplify:  $(7a - 7b) - (-3a + 9b) - 11b$

Answer:  $7a - 7b + 3a - 9b - 11b = 10a - 27b$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

12) Simplify:  $(8a - 7b) - (-3a + 7b) - 11b$

Answer:  $8a - 7b + 3a - 7b - 11b = 11a - 25b$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

13) Simplify:  $-7(9a)$

Answer:  $-63a$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

14) Simplify:  $-9a(-5b)$

Answer:  $45ab$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

15) Simplify:  $-5a(-5b)$

Answer:  $25ab$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

16) Simplify:  $-6m(-3m)$

Answer:  $18m^2$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

17) Simplify:  $3a(-3b)(-4c)(-1)$

Answer:  $-36abc$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

18) Simplify:  $-2a(-3b)(-4c)(-5)$

Answer:  $120abc$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

19) Simplify:  $5(4x - 2)$

Answer:  $20x - 10$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

20) Simplify:  $-3x(4 - 2b - b)$

Answer:  $-12x + 6bx + 3bx = -12x + 9bx$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

21) Simplify:  $-3x(4 - 2b - 2b)$

Answer:  $-12x + 6bx + 6bx = -12x + 12bx$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

22) Simplify:  $-5(8a - b) - 2(-6a + 9b)$

Answer:  $-40a + 5b + 12a - 18b = -28a - 13b$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

23) Simplify:  $8(9y - 4) - 2(y - 1) - (1 - 3y)$

Answer:  $72y - 32 - 2y + 2 - 1 + 3y = 73y - 31$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

24) Simplify:  $4(9y - 4) - 2(y - 1) - (1 - 3y)$

Answer:  $36y - 16 - 2y + 2 - 1 + 3y = 37y - 15$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

25) Simplify:  $(5m - 2n)(m - 12n)$

Answer:  $5m^2 - 60mn - 2mn + 24n^2 = 5m^2 - 62mn + 24n^2$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

27) Simplify:  $(4a - 1)(a - 3a + 1)$

Answer:  $4a^2 - 12a^2 + 4a - a + 3a - 1 = -8a^2 + 6a - 1$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

28) Simplify:  $2(a - 1)(7a - 3) - 3(6a - 2)(2a + 1)$

Answer:  $2(7a^2 - 3a - 7a + 3) - 3(12a^2 + 6a - 4a - 2)$

$= 14a^2 - 6a - 14a + 6 - 36a^2 - 18a + 12a + 6$

$= -22a^2 - 26a + 12$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

29) Simplify:  $50xy \div (-5x)$

Answer:  $-10y$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

30) Simplify:  $60xy \div (-5xy)$

Answer:  $-12$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

31) Simplify:  $(-45a^3b) \div 15a^2$

Answer:  $-3ab$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

32) Simplify:  $(-64ab) \div (8ab)$

Answer:  $-8$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

33) Simplify:  $(-8ab) \div (8a)$

Answer:  $-b$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

34) Simplify:  $(21x - 36) \div (-3)$

Answer:  $-7x + 12$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

35) Simplify:  $(-a^3 - 11a^2 - 3a) \div (-a)$

Answer:  $a^2 + 11a + 3$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

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

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

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

$$= 14.5 - 0.5$$

$$= 14.0$$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\text{Answer: } r = \frac{116}{1760 * \frac{150}{365}} = \frac{116}{1760 * .4109589} = \frac{116}{723.28767} = .1603788$$

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Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\text{Answer: } r = \frac{200}{800 * \frac{150}{365}} = \frac{200}{800 * .4109589} = \frac{200}{328.76712} = .6083333$$

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\begin{aligned}\text{Answer: } A(1 - RT) &= 1400 \left[ 1 - 0.185 * \frac{252}{360} \right] = 1400 [1 - .185 * 7] \\ &= 1400[1 - .1295] = 1400[.8705] = 1218.7\end{aligned}$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\begin{aligned}\text{Answer: } A(1 - RT) &= 700 \left[ 1 - 0.185 * \frac{180}{360} \right] = 700 [1 - .185 * 7] \\ &= 700[1 - .0925] = 700[.9075] = 635.25\end{aligned}$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\begin{aligned}\text{Answer: } p &= 3120 \left[ 1 - .123 \left( \frac{295}{360} \right) \right] = 3120 [1 - .123 * .8194444] \\ &= 3120[1 - .1007917] = 3120[.8992083] = 2805.53\end{aligned}$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

49) Evaluate:  $1^6$

Answer: 1

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Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

50) Evaluate:  $(-1)^{14}$

Answer: 1

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

51) Evaluate:  $(-1)^{13}$

Answer: -1

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

52) Evaluate:  $\left[ \frac{-1}{8} \right]^5$

Answer:  $\frac{1}{-32768}$

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

53) Evaluate:  $(-0.1)^7$

Answer: -0.0000001

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

54) Evaluate:  $(-0.1)^4$

Answer: 0.0001

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

55) Evaluate:  $m^0$

Answer: 1

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

56) Evaluate:  $(-5)^{-2}$

Answer:  $\frac{1}{25}$  or .04

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

57) Evaluate:  $(-5)^{-3}$

Answer:  $-\frac{1}{125}$  or -.008

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

58) Evaluate:  $\left[\frac{2}{3}\right]^{-3}$

Answer:  $\frac{27}{8}$  or 3.375

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

59) Evaluate:  $(1.05)^0$

Answer: 1

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

60) Evaluate:  $-(288888)^0$

Answer: -1

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

61) Evaluate:  $(3)^2(3)^4$

Answer:  $(3)^2(3)^4 = 3^6 = 729$

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Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

62) Simplify:  $(-4)^4 * (-4)$

Answer:  $(-4)^4 + 1 = (-4)^5 = -1024$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

63) Simplify:  $(-4)^3 * (-4)$

Answer:  $(-4)^3 + 1 = (-4)^4 = 256$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

64) Simplify:  $(-3)^7 \div (-3)^4$

Answer:  $(-3)^{7-4} = (-3)^3 = -27$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

65) Simplify:  $(m^4)^5$

Answer:  $(m^4)^5 = m^4 \times 5 = m^{20}$

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

66) Simplify:  $(m^5)^5$

Answer:  $(m^5)^5 = m^5 \times 5 = m^{25}$

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

67) Simplify:  $[(-4)^4]^3$

Answer:  $(-4)^4 \times 3 = (-4)^{12} = 16777216$

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Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

68) Simplify:  $m^{13} \div m^6$

Answer:  $m^{13-6} = m^7$

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

69) Simplify:  $(-1)^4(-1)^2(-1)^5$

Answer:  $(-1)^4 + 2 + 5 = (-1)^{11} = -1$

Diff: 1 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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

Answer:  $x^3 + 5 - 4 = x^4$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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

Answer:  $x^{16+4-2} = x^{18}$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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

Answer:  $(1-r)^6$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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

Answer:  $(1 - r)^8$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

78) Simplify:  $[(1 - r)^{51}]^2$

Answer:  $(1 - r)^{51 \times 2} = (1 - r)^{102}$

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Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

79) Simplify:  $(2xy)^5$

Answer:  $2^5 x^5 y^5 = 32x^5y^5$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

80) Simplify:  $\left[\frac{a^5b^6}{x}\right]^3$

Answer:  $\frac{a^{5 \times 3} b^{6 \times 3}}{x^{1 \times 3}} = \frac{a^{15} b^{18}}{x^3}$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

81) Simplify:  $\left[\frac{a^6b^8}{x}\right]^2$

Answer:  $\frac{a^{6 \times 2} b^{8 \times 2}}{x^{1 \times 2}} = \frac{a^{12} b^{16}}{x^2}$

Diff: 2 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

82) Simplify:  $5^7 \div 5^{-3}$

Answer:  $5^7 - (-3) = 5^{10}$

Diff: 3 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

83) Simplify:  $\left[\frac{1+i}{i}\right]^n$

Answer:  $\frac{(1+i)^n}{i^n}$

Diff: 3 Type: SA Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

84) Compute:  $\sqrt{205.9225}$

Answer:  $\sqrt{205.9225} = 14.35$

Diff: 1 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

85) Compute:  $\sqrt[12]{1.126825}$

Answer: 1.01

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

86) Compute:  $\sqrt[3]{1.092727}$

Answer: 1.03

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

87) Compute:  $\sqrt[11]{.000488281}$

Answer: .5

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

88) Compute:  $\sqrt[14]{1.159}$

Answer: 1.010595566

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

89) Compute:  $\sqrt[6]{1.418519112}$

Answer: 1.06

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

90) Compute:  $1956^{2/5}$

Answer: 20.727529

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

91) Compute:  $32.5^{3/4}$

Answer: 13.611705

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

92) Compute:  $32^{3/4}$

Answer: 13.45434264

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

93) Compute:  $\sqrt[7]{4.5689}$

Answer: 1.2423925

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

94) Compute:  $1.28^{-5/14}$

Answer: .9156104

Diff: 3 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving 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: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving 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: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

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

Answer:  $\frac{1 - .8203482999}{.02} = \frac{.1796517001}{.02} = 8.982585006$

Diff: 3 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving 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: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

99) Express in logarithmic form:  $3^9 = 19683$

Answer:  $9 = \log_3 19683$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

100) Express in logarithmic form:  $5^6 = 15625$

Answer:  $6 = \log_5 15625$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

101) Express in logarithmic form:  $10^{-4} = 0.0001$

Answer:  $\log_{10} 0.0001 = -4$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

105) Express in exponential form:  $\ln e^5 = 5$

Answer:  $e^5 = e^5$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

106) Evaluate:  $\ln 300$

Answer:  $\ln 300 = 5.703782$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

107) Evaluate:  $\ln 60$

Answer:  $\ln 60 = 4.094344562$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped

with a natural logarithm function to determine the value of natural logarithms.

110) Solve:  $8x = 40$

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

Diff: 3 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

111) Solve:  $2x = 40$

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

Diff: 3 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

112) Solve:  $-5x = 35$

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

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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

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

Diff: 2 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

114) Solve:  $0.04x = 37$

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

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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

Answer:  $x = 0.24(4) = 0.96$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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

Answer:  $x = 0.3(8) = 2.4$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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

Answer:  $x = 15 * -8, x = -120$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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

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

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

119) Solve:  $-3x = 9 - 6x$

Answer:  $3x = 9, x = 3$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

120) Solve:  $3x = 9 + 12x$

Answer:  $-9x = 9, x = -1$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

121) Solve:  $2x + 17 = 7x - 15$

Answer:  $17 + 15 = 7x - 2x, 32 = 5x, 6.4 = x$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

122) Solve:  $2x + 17 = 8x - 3$

Answer:  $17 + 3 = 8x - 2x, 20 = 6x, 3.3333 = x$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

123) Solve:  $x - 0.23x = 2105$

Answer:  $.77x = 2105, x = \frac{2105}{.77} = 2733.766$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

127) 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: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

128) 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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

129) 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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

130) Solve:  $x - \frac{x}{2} = y + 1$

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

131) 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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

132) 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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

133) 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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

134) 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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

138) Solve:  $I = Prt$  for  $r$

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

Diff: 1 Type: SA Page Ref: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

139) Solve:  $I = Prt$  for  $t$

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

Diff: 1 Type: SA Page Ref: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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  $(2000 - x)$ .

$$0.06x + 0.08(2000 - x) = 150$$

$$0.06x + 160 - 0.08x = 150$$

$$-0.02x = -10$$

$$x = \$500.00 \text{ at } 6\%$$

$$2000 - 500 = \$1500.00 \text{ at } 8\%$$

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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  $\frac{1}{4}$  of the original regular selling price.

Answer: Let the regular selling price be \$ $x$ .

$$\text{Sale price} = \$ \left[ x - \frac{1}{4}x \right]$$

$$\therefore x - \frac{1}{4}x = 776$$

$$4x - x = 3104$$

$$3x = 3104$$

$$x = 1034.67$$

The regular selling price was \$1034.67.

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

149) After an increase of  $\frac{1}{9}$  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 \$ $x$ .

$$\text{New hourly wage} = \$ \left[ x + \frac{1}{9}x \right]$$

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

$$9x + x = 111.15$$

$$10x = 111.15$$

$$x = 11.12$$

The hourly wage before increase was \$11.12.

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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.

$$\therefore x + 2x + 30 = 120$$

$$3x = 90$$

$$x = 30$$

The longer piece is  $2(30)$  cm + 15 cm = 75 cm.

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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

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

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

$$x = 1000$$

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

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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  $6(60 - x)$ .

$$\therefore 5x + 6(60 - x) = 350$$

$$5x + 360 - 6x = 350$$

$$-x = -10$$

$$x = 10$$

Production of product A is 10 units.

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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  $\frac{7}{10}$  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 =  $\$15(\frac{7}{10}x - 4)$

$$\therefore 12x + 8(2.5x) + 15(\frac{7}{10}x - 4) = \$1640$$

$$12x + 20x + 10.5x - 60 = 1640$$

$$42.5x = 1700$$

$$x = 40$$

Sales were 40 \$12 tickets, 100 \$8 tickets, and 24 \$15 tickets.

Diff: 3 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

156) Evaluate  $s: s = ut + \frac{1}{2}at^2$  for  $u = 15$ ,  $a = 32$ ,  $t = 5$

$$\text{Answer: } s = 15(5) + \frac{1}{2}(32)(5)^2$$

$$= 75 + 400$$

$$= 475$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

$$= 100 + 125$$

$$= 225$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\begin{aligned}\text{Answer: } z &= 5(-6)^2 - 5(-6)(5) - 3(5)^2 \\ &= 5(36) + 150 - 3(25) \\ &= 180 + 150 - 75 \\ &= 255\end{aligned}$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

$$\begin{aligned}\text{Answer: } c &= 8\left(7\left(\frac{1}{3}\right) - 4\left(-\frac{5}{4}\right)\right) - 4\left(5\left(\frac{1}{3}\right) + 3\left(-\frac{5}{4}\right)\right) \\ &= 8\left(\frac{7}{3} + \frac{20}{4}\right) - 4\left(\frac{5}{3} - \frac{15}{4}\right) \\ &= \frac{56}{3} + \frac{160}{4} - \frac{20}{3} + \frac{60}{4} \\ &= \frac{36}{3} + \frac{220}{4} = 12 + 55 = 67\end{aligned}$$

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

Answer: For  $N = 112$ ,  $C = 250$ ,  $P = 2450$ ,  $n = 24$

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

Answer: For  $I = 224$ ,  $P = 6700$ ,  $r = 0.11$

$$T = \frac{I}{Pr} = \frac{224}{6700 \times 0.11} = \frac{224}{737} = .3039349$$

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 3 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

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

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

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

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

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

Diff: 3 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving 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: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

168) Compute:  $\ln 1.257$

Answer:  $\ln 1.257 = .228728$

Diff: 1 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

170) Solve:  $x - 0.26x = 8.96$

Answer:  $x - .26x = 8.96$ ,  $.74x = 8.96$ ,  $x = 12.10811$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

171) Solve:  $x - 0.75x = 9.00$

Answer:  $x - .75x = 9.00$ ,  $.25x = 9.00$ ,  $x = 36.00$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

176) After reducing the regular selling price by  $\frac{1}{7}$ , 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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

177) After reducing the regular selling price by  $\frac{1}{8}$ , 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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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 copper department.

Answer: Let the floor space occupied by copper be  $x$ .

Floor space occupied by zinc =  $2x + 500$

Total floor space =  $x + 2x + 500$

$$\therefore x + 2x + 500 = 9500$$

$$3x = 9000$$

$$x = 3000$$

The floor space occupied by copper is 3000 square metres.

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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.

$$x + 3x + (x + 4) = 204$$

$$5x = 200$$

$$x = 40 \text{ on the second shift}$$

$$3x = 120 \text{ on the first shift}$$

$$x + 4 = 44 \text{ on the third shift}$$

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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 of Product B is  $150 - 80 = 70$ .

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

181) 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: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

182) 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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

184) Simplify:  $[(2^3)^4]^2$

- A) 16777216
- B) 17666216
- C) 12222617
- D) 17222167
- E) 17333167

Answer: A

Diff: 1 Type: MC Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

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: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

187) Simplify:  $[(3^3) - 6^2]^3$

- A) 279
- B) -279
- C) 729
- D) -729
- E) 972

Answer: D

Diff: 1 Type: MC Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

188) Calculate the following:  $\ln \left[ 1.67 \times \left( \frac{2.13 - 15}{.0034} \right) \right]$

- A) 5.145
- B) 1.545
- C) -5.154
- D) -1.545
- E) -5.145

Answer: E

Diff: 1 Type: MC Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

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: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

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: 63-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

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: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving 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  $\frac{5}{8}$  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: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

194) Following equation is used in carbon dating of the artefacts:

$$N = N_0 \times e^{\frac{-t}{\tau}}$$

where,

N = Decay rate of the artefact, expressed as disintegrations per minute (dpm)

$N_0$  = Decay rate of natural carbon = 14 dpm

$$\tau = \text{Mean life time} = \frac{\text{Half-life of C-14}}{\ln 2} = \frac{5730}{\ln 2} = 8267 \text{ years}$$

t = Age of the artefact

Calculate the age of the artefact, if the decay rate of the artefact is measured as 4 dpm

$$\text{Answer: } N = N_0 \times e^{\frac{-t}{\tau}}$$

$$\Rightarrow \frac{N}{N_0} = e^{\frac{-t}{\tau}}$$

$$\Rightarrow \ln\left(\frac{N}{N_0}\right) = \frac{-t}{\tau} \ln(e)$$

$$\Rightarrow t = -\tau \times \ln\left(\frac{N}{N_0}\right) \quad \text{because } \ln(e) = 1$$

Plugging the values in the above equation, we get:

$$t = -8267 \times \ln\left(\frac{4}{14}\right)$$

$$\Rightarrow t = -8267 \times -1.253$$

$$\Rightarrow t = 10357$$

Age of the artefact is 10,357 years

Diff: 3 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

195) Following equation is used in carbon dating of the artefacts:

$$N = N_0 \times \frac{-t}{e^{\tau}}$$

where,

N = Decay rate of the artefact, expressed as disintegrations per minute (dpm)

N<sub>0</sub> = Decay rate of natural carbon = 14 dpm

$$\tau = \text{Mean life time} = \frac{\text{Half-life of C-14}}{\ln 2} = \frac{5730}{\ln 2} = 8267 \text{ years}$$

t = Age of the artefact

What is the expected decay rate of the artefact, if it is known to be from Canadian New France era, 350 years ago.

$$\text{Answer: } N = N_0 \times \frac{-t}{e^{\tau}}$$

Plugging the values in the above equation, we get

$$N = 14 \times \frac{-350}{8267} = 14 \times 0.959 = 13.4 \text{ dpm}$$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

196) Find b, if  $e^{-4b} = 0.25$

A) -0.0625

B) -1.386

C) -0.347

D) 0.347

E) -0.229

Answer: D

Diff: 2 Type: MC Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

197) Calculate  $\ln(200e^{(-4 \times 0.29)})$

A) -1.16

B) 0.06

C) 6.458

D) 4.138

E) 198.84

Answer: D

Diff: 2 Type: MC Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

198) Calculate  $\ln \left[ 900 \left( \frac{1.025^{30}}{0.025} \right) \right]$

- A) 9.75
- B) 17162
- C) 2653.29
- D) 10.52
- E) 11.23

Answer: A

Diff: 2 Type: MC Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

199) In the following equation:

$$PV_n = PMT \left[ \frac{1 - (1 + i)^{-n}}{i} \right]$$

calculate n, if  $PV_n = 75,000$ ;  $PMT = 3500$ ;  $i = 0.028$

Answer: Plugging the values in the above equation:

$$75000 = 3500 \left[ \frac{1 - 1.028^{-n}}{0.028} \right]$$

$$\Rightarrow 0.6 = 1 - 1.028^{-n}$$

$$\Rightarrow 1.028^{-n} = 0.4$$

$$\Rightarrow -n \ln(1.028) = \ln(0.4)$$

$$\Rightarrow -n(0.027615) = -0.916291$$

$$\Rightarrow n = 33.180706$$

Diff: 2 Type: SA Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

200) Evaluate  $\ln \left( 20 \frac{300}{1.09} \right)$

- A) 5505
- B) 8.613
- C) 112.35
- D) 104.66
- E) 8.786

Answer: B

Diff: 2 Type: MC Page Ref: 56-61

Topic: 2.4 Logarithms - Basic Aspects

Objective: 2-4: Write exponential equations in logarithmic form and use an electronic calculator equipped with a natural logarithm function to determine the value of natural logarithms.

201) Simplify:  $\left(\frac{3^3 \times 3^7}{3^{10}}\right)^{12}$

- A) 3
- B) 0.333
- C) 531,441
- D) 0.00000188
- E) 1

Answer: E

Diff: 1 Type: MC Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

202) Simplify:  $(2 + 0.025)^3$

- A) 8.000015625
- B) 8
- C) 8.304
- D) 11.39
- E) 91.125

Answer: C

Diff: 1 Type: MC Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

203) Evaluate:  $[(-2)^3]^5$

- A) 32768
- B) -32768
- C) -40
- D) 256
- E) -30

Answer: B

Diff: 1 Type: MC Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

204) Simplify  $\left(\frac{1+n}{2}\right)^3$

A)  $\frac{1}{8} + n^3$

B)  $\left(\frac{1}{2} + n\right)^3$

C)  $\left(\frac{1}{2} + \frac{n}{2}\right)^3$

D)  $\frac{(1+n)^3}{8}$

E)  $\left(\frac{1+n}{2}\right)^3$

Answer: D

Diff: 1 Type: MC Page Ref: 45-51

Topic: 2.2 Integral Exponents

Objective: 2-2: Simplify and evaluate powers with positive exponents, negative exponents, and exponent zero.

205) Evaluate  $\left(\sqrt[3]{9}\right)^3$

A) 1

B) 9

C) 2.08

D) 729

E)  $\frac{1}{9}$

Answer: B

Diff: 1 Type: MC Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

206) Evaluate  $5000(1 + 0.11)^5$

A) 0.08

B) 5000

C) 8425.29

D) 5281.12

E) 25000

Answer: C

Diff: 1 Type: MC Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

207) Evaluate:  $1862.14 \left[ \frac{1 - (1 + 0.0125)^{-12}}{0.0125} \right]^{-1}$

Answer:  $1862.14 \left[ \frac{1 - (1 + 0.0125)^{-12}}{0.0125} \right]^{-1}$

$$= 1862.14 \left[ \frac{1 - (1.0125)^{-12}}{0.0125} \right]^{-1}$$

$$= 1862.14 \left[ \frac{0.1385}{0.0125} \right]^{-1}$$

$$= 1862.14 [11.07931]^{-1}$$

$$= 168.07$$

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

208) Evaluate:  $\$5000 \left[ \frac{1 - (1 + 0.05)^{-1000}}{0.05} \right]$

Answer:  $\$5000 \left[ \frac{1 - (1 + 0.05)^{-1000}}{0.05} \right]$

$$= \frac{\$5000}{0.05} = \$100,000$$

Diff: 1 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

209) Evaluate:  $\frac{\ln \left( 1 + \frac{0.0064 \times 100000}{250} \right)}{\ln(1.0064)}$

Answer:  $\frac{\ln \left( 1 + \frac{0.0064 \times 100000}{250} \right)}{\ln(1.0064)}$

$$= \frac{1.26976}{0.00638}$$

$$= 199$$

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

210) Evaluate: 
$$\frac{27370}{\left[ \frac{1 - (1 + 0.005)^{-30}}{0.005} \right] (1 + 0.005)}$$

Answer: 
$$\frac{27370}{\left[ \frac{1 - (1 + 0.005)^{-30}}{0.005} \right] (1 + 0.005)}$$

$$= \frac{27370}{27.794 \times 1.005}$$

$$= 979.84$$

Diff: 2 Type: SA Page Ref: 52-55

Topic: 2.3 Fractional Exponents

Objective: 2-3: Use an electronic calculator to compute the numerical value of arithmetic expressions involving fractional exponents.

211) Simplify:  $(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

Answer:  $(a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

$= a(a^2 + b^2 + c^2 - ab - bc - ca) + b(a^2 + b^2 + c^2 - ab - bc - ca) + c(a^2 + b^2 + c^2 - ab - bc - ca)$

$= a^3 + ab^2 + ac^2 - a^2b - abc - ca^2 + ba^2 + b^3 + bc^2 - ab^2 - b^2c - abc + ca^2 + b^2c + c^3 - abc - bc^2 - ac^2$

$= a^3 + b^3 + c^3 - 3abc$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

212) Simplify:  $(a + b)^3$

Answer:  $(a + b)^3$

$= (a + b)(a + b)^2$

$= (a + b)(a^2 + 2ab + b^2)$

$= a^3 + 3a^2b + 3ab^2 + b^3$

Diff: 1 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

213) Simplify:  $7x - (5x - 4y) - (6x + 8y - 5x)$

A)  $x - 4y$

B)  $11x - 12y$

C)  $x + 12y$

D)  $3x + 12y$

E)  $3x - 4y$

Answer: A

Diff: 1 Type: MC Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

214) Simplify:  $x - 2y - [4x - 6y - \{3x - z + 2(2x - 4y + z)\}]$

Answer:  $x - 2y - [4x - 6y - \{3x - z + 2(2x - 4y + z)\}]$

$$= x - 2y - [4x - 6y - \{3x - z + 4x - 8y + 2z\}]$$

$$= x - 2y - [4x - 6y - \{7x + z - 8y\}]$$

$$= x - 2y - [4x - 6y - 7x - z + 8y]$$

$$= x - 2y - [-3x + 2y - z]$$

$$= x - 2y + 3x - 2y + z$$

$$= 4x - 4y + z$$

Diff: 2 Type: SA Page Ref: 39-43

Topic: 2.1 Simplification of Algebraic Expressions

Objective: 2-1: Simplify algebraic expressions using fundamental operations and substitution.

215) Solve:  $2x + 5 = 7$

A)  $x = 1$

B)  $x = 6$

C)  $x = 2$

D)  $x = 4$

E)  $x = \frac{1}{2}$

Answer: A

Diff: 1 Type: MC Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

216) Solve:  $8x - 11 = 5x + 4$

A)  $x = -\frac{7}{3}$

B)  $x = -\frac{7}{13}$

C)  $x = 5$

D)  $x = 15$

E)  $x = 4$

Answer: C

Diff: 1 Type: MC Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

217) Solve:  $0.5x - 0.75 + 9x = 5x + 1.5$

A)  $x = 0.05$

B)  $x = 0.155$

C)  $x = -0.5$

D)  $x = 0.5$

E)  $x = 0.55$

Answer: D

Diff: 1 Type: MC Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

218) Solve:  $y = 192 + 0.04y$

A)  $y = 184.62$

B)  $y = 192$

C)  $y = 200$

D)  $y = 320$

E)  $y = 137.14$

Answer: C

Diff: 1 Type: MC Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

219) Solve and find the value of  $a$ , given  $3a + 4(15-2a) = 20$

A)  $a = \frac{16}{3}$

B)  $a = 7$

C)  $a = 5$

D)  $a = -1$

E)  $a = 8$

Answer: E

Diff: 2 Type: MC Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

220) Solve and find the value of  $y$ , given  $3(1-2y) + 5y = 5$

Answer:  $3(1-2y) + 5y = 5$

$\Rightarrow -y + 3 = 5$

$\Rightarrow y = -2$

Diff: 1 Type: SA Page Ref: 63-67

Topic: 2.5 Solving Basic Equations

Objective: 2-5: Solve basic equations using addition, subtraction, multiplication, and division.

221) Solve:  $\frac{x}{1 + 0.11 \times \frac{175}{365}} + 2x \left( 1 + 0.11 \times \frac{190}{365} \right) = \$115.10$

Answer:  $\frac{x}{1 + 0.11 \times \frac{175}{365}} + 2x \left( 1 + 0.11 \times \frac{190}{365} \right) = \$115.10$

$\Rightarrow \frac{x}{1.05274} + 2.11452x = \$115.10$

$\Rightarrow 3.06442x = \$115.10$

$\Rightarrow x = \$37.56$

Diff: 2 Type: SA Page Ref: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

222) Solve:  $x \left( 1 + 0.09 \times \frac{180}{365} \right) + 2x \left( 1 + 0.09 \times \frac{85}{365} \right)^{-1} = \$2551.65$

Answer:  $1.04438x + 2x(1.02096)^{-1} = \$2551.65$

$\Rightarrow 1.04438x + 1.95894x = \$2551.65$

$\Rightarrow x = \$849.61$

Diff: 2 Type: SA Page Ref: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

223) Solve:  $x(1.05)^3 + \$1000 + \frac{x}{1.05^7} = \frac{\$13000}{1.05^2}$

Answer:  $1.157625x + 0.710681x = \$11791.38 - \$1000$

$\Rightarrow x = \frac{\$10791.38}{1.868306}$

$\Rightarrow x = \$5776.02$

Diff: 1 Type: SA Page Ref: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

224) Solve and find the value of x, given:  $\frac{3 \left( x - \frac{38-x}{5} \right)}{5} = \frac{3x - 2 \left( \frac{38-x}{5} \right)}{8}$

A)  $x = 20$

B)  $x = -9$

C)  $x = 9.02$

D)  $-17.16$

E)  $4.33$

Answer: C

Diff: 2 Type: MC Page Ref: 67-71

Topic: 2.6 Solving Equations Involving Algebraic Simplification

Objective: 2-6: Solve equations involving algebraic simplification and formula rearrangement.

225) Luxury furniture is promoting a no HST (13%) event for the fall sale. What is the actual selling price for the Sofa before tax shown on your receipt, if the ticket price of the sofa is \$795.00?

A) \$795.00

B) \$6,115.38

C) \$103.35

D) \$898.35

E) \$703.54

Answer: E

Diff: 1 Type: MC Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

226) Sobeys sells fruit trays consisting of pineapple and melons. The manager of the fruit department obtains pineapples at a wholesale price of \$2.50 per kg, and melons at \$1.85 per kg. He is required to produce 10 kg of the mixed fruit. What is the maximum weight of pineapple that he can put in the mix in order to have an effective wholesale cost no greater than \$2.00 per kg?

- A) 2.31 kg
- B) 7.69 kg
- C) 4.56 kg
- D) 4 kg
- E) 5.41 kg

Answer: A

Diff: 2 Type: MC Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

227) Sobeys sells fruit trays consisting of pineapple and melons. The manager of the fruit department obtains pineapples at a wholesale price of \$2.50 per kg, grapes at \$2.15 per kg, strawberries at \$1.50 per kg and melons at \$1.85 per kg. He is required to produce 10 kg of the mixed fruit. He is required to add 2 kg of strawberries and 3 kg of grapes. What is the maximum weight of pineapple that he can put in the mix in order to have an effective wholesale cost no greater than \$2.00 per kg?

Answer: Cost of 2 kg of strawberries =  $\$1.50 \times 2 = \$3.00$

Cost of 3 kg of grapes =  $\$2.15 \times 3 = \$6.45$

Total cost of the mixed fruit =  $\$2 \times 10 = \$20$

Cost of pineapple and melons =  $\$20 - (\$3 + \$6.45) = \$10.55 \Rightarrow 2.5p + 1.85m = 10.55$

Maximum weight of pineapple and melons =  $10 - (2 + 3) = 5\text{kg}$

$$\therefore 2.5p + 1.85(5-p) = 10.55$$

$$\Rightarrow 0.65p + 9.25 = 10.55$$

$$\Rightarrow p = \frac{10.55 - 9.25}{0.65} = 2$$

$\therefore$  Maximum weight of pineapple = 2 kg

Diff: 2 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

228) ABC financial has introduced a stock option incentive program. For a total of 301,375 options, each of the 3 executives receives twice as many options as the senior managers. Each senior manager receives twice the options as each of the middle managers and each of the middle managers receives 1.5 times the options as each of the employee. If there are 25 senior managers, 75 middle managers and 1000 employees, how many options will the each executive receive?

- A) 250
- B) 375
- C) 750
- D) 1500
- E) 4500

Answer: D

Diff: 2 Type: MC Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

229) Sleep Inc. reduced the price of the Sealy mattress by 20% for a spring sale. What was the regular price of the mattress, if the sale price is \$649.95?

- A) \$129.99
- B) \$779.94
- C) \$3,249.75
- D) \$812.44
- E) \$649.95

Answer: D

Diff: 1 Type: MC Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

230) Blue Mountain resort charges \$39 for a single ticket for high ropes and \$29 for a single ticket for low ropes. If a day's total revenue from the sale of 540 passes is \$18,910, how many tickets were sold for high ropes?

Answer:  $39HR + 29(540 - HR) = 18910$

$$\Rightarrow HR = \frac{18910 - 29 \times 540}{39 - 29} = 325$$

325 tickets were sold for high ropes

Diff: 3 Type: SA Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

231) Age difference between my son and me is 30 years. Sum of our ages is 54. What is my age now?

- A) 12
- B) 42
- C) 38
- D) 45
- E) 15

Answer: B

Diff: 1 Type: MC Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.

232) Transpipe owns 47% ownership stake in BP. Cameo owns a 29% stake in the BP. Suppose Transpipe sells 62.5% of its stake for \$47 Million. If Cameo uses that transaction as the basis for calculating the value of its own 29% position, what value will Cameo obtain?

- A) \$18.1 Million
- B) \$46.4 Million
- C) \$16 Million
- D) \$47 Million
- E) \$29 Million

Answer: B

Diff: 2 Type: MC Page Ref: 72-75

Topic: 2.7 Solving Word Problems

Objective: 2-7: Solve word problems by creating and solving equations.