*Student:* _____

1. Simplify and collect like terms: $(-p) + (-3p) + (4p)$

2. Simplify and collect like terms: $(5s - 2t) - (2s - 4t)$

3. Simplify and collect like terms: $4x^2y + (-3x^2y) - (-5x^2y)$

4. Simplify and collect like terms: $1 - (7e^2 - 5 + 3e - e^3)$

5. Simplify and collect like terms: $\left(6x^2 - 3xy + 4y^2\right) - \left(8y^2 - 10xy - x^2\right)$

6. Simplify and collect like terms: $\left(7m^3 - m - 6m^2 + 10\right) - \left(5m^3 - 9 + 3m - 2m^2\right)$

7. Simplify and collect like terms: $2(7x - 3y) - 3(2x - 3y)$

8. Simplify and collect like terms: $4(a^2 - 3a - 4) - 2(5a^2 - a - 6)$

9. Simplify and collect like terms: $15x - [4 - 2(5x - 6)]$

10. Simplify and collect like terms: $6a - [3a - 2(2b - a)]$

11. Simplify and collect like terms: $\frac{2x + 9}{4} - 1.2(x - 1)$

12. Simplify and collect like terms: $\frac{x}{2}-x^2+\frac{4}{5}-0.2x^2-\frac{4}{5}x+\frac{1}{2}$

13. Simplify and collect like terms: $\frac{8x}{0.5}+\frac{5.5x}{11}+0.5(4.6x-17)$

14. Simplify, collect like terms and maintain 5-figure accuracy: $\frac{2x}{1.045}-\frac{2.016x}{3}+\frac{x}{2}$

15. Simplify, collect like terms and maintain 5-figure accuracy: $\frac{P}{1+0.095\times\frac{5}{12}}+2P\left(1+0.095\times\frac{171}{365}\right)$

16. Simplify, collect like terms and maintain 5-figure accuracy: $y\left(1-0.125\times\frac{213}{365}\right)+\frac{2y}{\left(1+0.125\times\frac{88}{365}\right)}$

17. Simplify, collect like terms and maintain 5-figure accuracy: $k(1+0.04)^2+\frac{2k}{(1+0.04)^2}$

18. Simplify, collect like terms and maintain 5-figure accuracy: $\frac{h}{(1+0.055)^2} - 3h(1+0.055)^3$

19. Perform the operation indicated and collect like terms: $4a(3ab - 5a + 6b)$

20. Perform the operation indicated and collect like terms: $9k(4 - 8k + 7k^2)$

21. Perform the operation indicated and collect like terms: $-5xy(2x^2 - xy - 3y^2)$

22. Perform the operation indicated and collect like terms: $-(p^2 - 4pq - 5p)(\frac{2q}{p})$

23. Perform the operation indicated and collect like terms: $(4r - 3t)(2t + 5r)$

24. Perform the operation indicated and collect like terms: $(3p^2 - 5p)( - 4p + 2)$

25. Perform the operation indicated and collect like terms: $3(a - 2)(4a + 1) -5(2a + 3)(a - 7)$

26. Perform the operation indicated and collect like terms: $5(2x - y)(y + 3x) - 6x(x - 5y)$

27. Perform the operation indicated and collect like terms: $\frac{18x^2}{3x}$

28. Perform the operation indicated and collect like terms: $\frac{6a^2b}{-2ab^2}$

29. Perform the operation indicated and collect like terms: $\frac{x^2y - xy^2}{xy}$

30. Perform the operation indicated and collect like terms: $\frac{-4x+10x^2-6x^3}{-0.5x}$

31. Perform the operation indicated and collect like terms: $\frac{12x^3-24x^2+36x}{48x}$

32. Perform the operation indicated and collect like terms: $\frac{32a^2b-8ab+14ab^2}{2ab}$

33. Perform the operation indicated and collect like terms: $\frac{4a^2b^3-6a^3b^2}{2ab^2}$

34. Perform the operation indicated and collect like terms: $\frac{120(1+i)^2+180(1+i)^3}{360(1+i)}$

35. Evaluate the following expression for the given value of the variable:
$3d^2 - 4d + 15$ for $d = 2.5$

36. Evaluate the following expression for the given value of the variable:
$15g - 9h + 3$ for $g = 14$, $h = 15$

37. Evaluate the following expression for the given value of the variable:
$7x(4y - 8)$ for $x = 3.2$, $y = 1.5$

38. Evaluate the following expression for the given value of the variables:
$I \div Pr$ for $P = \$500$, $I = \$13.75$, $r = 0.11$

39. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{I}{rt}$ for $r = 0.095$, $I = \$23.21$, $t = \frac{283}{365}$

40. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{N}{1-d}$ for $N = \$89.10$, $d = 0.10$

41. Evaluate the following expression for the given value of the variable sand calculate to the cent: $L(1-d_1)(1-d_2)(1-d_3)$ for $L$ = \$490, $d_1 = 0.125,\ d_2 = 0.15,\ d_3 = 0.05$

42. Evaluate the following expression for the given value of the variables and calculate to the cent: $P(1+rt)$ for $P$ = \$770, $r$ = 0.13, $t = \frac{223}{365}$

43. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{S}{1+rt}$ for $S$ = \$2500, $r$ = 0.085, $t = \frac{123}{365}$

44. Evaluate the following expression for the given value of the variable: $(1+i)^m - 1$ for i = 0.0225, m = 4

45. Evaluate the following expression for the given value of the variables and calculate to the cent: $P(1+i)^n$ for $P$ = \$1280, $i$ = 0.025, $n$ = 3

46. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{S}{(1+i)^n}$ for $S = \$850$, $i = 0.0075$. $n = 6$

47. Evaluate the following expression for the given value of the variables and calculate to the cent: $R\left[\frac{(1+i)^n - 1}{i}\right]$ for $R = \$550$, $i = 0.085$, $n = 3$

48. Evaluate the following expression for the given value of the variables and calculate to the cent: $R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$ for $R = \$910$, $i = 0.1038129$, $n = 4$

49. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{R}{i}\left[1 - \frac{1}{(1+i)^n}\right]$ for $R = \$630$, $i = 0.115$, $n = 2$

50. Evaluate the following expression for the given value of the variables and calculate to the cent: $P(1+rt_1) + \frac{S}{1+rt_2}$ for $P = \$470$, $S = \$390$, $r = 0.075$, $t_1 = \frac{104}{365}$, $t_2 = \frac{73}{365}$

51. Use formula (6-1) to calculate P if r = 0.05, i = $6.25, and t = 0.25.

52. Use formula (13-1) to calculate i if PMT = $900 and PV = $150,000. (There are several instances in our formulas where a two- or three-letter symbol is used for a variable. This is usually done to make the symbol more suggestive of the quantity it represents. For example, we use PMT to represent the amount of each payment in a series of regular payments. The symbol P has already been taken to represent another quantity that begins with "p.")

53. Use formula (6-2) to calculate P if r = 0.004, S = $3626, and t = 9.

54. Use formula (4-1) to calculate L if N = $891 and d = 0.10.

55. Use formula (4-1) to calculate d if N = $410.85 and L = $498.00.

56. Use formula (6-2) to calculate t if r = 0.0025, S = $5100, and P = $5000.

57. Formula (5-3) contains three two-letter symbols. Use it to calculate CM if NI = $15,000, X = 5000, and FC = $60,000.

58. Use formula (5-3) to obtain X if NI = -$542.50, CM = $13.50, and FC = $18,970.

59. Use formula (4-2) to calculate L if N = $1468.80, d1 = 0.20, d2 = 0.15, and d3 = 0.10.

60. Use formula (4-2) to calculate $d_2$ if N = $70.29, L = $99.99, $d_1$ = 0.20, and $d_3$ = 0.05.

61. Use the formula $FV = PV(1 + i_1)(1 + i_2)(1 + i_3)$ to determine $i_1$ if PV = $1000, FV = $1094.83, $i_2$ = 0.03, $i_3$ = 0.035.

62. Use formula (10-1) to obtain PMT if FV = $1508.54, n = 4, and i = 0.05.

63. Use formula (10-2) to obtain PMT if PV = $6595.20, n = 20, and i = 0.06.

64. Use the formula $FV = PV(1 + i)^n$ to calculate i if PV = $2000, FV = $9321.91, and n = 20.

65. Use the formula $PV = FV(1 + i)^{-n}$ to calculate i if PV = $5167.20, FV = $10,000, and n = 15.

66. Rearrange formula (6-1) to isolate t on the left side.

67. Rearrange formula (13-1) to isolate i on the left side.

68. Rearrange formula (4-1) to isolate d on the left side.

69. Rearrange formula (5-3) to isolate CM on the left side.

70. Rearrange formula (5-3) to isolate X on the left side.

71. Rearrange formula (6-2) to isolate r on the left side.

72. Rearrange formula (6-2) to isolate t on the left side.

73. Rearrange formula (4-2) to isolate d1 on the left side.

74. Rearrange formula (4-2) to isolate d3 on the left side.

75. Rearrange the formula $FV = PV(1 + i)^n$ to isolate PV on the left side.

76. Rearrange the formula $FV = PV(1 + i)^n$ to isolate i on the left side.

77. Simplify: $a^2 \times a^3$

78. Simplify: $(x^6)(x^{-4})$

79. Simplify: $b^{10} \div b^6$

80. Simplify: $h^7 \div h^{-4}$

81. Simplify: $(1+i)^4 \times (1+i)^9$

82. Simplify: $(1+i) \times (1+i)^n$

83. Simplify: $\left(x^4\right)^7$

84. Simplify: $\left(y^3\right)^3$

85. Simplify: $\left(t^6\right)^{1/3}$

86. Simplify: $\left(n^{0.5}\right)^8$

87. Simplify: $\frac{\left(x^5\right)\left(x^6\right)}{x^9}$

88. Simplify: $\frac{(x^5)^6}{x^9}$

89. Simplify: $[2(1+i)]^2$

90. Simplify: $\left(\frac{1+i}{3i}\right)^3$

91. Simplify: $\frac{4r^5t^6}{\left(2r^2t\right)^3}$

92. Simplify: $\dfrac{\left(-r^{3}\right)(2r)^{4}}{\left(2r^{-2}\right)^{2}}$

93. Evaluate to six-figure accuracy: $8^{4/3}$

94. Evaluate to six-figure accuracy: $\left(-27^{2/3}\right)$

95. Evaluate to six-figure accuracy: $7^{3/2}$

96. Evaluate to six-figure accuracy: $5^{-3/4}$

97. Evaluate to six-figure accuracy: $(0.001)^{-2}$

98. Evaluate to six-figure accuracy: $0.893^{-1/2}$

99. Evaluate to six-figure accuracy: $(1.0085)^5(1.0085)^3$

100. Evaluate to six-figure accuracy: $(1.005)^3(1.005)^{-6}$

101. Evaluate to six-figure accuracy: $\sqrt[3]{1.03}$

102. Evaluate to six-figure accuracy: $\sqrt[6]{1.05}$

103. Evaluate to six-figure accuracy: $\left(4^4\right)\left(3^{-3}\right)\left(-\frac{3}{4}\right)^3$

104.

Evaluate to six-figure accuracy: $\left[\left(-\frac{3}{4}\right)^2\right]^{-2}$

105.

Evaluate to six-figure accuracy: $\left(\frac{2}{3}\right)^3\left(-\frac{3}{2}\right)^2\left(-\frac{3}{2}\right)^{-3}$

106.

Evaluate to six-figure accuracy: $\left(-\frac{2}{3}\right)^3 \div \left(\frac{3}{2}\right)^{-2}$

107.

Evaluate to six-figure accuracy: $\frac{1.03^{16}-1}{0.03}$

108.

Evaluate to six-figure accuracy: $\frac{\left(1.008\overline{3}\right)^{30}-1}{0.008\overline{3}}$

109. Evaluate to six-figure accuracy: $\frac{1-1.0225^{-20}}{0.0225}$

110. Evaluate to six-figure accuracy: $\frac{1-\left(1.00\overline{6}\right)^{-32}}{0.00\overline{6}}$

111. Evaluate to six-figure accuracy: $(1+0.0275)^{1/3}$

112. Evaluate to six-figure accuracy: $(1+0.055)^{1/6}-1$

113. Solve the following equation: $10a + 10 = 12 + 9a$

114. Solve the following equation: $29 - 4y = 2y - 7$

115. Solve the following equation: $0.5(x - 3) = 20$

116. Solve the following equation: $\frac{1}{3}(x - 2) = 4$

117. Solve the following equation: $y = 192 + 0.04y$

118. Solve the following equation: $x - 0.025x = 341.25$

119. Solve the following equation: $12x - 4(2x - 1) = 6(x + 1) - 3$

120. Solve the following equation: $3y - 4 = 3(y + 6) - 2(y + 3)$

121. Solve the following equation: $8 - 0.5(x + 3) = 0.25(x - 1)$

122. Solve the following equation: $5(2 - c) = 10(2c - 4) - 6(3c + 1)$

123. Solve the following equation: $3.1t + 145 = 10 + 7.6t$

124. Solve the following equation: $1.25y - 20.5 = 0.5y - 11.5$

125. Solve the following equation accurate to the cent: $\frac{x}{1.1^2} + 2x(1.1)^3 = \$1000$

126. Solve the following equation accurate to the cent: $\frac{3x}{1.025^6} + x(1.025)^8 = \$2641.35$

127. Solve the following equation accurate to the cent: $\frac{2x}{1.03^7} + x + x\left(1.03^{10}\right) = \$1000 + \frac{\$2000}{1.03^4}$

128. Solve the following equation accurate to the cent: $x(1.05)^3 + \$1000 + \frac{x}{1.05^7} = \frac{\$5000}{1.05^2}$

129. Solve the following equation accurate to the cent: $x\left(1 + 0.095 \times \frac{84}{365}\right) + \frac{2x}{\left(1 + 0.095 \times \frac{108}{365}\right)} = \$1160.20$

130. Solve the following equation accurate to the cent: $\frac{x}{1 + 0.115 \times \frac{78}{365}} + 3x\left(1 + 0.115 \times \frac{121}{365}\right) = \$1000\left(1 + 0.115 \times \frac{43}{365}\right)$

131. Solve the following pair of equations. Verify your solution.

$x - y = 2$

$3x + 4y = 20$

132. Solve the following pair of equations. Verify your solution.

$y - 3x = 11$

$5x + 30 = 4y$

133. Solve the following pair of equations. Verify your solution.

$4a - 3b = -3$

$5a - b = 10$

134. Solve the following pair of equations. Verify your solution.

$7p - 3q = 23$

$-2p - 3q = 5$

135. $7x - y = 35$

Solve the following pair of equations. Verify your solution.

$y = 2x$

136. Solve the following pair of equations. Verify your solution.

$g - h = 17$ $\frac{4}{3}g + \frac{3}{2}h = 0$

137. Solve the following pair of equations to three-figure accuracy. Verify your solution. $d = 3c - 500$
$0.7c + 0.2d = 550$

138. Solve the following pair of equations to three-figure accuracy. Verify your solution. $0.03x + 0.05y = 51$
$0.8x - 0.7y = 140$

139. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$2v + 6w = 1$
$-9w + 10v = 18$

140. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$2.5a + 2b = 11$
$8a + 3.5b = 13$

141. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$37x - 63y = 235$
$18x + 26y = 468$

142. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$68.9n - 38.5m = 57$
$45.1n - 79.4m = -658$

143. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$0.33e + 1.67f = 292$
$1.2e + 0.61f = 377$

144. Solve the following pair of equations. Verify your solution.
$318j - 451k = 7.22$
$-249j + 193k = -18.79$

145. A web site had 2/7 more hits last month than in the same month of the preceding year. If there were 2655 hits last month, how many were there 1 year earlier?

146. The retail price of a pair of skis consists of the wholesale cost to the retailer plus the retailer's markup. If skis retailing for $712 are marked up by 60% of the wholesale cost, what is that wholesale cost?

147. The price tags in Annie's Flower Shop include the 13% Harmonized Sales Tax (HST). How much HST will she report for a plant sold at $39.55?

148. A stockbroker's commission on a transaction is 2.5% of the first $5000 of the transaction amount and 1.5% of the remainder. What was the amount of a transaction that generated a total commission of $227?

149. A caterer has the following price structure for banquets. The first 20 meals are charged the basic price per meal. The next 20 meals are discounted by $2 each and all additional meals are each reduced by $3. If the total cost for 73 meals comes to $1620, what is the basic price per meal?

150. Econocar offers two plans for one-week rentals of a compact car. A rate of $295 per week includes the first 1000 kilometres. Extra distance costs 15 cents per kilometre. A weekly rate of $389 allows unlimited driving. Rounded to the nearest kilometre, beyond what driving distance is the unlimited driving plan cheaper?

151. Alicia pays 38% income tax on any additional earnings. She has an opportunity to work overtime at 1.5 times her base wage of $23.50 per hour. Rounded to the nearest quarter hour, how much overtime must she work to earn enough money (after tax) to buy a canoe that costs $2750 including sales taxes?

152. Classic Homes has found from experience that there should be 40% as many two-bedroom homes as three-bedroom homes in a subdivision, and twice as many two-bedroom homes as four-bedroom homes. How many homes of each type should Classic build in a new 96-home subdivision?

153. Broadway Mazda usually spends half as much on radio advertising as on newspaper advertising, and 60% as much on television advertising as on radio advertising. If next year's total advertising budget is $160,000, how much (rounded to the nearest dollar) should be allocated to each form of advertising?

154. A city's commercial construction by-laws require five parking spaces for every 100 square metres of retail rental space in a shopping centre. Four percent of the parking spaces must be large spaces for the physically handicapped. Of the remainder, there must be 40% more regular-size spaces than "small-car" spaces. How many parking spaces of each type are required for a 27,500 square metre shopping centre?

155. Erin has invested in both an equity mutual fund and a bond mutual fund. Her financial advisor told her that her overall portfolio rose in value by 1.1% last year. Erin noted in the newspaper that the equity fund lost 3.3% last year while the bond fund rose 7.7%. To the nearest 0.1%, what percentage of her portfolio was in the equity fund at the beginning of the year?

156. Steel is an alloy of iron and nickel. A steel recycling company has two piles of scrap steel. Pile A contains steel with 5.25% nickel content. Pile B contains steel with 2.84% nickel. The company has an order for 32.5 tonnes of steel containing 4.15% nickel. How much scrap steel should be taken from each pile for reprocessing?

157. The board of directors of Meditronics Inc. has designated 100,000 stock options for distribution to employees and management of the company. Each of three executives is to receive 2000 more options than each of eight scientists and engineers. Each scientist and engineer is to receive 50% more options than each of 14 technicians. How many options will a person in each position receive?

158. Dash Canada offers two long-distance telephone plans. Plan X costs 6.5 cents per minute for calls between 8 a.m. and 6 p.m. weekdays (business hours) and 4.5 cents per minute at other times. Plan Y costs 5.3 cents per minute any time. Above what percentage of business-hour usage will Plan Y be cheaper?

159. Quality Grocer makes its own bulk "trail mix" by mixing raisins and peanuts. The wholesale cost of raisins is $3.75 per kg and the cost of peanuts is $2.89 per kg. To the nearest 0.1 kg, what amounts of peanuts and raisins should be mixed to produce 50 kg of trail mix with an effective wholesale cost of $3.20 per kg?

160. A firm received a bill from its accountant for $3310, representing a combined total of 41 "billable" hours for both the Certified General Accountant (CGA) and her accounting technician, for conducting the firm's audit. If the CGA charges her time at $120 per hour and the technician's time at $50 per hour, how many hours did each work on the audit?

161. Joan, Stella, and Sue have agreed to form a partnership. For the original capital investment of $32,760, Sue agrees to contribute 20% more than Joan, and Joan agrees to contribute 20% more than Stella. How much will each contribute?

162. The annual net income of the SGR partnership is to be distributed so that Sven receives 30% less than George, and Robert receives 25% more than George. If the past year's net income was $88,880, what amount should be allocated to each?

163. It takes 20 minutes of machine time to manufacture Product X and 30 minutes of machine time to manufacture Product Y. If the machine operated 47 hours last week to produce a combined total of 120 units of the two products, how many units of Y were manufactured?

164. The tickets for a hockey game cost $19.00 for the blue section and $25.50 for the red section. If 4460 tickets were sold for a total of $93,450, how many seats were sold in each section?

165. Shirley had a three-sevenths interest in a partnership. She sold three-fifths of her interest for $27,000.
a) What is the implied value of Shirley's remaining partnership interest?
b) What is the implied value of the entire partnership?

166. Regal Resources owns a 58% interest in a mineral claim. Yukon Explorations owns the remainder. If Regal sells one-fifth of its interest for $1.2 million, what is the implied value of Yukon's interest?

167. The statistics for a professional accounting program indicate that five-sevenths of those who enter the program complete Level 1. Two-ninths of Level 1 completers do not finish Level 2. If 587 students completed Level 2 last year, how many (including this group of 587) began Level 1?

168. Executive Fashions sold four-sevenths of its inventory at cost in a bankruptcy sale. The remainder was sold to liquidators for $6700, representing 45% of the cost of the goods.
a) What was the original cost of the inventory that was sold to the liquidators?
b) What were the proceeds from the bankruptcy sale?

169. The annual dues for the Southern Pines Golf Club are $2140 for regular members and$856 for student members. If the total revenue from the dues of 583 members for thepast year was $942,028, how many members did the club have in each category?

170. The Hungry Heifer diner offers an all-you-can-eat buffet at $12.95 per adult and $8.95 per child. On a particular day, the diner had total buffet revenue of $3304.70 from 266 customers. How many of the customers were children?

171. Tina drove from Calgary to Vancouver, a distance of 1000 km, in 12.3 hours. She drove at 100 km/h on the "open road," but slowed to 50 km/h on urban and curving roads. What distance did she drive at each speed? (Hint: Travelling time at a particular speed 5 Distance/Speed)

172. Mr. and Mrs. Chudnowski paid $1050 to fly with their three children from Winnipeg to Regina. Mrs. Ramsey paid $610 for herself and two children on the same flight. What were the airfares per adult and per child?

173. Budget Truck Rentals offers short-term truck rentals consisting of an hourly rate plus a per-kilometre charge. Vratislav paid $54.45 for a two-hour rental during which he drove 47 km. Bryn paid $127.55 for five hours and 93 km driven. What rate did Budget charge per hour and per km?

174. Buckerfields Garden Supply makes custom fertilizer by mixing appropriate combinations of bulk 6% nitrogen fertilizer with bulk 22% nitrogen fertilizer. How many kilograms of each type should be mixed to make 300 kg of 16% nitrogen fertilizer? (Hint: The weight of nitrogen in the mixture equals the total weight of nitrogen in the two components mixed together.)

175. Colby inherited a small savings-bond portfolio consisting of four $1000 face-value Canada Savings Bonds and six $1000 face-value Ontario Savings Bonds. In the first year, the portfolio earned $438 interest. At the end of the first year, Colby cashed in one of the Canada Savings Bonds and two of the Ontario Savings Bonds. In the following year, the remaining bonds earned $306 interest. What annual rate of interest did each type of bond earn?

176. Mr. LeClair and Ms. Bartoli own adjacent hobby farms. They have just received their property tax notices providing the following assessment and tax information:

| Owner's name | Assessment on residence | Assessment on land and farm buildings | Total property tax |
|---|---|---|---|
| Mr. LeClair | $400,000 | $300,000 | $3870 |
| Ms. Bartoli | $350,000 | $380,000 | $3774 |

The regional government applies one tax rate to residences, and a lower tax rate to land with farm buildings. What are these property tax rates (expressed in percent to the nearest 0.01%)?

177. Product X requires 30 minutes of machining on a lathe, and product Y requires 45 minutes of machining. If the lathe was operated for 60.5 hours last week for machining a combined total of 93 units of Products X and Y, how many units of each product were produced?

178. Marichka bought 5 litres of milk and 4 dozen eggs for $19.51. Lonnie purchased 9 litres of milk and 3 dozen eggs for $22.98. What were the prices for a litre of milk and a dozen eggs?

179. TinyTot School purchases the same amount of milk and orange juice each week. After price increases from $1.50 to $1.60 per litre of milk and from $1.30 to $1.37 per can of frozen orange juice, the weekly bill rose from $57.00 to $60.55. How many litres of milk and cans of orange juice are purchased every week?

180. In the first week of July a beer and wine store sold 871 cases of beer and paid refunds on 637 cases of empty bottles, for a net revenue of $12,632.10. For the following week the net revenue was $13,331.70 from the sale of 932 cases and the return of 805 cases of empties. What refund did the store pay per case of empty bottles?

181. As a fundraiser, a local charity sold raffle tickets on a trip to Disney World at $2 each or three for $5. In all, 3884 tickets were sold for a total of $6925. How many people bought tickets at the three for $5 discount?

182. A convenience store sells canned soft drinks at $4.35 for a six-pack or 90 cents for a single can. If revenue from the sale of 225 cans of soft drinks on a weekend was $178.35, how many six-packs and how many single cans were sold?

183. A partnership in a public accounting practice has 7 partners and 12 accounting technicians. Each partner draws the same salary, and each technician is paid the same salary. The partners calculate that if they give the technicians a raise of 5% and if they increase their own salaries by 5%, the gross annual salaries for all accounting personnel will rise from the current $1,629,000 to $1,734,750. What are the current annual salaries of a partner and an accounting technician?

184. A manufacturing firm pays monthly salaries of $3400 to each production worker and $2800 to each assembly worker. As the economy drops into a recession, the firm decides to reduce its total monthly manufacturing payroll from $253,800 to $198,000 by laying off 20% of its production workers and 25% of its assembly workers. How many layoffs will there be from each of the assembly and production divisions?

185. Mr. Parker structured his will so that each of his four children will receive half as much from the proceeds of his estate as his wife, and each of 13 grandchildren will receive one-third as much as each child. After his death, $759,000 remains after expenses and taxes for distribution among his heirs. How much will each child and grandchild receive?

186. To coordinate production in a three-stage manufacturing process, Stage B must be assigned 60% more workers than Stage A. Stage C requires three-quarters as many workers as Stage B. How should the foreman allocate 114 workers among the three stages?

187. Fred has centralized the purchasing and recordkeeping functions for his three pharmacies in a single office. The annual costs of the office are allocated to the three stores. The Hillside store is charged $1000 less than twice the charge to the Barnett store. The Westside store is charged $2000 more than the Hillside store. What is the charge to the Westside store if the cost of operating the central office for a year is $27,600?

188. $100,000 is to be distributed under a firm's profit-sharing plan. Each of 3 managers is to receive 20% more than each of 26 production workers. How much will each manager and production worker receive?

189. José works in a toy manufacturing plant. The wooden toy he fabricates requires three steps: cutting, assembly, and painting. Assembly takes two minutes longer than half the cutting time, and painting requires half a minute longer than half the assembly time. How long does each step require if José made 72 units in 42 hours of work?

190. Calculate the missing value: Initial Value = $95; Final Value = $100; Percent Change =?
Calculate the answer accurate to the nearest 0.01%.

191. Calculate the missing value: Initial Value = $100; Final Value = $95; Percent Change =?
Calculate the answer accurate to the nearest 0.01%.

192. Calculate the missing value: Initial Value = 35kg; Final Value = 135kg; Percent Change =?
Calculate the answer accurate to the nearest 0.01%.

193. Calculate the missing value: Initial Value = 135kg; Final Value = 35kg; Percent Change =?
Calculate the answer accurate to the nearest 0.01%.

194. Calculate the missing value: Initial Value = 0.11; Final Value = 0.13; Percent Change =?
Calculate the answer accurate to the nearest 0.01%.

195. Calculate the missing value: Initial Value = 0.095; Final Value = 0.085; Percent Change =?
Calculate the answer accurate to the nearest 0.01%.

196. Calculate the missing value: Initial Value = $134.39; Final Value =? Percent Change = -12%. Calculate the answer accurate to the cent.

197. Calculate the missing value: Initial Value = 112g; Final Value =? Percent Change = 112%.

198. Calculate the missing value: Initial Value = 26.3cm; Final Value =? Percent Change = 300%

199. Calculate the missing value: Initial Value = 0.043; Final Value =? Percent Change = -30%

200. Calculate the missing value: Initial Value =? Final Value = $75; Percent Change = 200%. Calculate the answer accurate to the cent.

201. Calculate the missing value: Initial Value =? Final Value = $75; Percent Change = -50%
Calculate the answer accurate to the cent.

202.$100 is what percent more than $90? Calculate the answer accurate to the nearest 0.01%.

203.$100 is what percent less than $110? Calculate the answer accurate to the nearest 0.01%.

204.What amount when increased by 25% equals $100? Calculate the answer accurate to the cent.

205.What sum of money when increased by 7% equals $52.43? Calculate the answer accurate to the cent.

206.$75 is 75% more than what amount? Calculate the answer accurate to the cent.

207.How much is $56 increased by 65%? Calculate the answer accurate to the cent.

208.$754.30 is what percent less than $759.00? Calculate the answer accurate to the nearest 0.01%.

209.77,787 is what percent more than 77,400? Calculate the answer accurate to the nearest 0.01%.

210.How much is $75 increased by 75%? Calculate the answer accurate to the cent.

211.$100 is 10% less than what number? Calculate the answer accurate to the cent.

212.What amount after a reduction of 20% equals $100? Calculate the answer accurate to the cent.

213.What amount after a reduction of 25% equals $50? Calculate the answer accurate to the cent.

214. What amount after a reduction of $16.\overline{6}\ \%$ equals \$549? Calculate the answer accurate to cent.

215. How much is \$900 after a decrease of 90%? Calculate the answer accurate to the cent.

216. How much is \$102 after a decrease of 2%? Calculate the answer accurate to the cent.

217. How much is \$102 after a decrease of 100%? Calculate the answer accurate to the cent.

218. \$750 is what percent more than \$250? Calculate the answer accurate to the nearest 0.01%.

219. \$250 is what percent less than \$750? Calculate the answer accurate to the nearest 0.01%.

220. How much is $10,000 increased by ¾%? Calculate the answer accurate to the cent.

221. How much is $1045 decreased by 0.5%? Calculate the answer accurate to the cent.

222. What amount when increased by 150% equals $575? Calculate the answer accurate to the cent.

223. What amount after being increased by 210% equals $465? Calculate the answer accurate to the cent.

224. How much is $150 after an increase of 150%? Calculate the answer accurate to the cent.

225. The total cost of a coat, including GST and provincial sales tax totalling 14% of the ticket price, was $283.86. What was the ticket price of the coat? Calculate the answer accurate to the cent.

226. On the purchase of a plasma TV, the total cost to the customer (including 6% GST and 7% PST) came to $2822.74. How much GST and how much PST did the customer pay? Calculate the answer accurate to the cent.

227. In 2009, Canada's population reached 33,710,000, a level that was 10.56% higher than ten years earlier. Rounded to the nearest 10,000, what was the population figure for 1999?

228. Becker Tools sold 32,400 hammers at an average price of $15.10 in Year 1 and 27,450 hammers at an average price of $15.50 in Year 2. What was the percent change from Year 1 to Year 2 in:
a. The number of hammers sold?
b. The average selling price?
c. The revenue from the sale of hammers?

229. An investor purchased shares of Digger Resources at a price of $0.55 per share. One year later, the shares traded at $1.55, but they fell back to $0.75 by the end of the second year after the date of purchase. Calculate the percent change in the share price accurate to the nearest 0.01%.:
a. In the first year
b. In the second year
c. Over both years

230. What was the percent change in unit price when the regular size of Lily soap bars dropped from 100 g to 90 g (with no change in the price per bar)? Calculate the answer accurate to the nearest 0.01%.

231. After Island Farms increased the container size for its premium ice cream from 1.65 L to 2.2 L, the retail price increased from $5.49 to $7.98. What was the percent change in the unit price? Calculate the answer accurate to the nearest 0.01%.

232. Fluffy laundry detergent reduced its regular size from 3.6 kg to 3 kg. The retail price dropped from $7.98 to $6.98. What was the percent change in the unit price? Calculate the answer accurate to the nearest 0.01%.

233. The retail price of Paradise Island cheddar cheese dropped from $10.98 to $9.98 when the package size was reduced from 700 g to 600 g. What was the percent change in the unit price? Calculate the answer accurate to the nearest 0.01%.

234. Elegance shampoo has a suggested retail price of $4.49 for its 500 ml bottle. The manufacturer of the shampoo wants to increase the unit retail price by 10% at the same time that it reduces the container size to 425 ml. What should be the suggested retail price of the smaller bottle? Calculate the answer accurate to the cent.

235. The manufacturer of Caramalt chocolate bars wants to implement a 7.5% increase in the unit retail price along with a reduction in the bar size from 100 g to 80 g. If the current retail price of a 100-g bar is $1.15, what should be the price of an 80-g bar? Calculate the answer accurate to the cent.

236. The Edmonton Real Estate Board reports that the average selling price of homes last month in the greater Edmonton area was $338,500, an increase of 8.7% over the past year. Rounded to the nearest $100, what was the average selling price one year ago?
Calculate the answer accurate to the cent.

237. Mountain Sports is advertising "30% Off All Skiing Equipment" in its Spring Clearance Sale. On ski boots marked down to $348.60, what is the regular price?

238. Goldfield Resources' share price fell by $4 in Year 1 and then rose by $4 in Year 2. If the share price was $6 at the end of Year 1, what was the percent change in share price each year? Calculate the answer accurate to the nearest 0.01%.

239. In the second quarter (Q2) of 2009, Apple Computer sold 5.21 million iPhones, which represented a 626% increase over the number sold in Q2 of 2008. Rounded to the nearest 10,000, how many iPhones did Apple sell in the second quarter of 2008?

240. For the month of February 2009, Twitter.com reported that its number of unique visitors had grown by 1382% from the 475,000 visitors in February of 2008. Rounded to the nearest 1000, how many unique visitors did Twitter.com have in February 2009?

241. Mutual Fund A charges an annual management fee of 2.38% of money under management. The corresponding management fee for Mutual Fund B is 1.65%. On the same invested amount, what percentage more fees will you pay to Fund A than to Fund B?

242. In January of 2008, the federal government reduced the GST rate from 6% to 5%. What was the resulting percent reduction in the dollar amount of GST consumers paid on any item?

243. Facebook had 65,704,000 unique visitors in February of 2009. This number represented a 228.2% growth over the corresponding number for February 2008. Rounded to the nearest 10,000, what was the absolute increase, year-over-year, in the number of unique visitors?

244. The price of the shares of Nadir Explorations Ltd. fell by 76% in the past year, to the current price of $0.45 per share. In dollars and cents, how much did the price of each share drop in the past year?

245. A piece of machinery has depreciated by 55% of its original purchase price during the past 4 years, to the current value of $24,300. What is the dollar amount of the total depreciation during the last 4 years?

246. The owner listed a property for 140% more than she paid for it 12 years ago. After receiving no offers during the first 3 months of market exposure, she dropped the list price by 10%, to $172,800. What was the original price that the owner paid for the property?

247. A car dealer normally lists new cars at 22% above cost. A demonstrator model was sold for $17,568 after a 10% reduction from the list price. What amount did the dealer pay for this car?

248. General Paint and Cloverdale Paint normally offer the same prices. For its Spring Specials Sale, General Paint has marked down the price of outdoor latex paint by 30%. What percentage more will you pay if you buy paint at the regular price at Cloverdale?

249. If the Canadian dollar is worth 6.5% less than the U.S. dollar, by what percentage does the U.S. dollar exceed the value of the Canadian dollar?

250. Last year, Canada's exports to the U.S. exceeded imports from the U.S. by 23%. By what percentage were the United States' exports to Canada less than its imports from Canada?

251. Sears reported that its sales in January were down 17.4% from its sales in December. What percentage were December sales of January sales?

252. If the denominator of a fraction decreases by 20% and the numerator remains unchanged, by what percentage does the value of the fraction change?

253. The Hampton District school board decided to reduce the number of students per teacher next year by 15%. If the number of students does not change, by what percentage must the number of teachers be increased?

254. If operating expenses are 40% of revenue, by what percentage does revenue exceed operating expenses?

255. A company has 50% less equity financing than debt financing. What percentage is the debt of the equity? What percentage more debt financing does the company have than equity financing?

256. The Lightning laser printer prints 30% more pages per minute than the Reliable laser printer. What percentage less time than the Reliable will the Lightning require for long print jobs?

257. If the euro is worth 39% more than the Canadian dollar, how much less (in percentage terms) is the Canadian dollar worth than the euro?

258. A hospital can increase the dollar amount budgeted for nurses' overtime wages during the next year by only 3%. The nurses union has just won an 5% hourly rate increase for the next year. By what percentage must the hospital cut the number of overtime hours in order to stay within budget?

259. Multiply and collect the like terms: $4(3a + 2b)(2b - a) - 5a(2a - b)$

260. What amount is 17.5% more than $29.43?

261. What amount reduced by 80% leaves $100?

262.What amount reduced by 15% equals $100?

263.What is $47.50 increased by 320%?

264.What amount when decreased by 62% equals $213.56?

265.What amount when increased by 125% equals $787.50?

266.What amount is 30% less than $300?

267. Simplify and collect the like terms: $\frac{9y-7}{3} - 2.3(y-2)$

268. Simplify and collect the like terms: $P\left(1+0.095\times\frac{135}{365}\right)+\frac{2P}{\left(1+0.095\times\frac{75}{365}\right)}$

269. Simplify and combine the like terms: $6(4y - 3)(2 - 3y) - 3(5 - y)(1 + 4y)$

270. Simplify and combine the like terms: $\frac{5b-4}{4}-\frac{25-b}{1.25}+\frac{7}{8}b$

271. Simplify and combine the like terms: $\frac{x}{1+0.085\times\frac{63}{365}}+2x\left(1+0.085\times\frac{151}{365}\right)$

272. Simplify and combine the like terms: $\frac{96nm^2-72n^2m^2}{48n^2m}$

273. Evaluate accurate to the cent: $P(1+i)^n + \frac{S}{1+rt}$ for $P$ = \$2500, $i$ = 0.1025, $n$ = 2, $S$ = \$1500, $r$ = 0.09, and $t = \frac{93}{365}$.

274. Evaluate accurate to the cent: $L(1-d_1)(1-d_2)(1-d_3)$ for $L$ = \$340, $d_1 = 0.15,\ d_2 = 0.08,\ d_3 = 0.05$

275. Evaluate accurate to the cent: $\frac{R}{i}\left[1-\frac{1}{(1+i)^n}\right]$ for $R$ = \$575, $i$ = 0.085, $n$ = 3

276. Simplify: $\frac{\left(-3x^2\right)^3\left(2x^{-2}\right)}{6x^5}$

277. Simplify: $\frac{\left(-2a^3\right)^{-2}\left(4b^4\right)^{3/2}}{\left(-2b^3\right)(0.5a)^3}$

278. Simplify: $\left(-\frac{2x^2}{3}\right)^{-2}\left(\frac{5^2}{6x^3}\right)\left(-\frac{15}{x^5}\right)^{-1}$

279. Evaluate to six-figure accuracy: $(1.0075)^{24}$

280. Evaluate to six-figure accuracy: $(1.05)^{1/6}-1$

281. Evaluate to six-figure accuracy: $\frac{(1+0.0075)^{36}-1}{0.0075}$

282. Evaluate to six-figure accuracy: $\frac{1-(1+0.045)^{-12}}{0.045}$

283. Evaluate to six-figure accuracy: $\frac{\left(1.00\overline{6}\right)^{240}-1}{0.00\overline{6}}$

284. Evaluate to six-figure accuracy: $(1+0.025)^{1/3}-1$

285. Solve for *x* to five-figure accuracy: $\frac{2x}{1+0.13\times\frac{92}{365}}+x\left(1+0.13\times\frac{59}{365}\right)=\$831$

286. Solve for *x* to five-figure accuracy: $3x\left(1.03^{5}\right)+\frac{x}{1.03^{3}}+x=\frac{\$2500}{1.03^{2}}$

287. Solve for x to five-figure accuracy: $\frac{x}{1.08^{3}}+\frac{x}{2}(1.08)^{4}=\$850$

288. Solve for x to five-figure accuracy: $2x\left(1+0.085\times\frac{77}{365}\right)+\frac{x}{\left(1+0.085\times\frac{132}{365}\right)}=\$1565.70$

289. Use formula (4-2) to calculate d2 if N = $324.30, L = $498, d1 = 0.20, and d3 = 0.075.

290. Use the formula Vf = Vi(1 + c1)(1 + c2)(1 + c3) to determine c2 if Vf = $586.64, Vi = $500, c1 = 0.17, and c3 = 0.09.

291. Solve the following equations.
$3x + 5y = 11$
$2x - y = 16$

292. Solve each of the following pairs of equations to three-figure accuracy.

| | |
|---|---|
| a) | $4a - 5b = 30$ |
| | $2a - 6b = 22$ |
| b) | $76x - 29y = 1050$ |
| | $-213x - 63y = 250$ |

293. Rearrange the formula $FV = PV(1 + i_1)(1 + i_2)$ to isolate $i_1$.

294. Yellowknife Mining sold 34,300 oz of gold in 1992 at an average price of $320 per ounce. Production was down to 23,750 oz in 1993 because of a strike of the miners, but the average price obtained was $360 per ounce. What was the percent change from 1992 to 1993 in:
a) The amount of gold produced?
b) The average selling price per ounce?
c) The revenue from the sale of gold?

295. Two years ago the shares of Diamond Strike Resources traded at a price of $3.40 per share. One year later the shares were at $11.50, but then they declined in value by 35% during the subsequent year. Calculate:
a) The percent change in the share price during the first year.
b) The current share price.

296. Barry recently sold some stock after holding it for 2 years. The stock rose 150% in price during the first year but fell 40% in the second year. At what price did he buy the stock if he sold it for $24 per share?

297. Albion Distributors' revenues and expenses for the fiscal year just completed were $2,347,000 and $2,189,000, respectively.
a) If in the current year revenues rise by 10% but expense increases are held to 5%, what will be the percent increase in operating profit?
b) If, instead, revenues decline by 10% and expenses are reduced by 5%, what will be the percent change in operating profit?

298. The annual net income of the Todd Bros. partnership is distributed so that Ken receives $15,000 more than 80% of Hugh's share. How should a net income of $98,430 be divided between the partners?

299. The profits from a partnership are to be distributed so that Grace receives 20% more than Kajsa, and Mary Anne receives five-eighths as much as Grace. How much should each receive from a total distribution of $36,000?

300. Nguyen fishes for red snapper and lingcod off the coast of British Columbia, and delivers his catch each week to a fish buyer. On one delivery, he received $2454.20 for 370 kg of red snapper and 264 kg of lingcod. On another occasion he was paid $2124.70 for 304 kg of lingcod and 255 kg of red snapper. What price per kg was Nguyen paid for each type of fish?

301. Deanna is paid a base salary plus commission. On sales of $27,000 and $35,500 in two successive months, her gross pay was $2815.00 and $3197.50, respectively. What are her base salary and commission rate (in percent)?

302. Rory invested a total of $7800 in shares of ABC Ltd. and XYZ Inc. One year later the investment was worth $9310, after the shares of ABC had increased in value by 15% and the shares of XYZ were up 25%. How much did Rory invest in each company?

303. A hockey arena has 2500 seats in the preferred red sections near centre ice and 4500 seats in the less desirable blue sections. At regular season prices, a sell-out would generate ticket revenue of $50,250 for a single game. Ticket prices are raised by 20% in the "blues" and 30% in the "reds" for the playoffs. Ticket revenue from a playoff sell-out would be $62,400. What are the ticket prices for the playoffs?

304. Bart purchased 60% of a three-eighths interest in a ski chalet for $25,000. What was the implied value of the chalet?

305. During a one-day special, a grocery store sells cucumbers at 98 cents each or four for the price of three. At the end of the day, the store's computer reports that revenue from the sale of 541 cucumbers was $418.46. How many cucumbers were sold on the four-for-three promotion?

306. Simplify: $\left(\frac{3a^3b^2}{a-b}\right)^4$

307. Simplify: $\left(\frac{3}{2x^2}\right)^2\left(\frac{6x^3}{5^2}\right)\left(-\frac{x}{5}\right)^{-1}$

308. Simplify: $\frac{(-2y)^3\left(x^4\right)^{-2}}{\left(x^{-2}\right)^2(4y)^2}$

309. Simplify: $\frac{\left[\left(x^{1/3}\right)\left(x^{2/3}\right)x\right]^{3/2}}{\left(8x^3\right)^{2/3}}$

310. A wholesaler sells to retailers at a 27% discount from the suggested retail price. What is the suggested retail price of an item that costs the retailer $100?

311. Simplify: $2a-(-a)+4a-5a$

312. Simplify: $-4x-[-3x+2(x-6)]$

313. Evaluate: $R[\frac{(1+i)^n-1}{i}]$ for $R$ = \$1200, $i$ = 0.02, $n$ = 6

314. Simplify: $\frac{(2x^4y^2z^3)^2}{4xyz^2}$

315. Simplify: $x^7 \div x^{-4} \div x^3$

316. Simplify: $\frac{1-(1+0.015)^{-18}}{0.015}$

317. Solve for the unknown variable: $3(x-6)+5x-2(2x-3)=0$

318. Solve for the unknown variable: $9x+10=-3x+34$

319. Solve for the unknown variable: $1.5a+3(4a-6)=a(1.5)^2$

320. Solve for the unknown variable: $\frac{x}{(1.02)^6}+3x(1.02)^4-\$1000=\frac{\$4000}{(1.02)^3}$

321. $2x+7y=-8$
$5x-2y=19$

322. $0.07x + 0.38y = 0.294$
$-0.3x + 0.7y = 0.37$

323. $2y = 5x$
$3y - 5x = 0$

324. Surinder works in a retail store in Square One in Mississauga. She earns a base salary of $320 per week, and a commission of 3% on sales over her quota of $5000. If Surinder earned $515 last week, what was the value of her sales?

325. Tickets for the end of semester dance sold for $10 if purchased in advance, and $15 if purchased at the door. If 392 tickets were sold for a total of $4280, how many tickets were sold at the door?

326. Omar earns $17.00 per hour for a forty-hour week. His overtime rate is 1 ½ times any hours exceeding forty in a week. If Omar earned $807.50 last week, how many overtime hours did he work?

327. Mrs. Singh invested $20,000 in two investments paying 2% and 3% respectively. She earned $460 interest for the year. How much did Mrs. Singh invest at 3%?

328. Kristina is in charge of billing for a company that does computer training. She is preparing an invoice for $1340 for 32 hours of work, which includes training at $70 per hour and preparation of a manual at $25 per hour. How many hours of training are included in the invoice?

329. How much is $10 after an increase of 900%?

330. Manvir bought a stock for $80 last week. Yesterday, the stock went up by 20%. Today it dropped by 20%. What is the current value of the stock?

331. Cliff just received a raise to $18.45 per hour from $18.00. What is the percent increase in his hourly rate?

332. If the CPI increases from 120.0 to 125.0 over a period, what is the percent increase in the CPI?

333. A coat is reduced by 30% to a sale price of $45.99. What was the selling price of the coat?

334. Sales have increased by 10% over last year. What percentage less were last year's sales than this year's sales?

335. Madison found a sweater at a suburban discount mall for 25% less than at a store in downtown Toronto. What percentage more would she have paid if she bought the sweater in downtown Toronto?

336. If December sales were 30% more than November sales, by what percent are November sales less than December sales?

337. If operating expenses are 25% of revenue, by what percentage does revenue exceed operating expenses?

338. Wilfredo can do a task 35% faster than Kunal. What percentage less time than Kunal does Wilfredo take to do a task?

339. Simplify and collect like terms: -a + (2b - c) - (a -b +c)
A. -2a + 3b - 2c
B. -2a + b - 2c
C. 3b - 2c
D. -2a + 3b
E. -2a + 2b - 2c

340. Simplify and collect like terms: 1 - (3x - xy + y) - (-x + y - 5xy)
A. 1 - 2x - 2y - 6xy
B. 1 - 2x - 2y + 6xy
C. 1 - 4x - 2y + 6xy
D. 1 - 2x - 2y + 4xy
E. 1 - 4x - 2y - 6xy

341. Simplify and collect like terms: 3(x - 2y)(2x + y)
A. $6x^2 - 6xy - 6y^2$
B. $6x^2 + 10xy - 6y^2$
C. $6x^2 - 9xy - 6y^2$
D. $6x^2 - 9xy + 6y^2$
E. $6x^2 + 10xy + 6y^2$

342. Simplify and collect like terms: 9x - [ 4y - 3(x - y)]
A. 12 x + 7y
B. 6x - 7y
C. 6x + 7y
D. 12x - 7y
E. 9x - 7y

343. Simplify and collect like terms:
$\frac{4x + 5}{8}$ - 2.1(x - 7)
A. -1.6x - 14.075
B. -1.6x - 15.325
C. 2.6x + 15.325
D. 2.6x - 14.075
E. -1.6x + 15.325

344. Simplify and collect like terms: $\frac{x}{5} + \frac{2}{5} - 0.7x^2 - \frac{3}{5}x + \frac{3}{4}$
A. $-0.7x^2 - .4x + 1.15$
B. $0.7x^2 - .4x + 1.15$
C. $-0.7x^2 - .4x + .35$
D. $0.7x^2 - .4x + .35$
E. $-0.7x^2 + .8x + 1.15$

345. Simplify and collect like terms: $\frac{P}{1 + 0.07 \times \frac{5}{12}} + 2P(1 + 0.07 \times \frac{4}{12})$
A. 3.076P
B. 3.018P
C. 2.787P
D. 3.532P
E. 2.956P

346. $x(1+0.045\times\frac{55}{365})+\frac{2x}{(1-0.045\times\frac{200}{365})}$

Simplify and collect like terms:

A. 2.957*x*
B. 2.208*x*
C. 3.057*x*
D. 2.068*x*
E. 1.983*x*

347. $\frac{12xy-6y^2}{3y}$

Simplify and collect like terms:

A. $4x+2y$
B. $4xy-2y$
C. $4xy-2y^2$
D. $4x-2y$
E. $4xy-2y^2$

348. $\frac{10xy^2-15x^3y^2+25xy^4}{5xy}$

Simplify and collect like terms:

A. $2y^2-3x^2y+5y^3$
B. $2xy-3x^2y+5y^3$
C. $2y-3x^2y+5y$
D. $2y-3x^2+5y$
E. $2y-3x^2y+5y^3$

349. Evaluate the following expression: 3x + 4y -6xy, for x = 2, y = -3

A. 30
B. -42
C. 54
D. -18
E. 24

350. Evaluate the following expression: $P(1+rt)$, for $P$ = \$1575, $r$ = .055, $t=\frac{168}{365}$

A. \$39.87
B. \$1614.87
C. \$1973.71
D. \$16,128
E. \$724.96

351. Simplify the following: $a^2\times a^6\times a$

A. $a^8$
B. $a^7$
C. $a^9$
D. $a^{12}$
E. $a^{13}$

352. Simplify the following: $(a^2)(a^{-6})(a^3)$

A. $a^{11}$
B. $a$
C. $a^{-36}$
D. $a^{-1}$
E. $a^{-5}$

353. Simplify the following: $b^8 \div b^2$

A. $b^4$

B. $b^{10}$

C. $b^{16}$

D. $b^{-6}$

E. $b^6$

354. Simplify the following: $y^8 \div y^{-5}$

A. $y^{13}$

B. $y^3$

C. $y^{-40}$

D. $y^{40}$

E. $y^{-13}$

355. Simplify the following: $(x^5)^4$

A. $x^9$

B. $x^{20}$

C. $x$

D. $x^{-1}$

E. $x^0$

356. Simplify the following: $(2x^3)^5$

A. $10x^{15}$

B. $32x^8$

C. $32x^{15}$

D. $2x^{15}$

E. $2x^8$

357. Simplify the following: $\frac{(x^5)(x)(x^{-3})}{x^{-4}}$

A. $x^{-1}$

B. $x^6$

C. $x^{-2}$

D. $x^7$

E. $x^2$

358. Simplify the following: $\frac{(a^3)^{-2}}{a^6}$

A. $a^0$

B. $a$

C. $a^{-11}$

D. $a^{-5}$

E. $a^{-12}$

359. Simplify the following: $\frac{(2a^3b^2)^4}{a^2b^3}$

A. $16a^{10}b^5$
B. $2a^{10}b^5$
C. $16a^3b^3$
D. $2a^5b^5$
E. $16a^5b^3$

360. Simplify the following: $\left(\frac{4x}{2x^3}\right)^{-2}\left(\frac{3y^2}{2y^3}\right)^2\left(\frac{3xy}{5}\right)^{-1}$

A. $\frac{5x^2}{16y^3}$
B. $\frac{15x^3}{16y^3}$
C. $\frac{5x^3}{8y^2}$
D. $\frac{15x^3}{4y^3}$
E. $\frac{5x^2}{8y^2}$

361. Evaluate the following: $25^{3/2}$

A. 8.6
B. 37.5
C. 125
D. 5
E. 625

362. Evaluate the following: $-16^{\frac{5}{4}}$

A. 32
B. 64
C. -64
D. -32
E. 10

363. Evaluate the following: $\sqrt[4]{(121.89)^2}$

A. 14,857.17
B. 487.56
C. 3714.29
D. 60.945
E. 11.04

364. Evaluate the following: $\frac{1.04^{10}-1}{0.04}$

A. 12.006
B. 698.137
C. 1.201
D. 36.006
E. 35.58

365. Evaluate the following: $\frac{1.055^6-1}{0.055}$

A. 233.95
B. 6.888
C. 0.689
D. 23.395
E. 23.763

366. Evaluate the following: $\frac{1-1.075^{-8}}{0.075}$

A. -5.857
B. -10.446
C. 5.857
D. 0.5857
E. 13.485

367. Evaluate the following: $\frac{1-1.056^{-15}}{0.056}$

A. -9.971
B. -22.579
C. 58.29
D. 9.971
E. 25.743

368. Evaluate the following: $\left(\frac{4}{3}\right)^{2}\left(\frac{3}{4}\right)^{-3}\left(\frac{4}{3}\right)^{-5}$

A. $\frac{4}{3}$
B. $\frac{3}{4}$
C. $\frac{16}{3}$
D. $\frac{4}{9}$
E. 1

369. The retail price of a sweater is $161.00, which includes a markup of 40% of cost. What is the cost price of the sweater?

A. $115
B. $70.84
C. $64.40
D. $96.60
E. $100.63

370. The retail price of a packaged CD is $60.00, which includes a markup of 150% of cost. What is the cost price of the CD?

A. $40
B. $24
C. $36
D. $20
E. $32

371. The commission on a transaction is 3% of the first $100,000 and 2% of the balance. What was the amount of a transaction where the commission charged was $10,100?

A. $225,000
B. $545,000
C. $310,000
D. $355,000
E. $455,000

372. Sam has $20,000 to invest. He invested part at 5% and part at 6%. His investments earned $1120 total interest for the year. How much did Sam invest at each rate?
A. $12,000; $8000
B. $10,000; $10,000
C. $6000; $14,000
D. $14,000; $6000
E. $8000; $12,000

373. Anders has $35,000 to invest. He invested part at 5.5% and part at 7%. His investments earned $2195 total interest for the year. How much did Anders invest at each rate?
A. $17,000; $18,000
B. $18,000; $17,000
C. $20,000; $15,000
D. $15,000; $20,000
E. $10,000; $25,000

374. Tickets for the school play were $3 for students and $5 for all others. The box office sold 750 tickets for a total of $3200. How many student tickets were sold?
A. 475
B. 275
C. 500
D. 250
E. 300

375. At a United Way fund raiser, students sold cinnamon buns for $2 each or 3 for $5. They sold 500 all together, and raised $900. How many of the 3 for $5 were sold?
A. 100
B. 200
C. 300
D. 250
E. 150

376. Stavros sells gold and green fabric in his drapery store. He buys the same quantity of both each quarter for $18 per metre for the gold fabric and $20 for the green fabric. His last order totalled $2290. The supplier has advised Stavros that the gold fabric will increase by 20% and the green fabric by 25%, and his total order for the next quarter will be $2813. How many metres of gold fabric does Stavros order each quarter?
A. 65
B. 56
C. 85
D. 55
E. 25

377. What was the percent change in unit price when a box of tissues dropped from 200 to 150 tissues per box? (with no change in the price per box)?
A. 25%
B. 20%
C. 30%
D. 35%
E. 33.3%

378. What was the percent change in unit price when a box of tissues dropped from 400 to 350 tissues per box? (with no change in the price per box)?
A. 12.5%
B. 15%
C. 17.5%
D. 11.7%
E. 14.3%

379. What is the percent change in unit price of a bag of cookies if the number of cookies per box is decreased by 15% (with no change in the price per bag)?
A. 17.6%
B. 15%
C. 20%
D. 10%
E. 11.1%

380. A loan company dropped the interest rate it charges on second mortgages from 9.5% to 7.9%. What percent reduction did this represent?
A. 16%
B. 16.8%
C. 1.6%
D. 20.3%
E. 15.7%

381. A loan company dropped the interest rate it charges on second mortgages from 8.7% to 7.3%. What percent reduction did this represent?
A. 1.4%
B. 19.2%
C. 16.1%
D. 14%
E. 15.6%

382. If the Canadian dollar is worth18% less than the U.S. dollar, by what percentage does the U.S. dollar exceed the value of the Canadian dollar?
A. 15%
B. 18%
C. 24%
D. 21.95%
E. 20%

383. If the Canadian dollar is worth 22% less than the U.S. dollar, by what percentage does the U.S. dollar exceed the value of the Canadian dollar?
A. 22%
B. 20%
C. 25.2%
D. 30.8%
E. 28.2%

384. A car dealer normally lists cars at 25% above cost. During a sale the manger offered a 10% reduction. If a car sold for $20,812.50, what was the cost price to the dealership?
A. $18,500
B. $23,125
C. $18,315
D. $16,650
E. $17,250

385. If the euro is worth 60% more than the Canadian dollar, how much less (in percentage terms) is the Canadian dollar worth than the euro?
A. 40%
B. 37.5%
C. 62.5%
D. 45%
E. 55%

386. If the euro is worth 57% more than the Canadian dollar, how much less (in percentage terms) is the Canadian dollar worth than the euro?
   A. 43%
   B. 63.7%
   C. 36.3%
   D. 42%
   E. 45%

387. Simplify: 8 - (2x + 4y - 3) - (4y + 10)
   A. -8y - 2x + 21
   B. -8y - 2x + 1
   C. -8y - 2x - 2
   D. -2x + 1
   E. -2x + 21

388. (5x - 2y)(x - 2y) =
   A. $5x^2 - 12xy - 4y^2$
   B. $5x^2 + 8xy - 4y^2$
   C. $5x^2 - 12xy + 4y^2$
   D. $5x^2 - 8xy + 4y^2$
   E. $5x^2 + 12xy + 4y^2$

389. 2(b - 2) - (b - 2) =
   A. b + 6
   B. 3b - 2
   C. 3b + 2
   D. b - 2
   E. b - 6

390. Evaluate: -4(r - t) - (2r - 4t) for r = 1/2 and t = 1/4.
   A. 1
   B. 5
   C. 3
   D. -5
   E. -1

391. $\frac{6a+9}{3} - 4(a-1)$ =
   A. -2a + 13
   B. -2a - 1
   C. -2a + 7
   D. 2a + 7
   E. 2a - 1

392. Evaluate: $L(1 - d_1)(1 - d_2)$ for L = \$1000, $d_1 = 0.30$, and $d_2 = 0.20$.
   A. \$440.00
   B. \$500.00
   C. \$1785.71
   D. \$560.00
   E. \$600.00

393. $2.48832^{1/5}$ =
   A. 95.396217
   B. 0.0104826
   C. 1.2
   D. 3.0
   E. 0.8333333

394. $\left(\frac{r^3t^4}{t}\right)^3$ =

A. $r^9t4$
B. $r^6t^6$
C. $r^6t^7$
D. $r^9t^{11}$
E. $r^9t^9$

395. $\frac{(r^9)^2(r^6)}{r^{12}}$ =

A. $r^5$
B. $r^{17/12}$
C. $r^{12}$
D. $r^2$
E. $r^{36}$

396. $(8^2)(2^{-4})(-2)^2$ =

A. 1024
B. 256
C. 4
D. 48
E. 16

397. Solve for x: $2x + \frac{1}{8}x = x + 10$

A. $3\frac{1}{5}$
B. $8\frac{8}{9}$
C. $-3\frac{1}{5}$
D. $4\frac{12}{17}$
E. $\frac{9}{80}$

398. Solve for x: 2/3 (x + 3) = -1/2 (6x + 20) + 15

A. $2\frac{5}{6}$
B. $\frac{9}{11}$
C. 1.5
D. $-2\frac{13}{22}$
E. 3.875

399. Solve for x: $-\left(\frac{1}{2}x - 5\right)$ = 2x - 10

A. 6
B. -6
C. -10
D. $3\frac{1}{3}$
E. 10

400. Solve for x: $\frac{x}{1.5^2} + 3x(1.5)^2 = 100$

A. 13.9082
B. 13.8996
C. 14.8148
D. 25.0000
E. 225.0000

401. An employee earns $1562.50 for 55 hours of work during last week. His regular workweek is 40 hours and he gets overtime at time and one-half the regular rate of pay. What is the regular hourly rate of pay?

A. $37.50
B. $28.41
C. $42.61
D. $58.59
E. $25.00

402. The stock market index decreased this month by one-thirteenth of last month's index. If this month's index is 2400, what was last month's index?

A. 2585
B. 2320
C. 2483
D. 2600
E. 2215

403. A company laid off 80% of its work force. The number of employees after the layoff is 3000. How many employees were there before the layoff?

A. 5400
B. 7200
C. 3600
D. 15,000
E. 3750

404. John and Jill agree to form a partnership. The partnership agreement requires that John invests $7000.00 less than one-half of what Jill is to invest. If the total investment of both is $125,000.00, how much is Jill's investment?

A. $88,000.00
B. $37,000.00
C. $78,666.67
D. $46,333.33
E. $74,393.33

405. If actual sales of $18,000 were 36% of budgeted sales, what were the budgeted sales?

A. $50,000
B. $52,920
C. $25,920
D. $10,080
E. $46,080

406. What number is 25% less than 96?

A. 120
B. 128
C. 384
D. 72
E. 125

407. 0.51% of $8500.00 =
A. $43,444.44
B. $1663.04
C. $43.44
D. $166,304.35
E. $434.44

408. 35% of $180.00 is what amount?
A. $63.00
B. $243.00
C. $117.00
D. $514.29
E. $276.92

409. What number is $87\frac{1}{2}\%$ less than 250?
A. 218.75
B. 468.75
C. 133.33
D. 383.33
E. 31.25

410. After adding $2\frac{1}{4}\%$ to a sum of money, the new amount is $45,000.00. What was the original amount of money?
A. $43,987.50
B. $44,009.78
C. $2,000,000.00
D. $46,035.81
E. $20,000.00

411. Susan is paid a 15% commission of her sales. If she earns a commission of $3800, what was the amount of her sales?
A. $44,705.88
B. $25,333.33
C. $4470.59
D. $7030.00
E. $3230.00

412. An item listed at 40% above cost was sold by a dealer during a special sale at a 15% reduction from the list price. What did the item cost the dealer if it was sold for $23,765.00?
A. $23,494.81
B. $33,271.00
C. $19,970.59
D. $27,958.82
E. $43,965.25

413. After real estate fees of 3% had been deducted from the proceeds of the sale of a property, the real estate agent sent the vendor (seller) of the property $244,400. What was the amount of fees retained by the real estate agent?
A. $7558.76
B. $251,958.76
C. $7800.00
D. $7118.45
E. $237,281.55

414. The retail price of an item is $625.50. This includes a markup of three-quarters of the wholesale cost to the retailer. What is the wholesale cost?
    A. $1094.63
    B. $469.13
    C. $834.00
    D. $156.38
    E. $357.43

415. $100 is what percent less than $125?
    A. 125%
    B. 45%
    C. 25%
    D. 20%
    E. 15%

416. What sum of money, increased by 7% equals $187.25?
    A. $200.36
    B. $174.14
    C. $180.25
    D. $175.00
    E. $170.00

417. How much is 600 increased by 44%
    A. 840
    B. 644
    C. 864
    D. 1,367
    E. 788

418. What amount, when reduced by 60% equals $840
    A. $336
    B. $900
    C. $1,680
    D. $1,400
    E. $2,100

419. After a 5.25% raise, Johnny earned $19.28 per hour. What was his hourly rate before the raise?
    A. $18.27
    B. $18.32
    C. $20.26
    D. $18.78
    E. $10.11

420. The population of Enfield has increased by 36% over the last five years. If the current population is 89,244 what was it 5 years ago?
    A. 65,621
    B. 53,244
    C. 19,182
    D. 57,123
    E. 70,377

421. How much is 50 increased by 300%?
    A. 350
    B. 300
    C. 250
    D. 200
    E. 150

422. What percent of 36 is 90?
   A. 150%
   B. 140%
   C. 175%
   D. 200%
   E. 250%

423. A retailer purchases merchandise at 25% below the suggested retail price. If the retailer pays $375 for an item, what is the suggested retail price?
   A. $468.75
   B. $500.00
   C. $525.00
   D. $475.00
   E. $450.00

424. The share value of RipOff Technologies has dropped this year by 85%, to a new low of $7.50 per share. How much money has been lost per share?
   A. $42.50
   B. $63.75
   C. $8.82
   D. $92.50
   E. $15.00

425. During the last 30 years the price of gasoline has increased by 440%. If the current price per litre is $0.589, what was it 30 years ago?
   A. $0.201
   B. $0.149
   C. $0.134
   D. $0.109
   E. $0.037

426. Bart purchased three-quarters of a 32% interest in a Swiss Chalet franchise for $270,000. What is implied value of the franchise?
   A. $115,200
   B. $632,800
   C. $980,750
   D. $1,125,000
   E. $1,625,000

427. Solve for x and y:
   $x + y = 40$
   $-x + y = -20$
   A. $x = 30; y = 10$
   B. $x = -10; y = 30$
   C. $x = -30; y = -10$
   D. $x = -60; y = 20$
   E. $x = -60; y = -20$

428. Solve for x and y:
   $2x + 3y = 7$
   $3x - y = 5$
   A. $x = 6; y = 2$
   B. $x = -2; y = 1$
   C. $x = -2; y = -1$
   D. $x = 2; y = 1$
   E. $x = 2; y = -1$

429. The difference between two numbers is 42. If one-half of the larger number is three more than twice the smaller number, what are the two numbers?
   A. -12 and -54
   B. 12 and 54
   C. 16.0 and 58.0
   D. 11 and 31
   E. -12.5 and 29.5

430. Solve for x and y in the following pair of equations:
   y = -0.2x + 4.2
   x - 0.5y = 10
   A. x = 11; y = 2
   B. x = 2; y = 11
   C. x = 11; y = 6.4
   D. x = 6.45; y = 2.9
   E. x = 6.4; y = 11

431. Evaluate to six-figure accuracy: $0.893^{-1/2}$

432. Simplify and collect like terms: $(-p) + (-3p) + (4p)$

433. Simplify and collect like terms: $(5s - 2t) - (2s - 4t)$

434. Simplify and collect like terms: $4x^2y + (-3x^2y) - (-5x^2y)$

435. Simplify and collect like terms: $1 - (7e^2 - 5 + 3e - e^3)$

436. Simplify and collect like terms: $(6x^2 - 3xy + 4y^2) - (8y^2 - 10xy - x^2)$

437. Simplify and collect like terms: $(7m^3 - m - 6m^2 + 10) - (5m^3 - 9 + 3m - 2m^2)$

438. Simplify and collect like terms: $2(7x - 3y) - 3(2x - 3y)$

439. Simplify and collect like terms: $4(a^2 - 3a - 4) - 2(5a^2 - a - 6)$

440. Simplify and collect like terms: $15x - [4 - 2(5x - 6)]$

441. Simplify and collect like terms: $6a - [3a - 2(2b - a)]$

442. Simplify and collect like terms: $\frac{2x+9}{4} - 1.2(x-1)$

443. Simplify and collect like terms: $\frac{x}{2} - x^2 + \frac{4}{5} - 0.2x^2 - \frac{4}{5}x + \frac{1}{2}$

444. Simplify and collect like terms: $\frac{8x}{0.5} + \frac{5.5x}{11} + 0.5(4.6x - 17)$

445. Simplify, collect like terms and maintain 5-figure accuracy: $\frac{2x}{1.045} - \frac{2.016x}{3} + \frac{x}{2}$

446. Simplify, collect like terms and maintain 5-figure accuracy: $\frac{P}{1 + 0.095 \times \frac{5}{12}} + 2P\left(1 + 0.095 \times \frac{171}{365}\right)$

447. Simplify, collect like terms and maintain 5-figure accuracy: $y\left(1-0.125\times\frac{213}{365}\right)+\frac{2y}{\left(1+0.125\times\frac{88}{365}\right)}$

448. Simplify, collect like terms and maintain 5-figure accuracy: $k(1+0.04)^2+\frac{2k}{(1+0.04)^2}$

449. Simplify, collect like terms and maintain 5-figure accuracy: $\frac{h}{(1+0.055)^2}-3h(1+0.055)^3$

450. Perform the operation indicated and collect like terms: $4a(3ab - 5a + 6b)$

451. Perform the operation indicated and collect like terms: $9k(4 - 8k + 7k^2)$

452. Perform the operation indicated and collect like terms: $-5xy(2x^2 - xy - 3y^2)$

453. Perform the operation indicated and collect like terms: $-(p^2 - 4pq - 5p)(\frac{2q}{p})$

454. Perform the operation indicated and collect like terms: $(4r - 3t)(2t + 5r)$

455. Perform the operation indicated and collect like terms: $(3p^2 - 5p)( - 4p + 2)$

456. Perform the operation indicated and collect like terms: $3(a - 2)(4a + 1) -5(2a + 3)(a - 7)$

457. Perform the operation indicated and collect like terms: $5(2x - y)(y + 3x) - 6x(x - 5y)$

458. Perform the operation indicated and collect like terms: $\frac{18x^2}{3x}$

459. Perform the operation indicated and collect like terms: $\frac{6a^2b}{-2ab^2}$

460. Perform the operation indicated and collect like terms: $\frac{x^2y - xy^2}{xy}$

461. Perform the operation indicated and collect like terms: $\frac{-4x + 10x^2 - 6x^3}{-0.5x}$

462. Perform the operation indicated and collect like terms: $\frac{12x^3 - 24x^2 + 36x}{48x}$

463. Perform the operation indicated and collect like terms: $\frac{32a^2b - 8ab + 14ab^2}{2ab}$

464. Perform the operation indicated and collect like terms: $\frac{4a^2b^3 - 6a^3b^2}{2ab^2}$

465. Perform the operation indicated and collect like terms: $\frac{120(1+i)^2 + 180(1+i)^3}{360(1+i)}$

466. Evaluate the following expression for the given value of the variable:
$3d^2 - 4d + 15$ for $d = 2.5$

467. Evaluate the following expression for the given value of the variable:
$15g - 9h + 3$ for $g = 14$, $h = 15$

468. Evaluate the following expression for the given value of the variable:
$7x(4y - 8)$ for $x = 3.2$, $y = 1.5$

469. Evaluate the following expression for the given value of the variables:
$I \div Pr$ for $P = \$500$, $I = \$13.75$, $r = 0.11$

470. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{I}{rt}$ for $r$ = 0.095, $I$ = \$23.21, $t = \frac{283}{365}$

471. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{N}{1-d}$ for $N$ = \$89.10, $d$ = 0.10

472. Evaluate the following expression for the given value of the variable sand calculate to the cent: $L(1-d_1)(1-d_2)(1-d_3)$ for $L$ = \$490, $d_1 = 0.125,\ d_2 = 0.15,\ d_3 = 0.05$

473. Evaluate the following expression for the given value of the variables and calculate to the cent: $P(1+rt)$ for $P$ = \$770, $r$ = 0.13, $t = \frac{223}{365}$

474. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{S}{1+rt}$ for $S$ = \$2500, $r$ = 0.085, $t = \frac{123}{365}$

475. Evaluate the following expression for the given value of the variable: $(1+i)^m - 1$ for i = 0.0225, m = 4

476. Evaluate the following expression for the given value of the variables and calculate to the cent: $P(1+i)^n$ for $P$ = \$1280, $i$ = 0.025, $n$ = 3

477. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{S}{(1+i)^n}$ for $S$ = \$850, $i$ = 0.0075. $n$ = 6

478. Evaluate the following expression for the given value of the variables and calculate to the cent: $R\left[\frac{(1+i)^n - 1}{i}\right]$ for $R$ = \$550, $i$ = 0.085, $n$ = 3

479. Evaluate the following expression for the given value of the variables and calculate to the cent: $R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$ for $R$ = \$910, $i$ = 0.1038129, $n$ = 4

480. Evaluate the following expression for the given value of the variables and calculate to the cent: $\frac{R}{i}\left[1-\frac{1}{(1+i)^n}\right]$ for $R$ = \$630, $i$ = 0.115, $n$ = 2

481. Evaluate the following expression for the given value of the variables and calculate to the cent: $P(1+rt_1)$ + $\frac{S}{1+rt_2}$ for $P$ = \$470, $S$ = \$390, $r$ = 0.075, $t_1=\frac{104}{365}$, $t_2=\frac{73}{365}$

482. Use formula (6-1) to calculate P if r = 0.05, i = \$6.25, and t = 0.25.

483. Use formula (13-1) to calculate i if PMT = \$900 and PV = \$150,000. (There are several instances in our formulas where a two- or three-letter symbol is used for a variable. This is usually done to make the symbol more suggestive of the quantity it represents. For example, we use PMT to represent the amount of each payment in a series of regular payments. The symbol P has already been taken to represent another quantity that begins with "p.")

484. Use formula (6-2) to calculate P if r = 0.004, S = \$3626, and t = 9.

485. Use formula (4-1) to calculate L if N = $891 and d = 0.10.

486. Use formula (4-1) to calculate d if N = $410.85 and L = $498.00.

487. Use formula (6-2) to calculate t if r = 0.0025, S = $5100, and P = $5000.

488. Formula (5-3) contains three two-letter symbols. Use it to calculate CM if NI = $15,000, X = 5000, and FC = $60,000.

489. Use formula (5-3) to obtain X if NI = -$542.50, CM = $13.50, and FC = $18,970.

490. Use formula (4-2) to calculate L if N = $1468.80, d1 = 0.20, d2 = 0.15, and d3 = 0.10.

491. Use formula (4-2) to calculate $d_2$ if N = \$70.29, L = \$99.99, $d_1$ = 0.20, and $d_3$ = 0.05.

492. Use the formula $FV = PV(1 + i_1)(1 + i_2)(1 + i_3)$ to determine $i_1$ if PV = \$1000, FV = \$1094.83, $i_2$ = 0.03, $i_3$ = 0.035.

493. Use formula (10-1) to obtain PMT if FV = \$1508.54, n = 4, and i = 0.05.

494. Use formula (10-2) to obtain PMT if PV = \$6595.20, n = 20, and i = 0.06.

495. Use the formula $FV = PV(1 + i)^n$ to calculate i if PV = \$2000, FV = \$9321.91, and n = 20.

496. Use the formula $PV = FV(1 + i)^{-n}$ to calculate i if PV = \$5167.20, FV = \$10,000, and n = 15.

497.Rearrange formula (6-1) to isolate t on the left side.

498.Rearrange formula (13-1) to isolate i on the left side.

499.Rearrange formula (4-1) to isolate d on the left side.

500.Rearrange formula (5-3) to isolate CM on the left side.

501.Rearrange formula (5-3) to isolate X on the left side.

502.Rearrange formula (6-2) to isolate r on the left side.

503.Rearrange formula (6-2) to isolate t on the left side.

504.Rearrange formula (4-2) to isolate d1 on the left side.

505.Rearrange formula (4-2) to isolate d3 on the left side.

506.Rearrange the formula $FV = PV(1 + i)^n$ to isolate PV on the left side.

507.Rearrange the formula $FV = PV(1 + i)^n$ to isolate i on the left side.

508.Simplify: $a^2 \times a^3$

509. Simplify: $\left(x^{6}\right)\left(x^{-4}\right)$

510. Simplify: $b^{10} \div b^{6}$

511. Simplify: $h^{7} \div h^{-4}$

512. Simplify: $(1+i)^{4} \times (1+i)^{9}$

513. Simplify: $(1+i) \times (1+i)^{n}$

514. Simplify: $\left(x^{4}\right)^{7}$

515. Simplify: $\left(y^{3}\right)^{3}$

516. Simplify: $\left(t^{6}\right)^{1/3}$

517. Simplify: $\left(n^{0.5}\right)^{8}$

518. Simplify: $\frac{\left(x^{5}\right)\left(x^{6}\right)}{x^{9}}$

519. Simplify: $\frac{(x^{5})^{6}}{x^{9}}$

520. Simplify: $[2(1+i)]^{2}$

521. Simplify: $\left(\frac{1+i}{3i}\right)^3$

522. Simplify: $\frac{4r^5t^6}{(2r^2t)^3}$

523. Simplify: $\frac{(-r^3)(2r)^4}{(2r^{-2})^2}$

524. Evaluate to six-figure accuracy: $8^{4/3}$

525. Evaluate to six-figure accuracy: $(-27^{2/3})$

526. Evaluate to six-figure accuracy: $7^{3/2}$

527. Evaluate to six-figure accuracy: $5^{-3/4}$

528. Evaluate to six-figure accuracy: $(0.001)^{-2}$

529. Evaluate to six-figure accuracy: $(1.0085)^5(1.0085)^3$

530. Evaluate to six-figure accuracy: $(1.005)^3(1.005)^{-6}$

531. Evaluate to six-figure accuracy: $\sqrt[3]{1.03}$

532. Evaluate to six-figure accuracy: $\sqrt[6]{1.05}$

533. Evaluate to six-figure accuracy: $\left(4^4\right)\left(3^{-3}\right)\left(-\frac{3}{4}\right)^3$

534. Evaluate to six-figure accuracy: $\left[\left(-\frac{3}{4}\right)^2\right]^{-2}$

535. Evaluate to six-figure accuracy: $\left(\frac{2}{3}\right)^3\left(-\frac{3}{2}\right)^2\left(-\frac{3}{2}\right)^{-3}$

536. Evaluate to six-figure accuracy: $\left(-\frac{2}{3}\right)^3 \div \left(\frac{3}{2}\right)^{-2}$

537. Evaluate to six-figure accuracy: $\frac{1.03^{16}-1}{0.03}$

538. Evaluate to six-figure accuracy: $\frac{\left(1.008\overline{3}\right)^{30}-1}{0.008\overline{3}}$

539. Evaluate to six-figure accuracy: $\frac{1-1.0225^{-20}}{0.0225}$

540. Evaluate to six-figure accuracy: $\frac{1-\left(1.00\overline{6}\right)^{-32}}{0.00\overline{6}}$

541. Evaluate to six-figure accuracy: $(1+0.0275)^{1/3}$

542. Evaluate to six-figure accuracy: $(1+0.055)^{1/6}-1$

543. Solve the following equation: $10a + 10 = 12 + 9a$

544. Solve the following equation: $29 - 4y = 2y - 7$

545. Solve the following equation: $0.5(x - 3) = 20$

546. Solve the following equation: $\frac{1}{3}(x - 2) = 4$

547. Solve the following equation: $y = 192 + 0.04y$

548. Solve the following equation: $x - 0.025x = 341.25$

549.Solve the following equation: $12x - 4(2x - 1) = 6(x + 1) - 3$

550.Solve the following equation: $3y - 4 = 3(y + 6) - 2(y + 3)$

551.Solve the following equation: $8 - 0.5(x + 3) = 0.25(x - 1)$

552.Solve the following equation: $5(2 - c) = 10(2c - 4) - 6(3c + 1)$

553.Solve the following equation: $3.1t + 145 = 10 + 7.6t$

554.Solve the following equation: $1.25y - 20.5 = 0.5y - 11.5$

555. Solve the following equation accurate to the cent: $\frac{x}{1.1^2} + 2x(1.1)^3 = \$1000$

556. Solve the following equation accurate to the cent: $\frac{3x}{1.025^6} + x(1.025)^8 = \$2641.35$

557. Solve the following equation accurate to the cent: $\frac{2x}{1.03^7} + x + x\left(1.03^{10}\right) = \$1000 + \frac{\$2000}{1.03^4}$

558. Solve the following equation accurate to the cent: $x(1.05)^3 + \$1000 + \frac{x}{1.05^7} = \frac{\$5000}{1.05^2}$

559. Solve the following equation accurate to the cent: $x\left(1 + 0.095 \times \frac{84}{365}\right) + \frac{2x}{\left(1 + 0.095 \times \frac{108}{365}\right)} = \$1160.20$

560. Solve the following equation accurate to the cent: $\frac{x}{1 + 0.115 \times \frac{78}{365}} + 3x\left(1 + 0.115 \times \frac{121}{365}\right) = \$1000\left(1 + 0.115 \times \frac{43}{365}\right)$

561. Solve the following pair of equations. Verify your solution.

$x - y = 2$

$3x + 4y = 20$

562. Solve the following pair of equations. Verify your solution.

$y - 3x = 11$

$5x + 30 = 4y$

563. Solve the following pair of equations. Verify your solution.

$4a - 3b = -3$

$5a - b = 10$

564. Solve the following pair of equations. Verify your solution.

$7p - 3q = 23$

$-2p - 3q = 5$

565. $7x - y = 35$

Solve the following pair of equations. Verify your solution.

$y = 2x$

566. Solve the following pair of equations. Verify your solution.

$g - h = 17$ $\frac{4}{3}g + \frac{3}{2}h = 0$

567. Solve the following pair of equations to three-figure accuracy. Verify your solution. $d = 3c - 500$
$0.7c + 0.2d = 550$

568. Solve the following pair of equations to three-figure accuracy. Verify your solution. $0.03x + 0.05y = 51$
$0.8x - 0.7y = 140$

569. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$2v + 6w = 1$
$-9w + 10v = 18$

570. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$2.5a + 2b = 11$
$8a + 3.5b = 13$

571. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$37x - 63y = 235$
$18x + 26y = 468$

572. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$68.9n - 38.5m = 57$
$45.1n - 79.4m = -658$

573. Solve the following pair of equations to three-figure accuracy. Verify your solution.
$0.33e + 1.67f = 292$
$1.2e + 0.61f = 377$

574. Solve the following pair of equations. Verify your solution.
$318j - 451k = 7.22$
$-249j + 193k = -18.79$

575. A web site had 2/7 more hits last month than in the same month of the preceding year. If there were 2655 hits last month, how many were there 1 year earlier?

576. The retail price of a pair of skis consists of the wholesale cost to the retailer plus the retailer's markup. If skis retailing for $712 are marked up by 60% of the wholesale cost, what is that wholesale cost?

577. The price tags in Annie's Flower Shop include the 13% Harmonized Sales Tax (HST). How much HST will she report for a plant sold at $39.55?

578. A stockbroker's commission on a transaction is 2.5% of the first $5000 of the transaction amount and 1.5% of the remainder. What was the amount of a transaction that generated a total commission of $227?

579. A caterer has the following price structure for banquets. The first 20 meals are charged the basic price per meal. The next 20 meals are discounted by $2 each and all additional meals are each reduced by $3. If the total cost for 73 meals comes to $1620, what is the basic price per meal?

580. Econocar offers two plans for one-week rentals of a compact car. A rate of $295 per week includes the first 1000 kilometres. Extra distance costs 15 cents per kilometre. A weekly rate of $389 allows unlimited driving. Rounded to the nearest kilometre, beyond what driving distance is the unlimited driving plan cheaper?

581. Alicia pays 38% income tax on any additional earnings. She has an opportunity to work overtime at 1.5 times her base wage of $23.50 per hour. Rounded to the nearest quarter hour, how much overtime must she work to earn enough money (after tax) to buy a canoe that costs $2750 including sales taxes?

582. Classic Homes has found from experience that there should be 40% as many two-bedroom homes as three-bedroom homes in a subdivision, and twice as many two-bedroom homes as four-bedroom homes. How many homes of each type should Classic build in a new 96-home subdivision?

583. Broadway Mazda usually spends half as much on radio advertising as on newspaper advertising, and 60% as much on television advertising as on radio advertising. If next year's total advertising budget is $160,000, how much (rounded to the nearest dollar) should be allocated to each form of advertising?

# ch02 Key

1. 0

2. 3s + 2t

3. $6x^2y$

4. $e^3 - 7e^2 - 3e + 6$

5. $7x^2 + 7xy - 4y^2$

6. $2m^3 - 4m^2 - 4m + 19$

7. 8x + 3y

8. $-6a^2 - 10a - 4$

9. 25x - 16

10. a + 4b

11. -0.7x + 3.45

12. $-1.2x^2$ -0.3x + 1.3

13. 18.8x - 8.5

14. 1.7419x

15. 3.0509P

16. 2.8685y

17. 2.9307k

18. -2.6243h

19. $12a^2b - 20a^2 + 24ab$

20. $36k - 72k^2 + 63k^3$

21. $-10x^3y + 5x^2y^2 + 15xy^3$

22. $-2pq + 8q^2 + 10q$

23. $20r^2 - 7rt - 6t^2$

24. $-12p^3 + 26p^2 - 10p$

25. $2a^2 + 34a + 99$

26. $24x^2 + 25xy - 5y^2$

27. 6x

28. $-3\frac{a}{b}$

29. x - y

30. $8 - 20x + 12x^2$

31. $\frac{x^2 - 2x + 3}{4}$

32. 16a - 4 + 7b

33. $2ab - 3a^2$

34. $\frac{2(1+i)+3(1+i)^2}{6}$

35. 23.75

36. 78

37. -44.8

38. 0.250

39. $315.11

40. $99.00

41. $346.22

42. $776.12

43. $2430.38

44. 0.093083

45. $1378.42

46. $812.73

47. $1794.22

48. $4687.97

49. $1071.77

50. $864.28

51. $500.00

52. 0.00600

53. $3500.00

54. $9900.00

55. 0.175

56. 8.00

57. $15.00

58. 1365

59. $2400.00

60. 0.0750

61. 0.0270

62. $350.00

63. $575.00

64. 0.0800

65. 0.0450

66. $t = \frac{I}{\Pr}$

67. $i = \frac{PMT}{PV}$

68. $d = 1 - \frac{N}{L}$

69. $CM = \frac{NI + FC}{X}$

70. $X = \frac{NI + FC}{CM}$

71. $r = (S - P)/Pt$

72. $t = (S - P)/\mathrm{Pr}$

73. $d_1 = 1 - \frac{N}{L(1-d_2)(1-d_3)}$

74. $d_3 = 1 - \frac{N}{L(1-d_1)(1-d_2)}$

75. $PV = FV(1+i)^{-n}$

76. $i = \left(\frac{FV}{PV}\right)^{1/n} - 1$

77. $a^5$

78. $x^2$

79. $b^4$

80. $h^{11}$

81. $(1+i)^{13}$

82. $(1+i)^{n+1}$

83. $x^{28}$

84. $y^9$

85. $t^2$

86. $n^4$

87. $x^2$

88. $x^{21}$

89. $4(1+i)^2$

90. $\frac{(1+i)^3}{27i^3}$

91. $\frac{t^3}{2r}$

92. $-4r^{11}$

93. 16

94. -9

95. 18.5203

96. 0.299070

97. 1,000,000

98. 1.05822

99. 1.07006

100. 0.985149

101. 1.00990

102. 1.00816

103. -4

104. 3.16049

105. -0.197531

106. -0.666667

107. 20.1569

108. 33.9235

109. 15.9637

110. 28.7312

111. 1.00908

112. 0.00896339

113. a = 2

114. y = 6

115. x = 43

116. x = 14

117. y = 200

118. x = 350

119. x = 0.5

120. y = 8

121. x = 9

122. c = 8

123. t = 30

124. y = 12

125. x = $286.66

126. x = $694.13

127. x = $699.47

128. x = $1892.17

129. x = $391.01

130. x = $247.79

131. (4, 2)

132. (-2, 5)

133. (3, 5)

134. (2, -3)

135. (7, 14)

136. (-8, 9)

137. (500, 1000)

138. (700, 600)

139. $\left(\frac{3}{2}, -\frac{1}{3}\right)$

140. (-1.72, 7.66)

141. (17.0, 6.24)

142. (12.8, 8.00)

143. (250, 125)

144. (0.139, 0.0820)

145. 2065

146. $445.00

147. $4.55

148. $11,800

149. $25.00

150. 1627 km

151. 125¾ hours

152. 24 two-bedroom; 60 three-bedroom; 12 four-bedroom

153. Radio: $44,444; TV: $26,667; Newspaper: $88,889

154. 55 handicapped; 550 small-car; 770 regular

155. 60%

156. 17.67 tonnes from A; 14.83 tonnes from B

157. Technician: 3082; Scientist: 4623; Executive: 6623

158. 40%

159. Peanuts: 32.0 kg; Raisins 18.0 kg

160. CGA: 18 hours; technician: 23 hours

161. Stella = $9000; Joan = $10,800; Sue = $12,960

162. George = $30,128.81; Robert = $37,661.02; Sven = $21,090.17

163. 42

164. blue = 3120; red = 1340

165. a) $18,000; b) $105,000

166. $4,344,828

167. 1057

168. a) $14,888.89; b) $19,852

169. 238 student members and 345 regular members

170. 35

171. 230 km at 50 km/h; 770 km at 100 km/h

172. $270 adult; $170 child

173. $19.00 per hour plus $0.35 per km

174. 112.5 kg of 6% fertilizer; 187.5 kg of 22% fertilizer

175. CSB: 4.2%; OSB: 4.5%

176. 0.72% on residences; 0.33% on land with buildings

177. 37 units of X and 56 units of Y

178. $1.59 per litre and $2.89 per dozen

179. 25 litres of milk and 15 cans of OJ

180. $1.50 per case

181. 843 people

182. 23 six-packs and 87 single cans

183. partner salary is $117,000 and the technician salary is $67,500

184. 9 production workers and 9 assembly workers will be laid off

185. each child = $73,451.62; each grandchild = $24,483.87

186. Stage A = 30; Stage B = 48; Stage C = 36

187. $12,040

188. Each worker = $3378.38; each manager = $4054.05

189. Cutting = 18 minutes; Assembly = 11 minutes; Painting = 6 minutes

190. 5.26%

191. -5.00%

192. 285.71%

193. -74.07%

194. 18.18%

195. -10.53%

196. $118.26

197. 237.44g

198. 105.2cm

199. 0.0301

200. $25.00

201. $150.00

202. 11.11%

203. -9.09%

204. $80.00

205. $49.00

206. $42.86

207. $92.40

208. -0.62%

209. 0.50%

210. $131.25

211. $111.11

212. $125.00

213. $66.67

214. $658.80

215. $90.00

216. $99.96

217. $0.00

218. 200.00%

219. -66.67%

220. $10,075.00

221. $1039.78

222. $230.00

223. $150.00

224. $375.00

225. $249.00

226. GST = $149.88; PST = $174.86

227. 30,490,000

228. a) -15.28%; b) 2.65%; c) -13.03%

229. a) 181.82%; b) -51.61%; c) 36.36%

230. 11.11% increase

231. 9.02%

232. 4.96% increase

233. 6.04%

234. $4.20

235. $0.99

236. $311,400

237. $498.00

238. Year 1: -40.0%; Year 2: 66.67%

239. 720,000 iPhones

240. 7,040,000 visitors

241. 44.24%

242. -16.67%

243. 45,680,000 rounded to the nearest 10,000

244. $1.43

245. $29,700

246. $80,000

247. $16,000

248. 42.86% more at Cloverdale

249. 6.95% more than the Canadian dollar

250. 18.70% less

251. 121.07%

252. 25.0% increase

253. 17.65%

254. 150%

255. 2:1 Debt to Equity ratio; therefore, 100%

256. 23.08% less

257. 28.06 % less

258. 1.90%

259. $-22a^2 + 21ab + 16b^2$

260. $34.58

261. $500.00

262. $117.65

263. $199.50

264. $562.00

265. $350.00

266. $210.00

267. $0.7y + 2.2\ \overline{6}$

268. 2.996843P

269. $-60y^2 + 45y - 51$

270. 2.925b - 21

271. 3.05587x

272. $\frac{96nm^2 - 72n^2m^2}{48n^2m} = \frac{4m - 3nm}{2n} = \frac{4m}{2n} - \frac{3nm}{2n} = 2\frac{m}{n} - 1.5m$

273. $4505.14

274. $252.59

275. $1468.56

276. $-\frac{9}{x}$

277. $-\frac{8b^3}{a^9}$

278. $-\frac{5}{8x^2}$

279. 1.19641

280. 0.00816485

281. 41.1527

282. 9.11858

283. 589.020

284. 0.00826484

285. $280.97

286. $436.96

287. $576.63

288. $520.85

289. 12.0%

290. -8.00%

291. (7, -2)

292. a) (5.00, -2.00); b) (11.4, -6.32)

293. $i_1 = \frac{FV}{PV(1+i_2)} - 1$

294. a) -30.76%; b) 10.34%; c) -23.60%

295. a) 238.24%; b) $7.48

296. $16.00

297. a) 79.27%; b) -79.27%

298. Hugh = $46,350 and Ken = $52,080

299. Kajsa receives $12,203.39; Grace receives $14,644.07; Mary Anne receives $9152.54

300. Lingcod: $3.55 per kg; Red snapper: $4.10 per kg

301. Base: $1600 per month; Commission rate: 4.5%

302. $3400 invested in XYZ; $4400 invested in ABC

303. $10.92 reds; $7.80 blues

304. $111,111.11

305. 456

306. $\frac{81a^{12}b^8}{(a-b)^4}$

307. $-\frac{27}{10x^2}$

308. $-\frac{y}{2x^4}$

309. $\frac{x}{4}$

310. $136.99

311. $2a$

312. $-3x + 12$

313. $3154.06

314. $x^7y^3z^4$

315. $x^8$

316. 15.67

317. $x = 3$

318. $x = 2$

319. $a = 1.6$

320. $1153.32

321. $x = 3$; $y = -2$

322. $x = 0.4$; $y = 0.7$

323. $x = 0$; $y = 0$

324. $11,500

325. 72

326. 5

327. $6000

328. 12

329. $100.00

330. $76.80

331. 2.5%

332. 4.17%

333. $65.70

334. 9.09%

335. 33.3%

336. 23.1%

337. 300%

338. 25.9%

339. A

340. B

341. C

342. D

343. E

344. A

345. B

346. C

347. D

348. E

349. A

350. B

351. C

352. D

353. E

354. A

355. B

356. C

357. D

358. E

359. A

360. B

361. C

362. D

363. E

364. A

365. B

366. C

367. D

368. E

369. A

370. B

371. E

372. E

373. A

374. B

375. C

376. D

377. E

378. E

379. A

380. B

381. C

382. D

383. E

384. A

385. B

386. C

387. B

388. C

389. D

390. E

391. C

392. D

393. C

394. E

395. C

396. E

397. B

398. B

399. A

400. B

401. E

402. D

403. D

404. A

405. A

406. D

407. C

408. A

409. E

410. B

411. B

412. C

413. A

414. E

415. D

416. D

417. C

418. E

419. B

420. A

421. D

422. E

423. B

424. A

425. D

426. D

427. A

428. D

429. B

430. A

431. 1.05822

432. 0

433. 3s + 2t

434. $6x^2y$

435. $e^3 - 7e^2 - 3e + 6$

436. $7x^2 + 7xy - 4y^2$

437. $2m^3 - 4m^2 - 4m + 19$

438. 8x + 3y

439. $-6a^2 - 10a - 4$

440. 25x - 16

441. a + 4b

442. -0.7x + 3.45

443. $-1.2x^2$ -0.3x + 1.3

444. 18.8x - 8.5

445. 1.7419x

446. 3.0509P

447. 2.8685y

448. 2.9307k

449. -2.6243h

450. $12a^2b - 20a^2 + 24ab$

451. $36k - 72k^2 + 63k^3$

452. $-10x^3y + 5x^2y^2 + 15xy^3$

453. $-2pq + 8q^2 + 10q$

454. $20r^2 - 7rt - 6t^2$

455. $-12p^3 + 26p^2 - 10p$

456. $2a^2 + 34a + 99$

457. $24x^2 + 25xy - 5y^2$

458. 6x

459. $-3\frac{a}{b}$

460. x - y

461. $8 - 20x + 12x^2$

462. $\frac{x^2 - 2x + 3}{4}$

463. 16a - 4 + 7b

464. $2ab - 3a^2$

465. $\frac{2(1+i)+3(1+i)^2}{6}$

466. 23.75

467. 78

468. -44.8

469. 0.250

470. $315.11

471. $99.00

472. $346.22

473. $776.12

474. $2430.38

475. 0.093083

476. $1378.42

477. $812.73

478. $1794.22

479. $4687.97

480. $1071.77

481. $864.28

482. $500.00

483. 0.00600

484. $3500.00

485. $9900.00

486. 0.175

487. 8.00

488. $15.00

489. 1365

490. $2400.00

491. 0.0750

492. 0.0270

493. $350.00

494. $575.00

495. 0.0800

496. 0.0450

497. $t = \frac{I}{\text{Pr}}$

498. $i = \frac{PMT}{PV}$

499. $d = 1 - \frac{N}{L}$

500. $CM = \frac{NI + FC}{X}$

501. $X = \frac{NI + FC}{CM}$

502. $r = (S - P)/Pt$

503. $t = (S - P)/\mathrm{Pr}$

504. $d_1 = 1 - \frac{N}{L(1-d_2)(1-d_3)}$

505. $d_3 = 1 - \frac{N}{L(1-d_1)(1-d_2)}$

506. $PV = FV(1+i)^{-n}$

507. $i = \left(\frac{FV}{PV}\right)^{1/n} - 1$

508. $a^5$

509. $x^2$

510. $b^4$

511. $h^{11}$

512. $(1+i)^{13}$

513. $(1+i)^{n+1}$

514. $x^{28}$

515. $y^9$

516. $t^2$

517. $n^4$

518. $x^2$

519. $x^{21}$

520. $4(1+i)^2$

521. $\frac{(1+i)^3}{27i^3}$

522. $\frac{t^3}{2r}$

523. $-4r^{11}$

524. 16

525. -9

526. 18.5203

527. 0.299070

528. 1,000,000

529. 1.07006

530. 0.985149

531. 1.00990

532. 1.00816

533. -4

534. 3.16049

535. -0.197531

536. -0.666667

537. 20.1569

538. 33.9235

539. 15.9637

540. 28.7312

541. 1.00908

542. 0.00896339

543. a = 2

544. y = 6

545. x = 43

546. x = 14

547. y = 200

548. x = 350

549. x = 0.5

550. y = 8

551. x = 9

552. c = 8

553. t = 30

554. y = 12

555. x = $286.66

556. x = $694.13

557. x = $699.47

558. x = $1892.17

559. x = $391.01

560. x = $247.79

561. (4, 2)

562. (-2, 5)

563. (3, 5)

564. (2, -3)

565. (7, 14)

566. (-8, 9)

567. (500, 1000)

568. (700, 600)

569. $\left(\frac{3}{2},-\frac{1}{3}\right)$

570. (-1.72, 7.66)

571. (17.0, 6.24)

572. (12.8, 8.00)

573. (250, 125)

574. (0.139, 0.0820)

575. 2065

576. $445.00

577. $4.55

578. $11,800

579. $25.00

580. 1627 km

581. 125¾ hours

582. 24 two-bedroom; 60 three-bedroom; 12 four-bedroom

583. Radio: $44,444; TV: $26,667; Newspaper: $88,889

# ch02 Summary

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