

## Answers

1. b

2. d

3. c

4. c

5. b

6. b

7.  $-2.75, 25\%, \sqrt{4}, 2.25, \frac{5}{2}, 2^2$

8.  $-\frac{7}{2}, 30\%, .3999, \frac{7}{3}, \pi, 3.55, 3^2$

9.  $-5, 50\%, \sqrt{25}, 5.02, 5.2, \frac{25}{4}$

10.  $-10.01, -10, 10\%, 1^{10}, \sqrt{105}, 10.9, \frac{100}{9}$

11.  $-17.9, -17.11, -17.1, 170\%, \sqrt{17}, \frac{52}{3}$

12.  $-4.5, 0, .4001, \sqrt{17}, 450\%, \frac{19}{4}$

13.  $9.756 \times 10^{-5}, 2.4 \times 10^{-1}, 5.3209 \times 10^5, 1.801 \times 10^6$

14. b

15. e

16. b

17. c

18. d

19. c

20. c

21. d

22. a

23. c

24. d

25. a

26. 7.9 rounds to 8                       $8 - 5 = 3$  hours difference

4.6 rounds to 5

27.  $330 \div 14 = 23.57$  gallons                       $24 \times 2.02 = \$48.48$  spent on gas

28.  $1009 + 599 = 1608$                        $1608 - 489 = \$1119$  in her bank account

29.  $\$2.94 \div 6 = .49$  per pound                       $.49 \div 7 = \$.07$  per banana

30. b

31. c

32. d

33.  $1\frac{3}{4} = 1\frac{9}{12}$                        $\frac{1}{2} = \frac{6}{12}$                        $2\frac{1}{6} = 2\frac{2}{12}$

$1\frac{9}{12} + \frac{6}{12} + 2\frac{2}{12} = 3\frac{17}{12} = 4\frac{5}{12}$  hours spent on homework

34.  $6\frac{1}{4} - 2\frac{1}{2} = \frac{25}{4} - \frac{5}{2} = \frac{25}{4} - \frac{10}{4} = \frac{15}{4}$  or  $3\frac{3}{4}$  pounds of fish

35.  $\frac{25}{3} \cdot \frac{3}{4} = \frac{25}{4} = 6\frac{1}{4}$  dozen cookies sold or  $\frac{25}{3} \cdot \frac{12}{1} = 100$  cookies and  $\frac{3}{4}$  of 100 is 75

cookies

36. b

37. c

38. b

39. c

40. c

41. a

42. a

43. c

44. c

45. a

46. c

47. b

48. a

49.  $8 \overline{)3.000} \begin{array}{r} .375 \\ \underline{.320} \\ .080 \\ \underline{.072} \\ .008 \\ \underline{.008} \\ 0 \end{array}$

50. Move the decimal point two places to the left. .7869

$$51. .65 = \frac{65}{100} = \frac{13}{20}$$

$$52. a.) \frac{12}{6} = \frac{2}{1}$$

$$b.) \frac{6}{18} = \frac{1}{3}$$

$$53. \$375 + 405 + 430 + 425 = \$1635 \quad \frac{375}{1635} = \frac{25}{109}$$

$$54. a.) \frac{9}{12} = 12 \overline{)9.0}^{\cdot 75} = 75\% \text{ pizza eaten by Stanley}$$

$$b.) \frac{3}{12} = \frac{1}{4} \text{ of pizza left}$$

$$c.) \frac{9}{3} = \frac{3}{1}$$

$$55. \frac{3}{5} = \frac{d}{20} \quad 5d = 3 \cdot 20 \quad 5d = 60 \quad d = 12 \text{ days}$$

$$56. \frac{108}{144} = \frac{3}{4} = 75\% \text{ raised by Peter}$$

57. c

$$58. \frac{1}{50} = \frac{5}{m} \quad m = 250 \text{ miles}$$

59. b

60. a

61. b

62. a

63. a

$$64. \frac{2 \cdot 5^5}{5^4} = 2 \cdot 5^{5-4} = 2 \cdot 5 = 10$$

65. b

66. b

67. d

68. e

69. g

70. 16 numbers      6, 12, 18, 24, 30, 36, 42, 48, 54, 60, 66, 72, 78, 84, 90, 96  
 or  $100 \div 6 = 16$  remainder 4 or 16 whole numbers

71. e

72. 23 & 29    A prime number is divisible by only two numbers, one and itself.

73. b

74. b

75. 1    One is neither prime nor composite because it is not divisible by 2 numbers, just by itself.

76. 9    A composite number is divisible by a number or numbers other than one and the number itself. Nine is divisible by 1, 3, and 9.

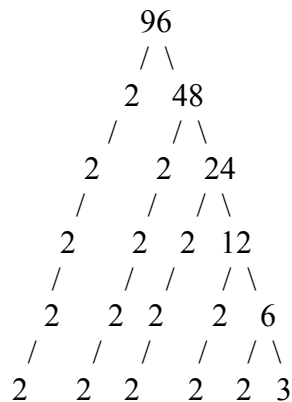
77. a

78. c

79. e

80. c

81.



Prime Factorization is then  $2^5 \cdot 3$ .

82.  $150 = 25 \cdot 6$ , so prime factorization is  $5 \cdot 5 \cdot 2 \cdot 3$ .

83. This is not completely factored because  $6 = 2 \cdot 3$  and  $4 = 2 \cdot 2$ . The prime factorization is  $2 \cdot 2 \cdot 2 \cdot 2 \cdot 3$  or  $2^4 \cdot 3$ .

84.  $18 \div 3(8 - 5) + 7 = 18 \div 3(3) + 7 = 6(3) + 7 = 18 + 7 = 25$

85. a

86. c

87. 
$$\frac{(24 + 12) + 2(5 - 7)}{10 - 2 \cdot 4} = \frac{36 + 2(-2)}{10 - 8} = \frac{36 - 4}{2} = \frac{32}{2} = 16$$

88. b

89. b

90. a.) length = 4.3 cm., slant height = 2.4 cm., height = 1.9 cm.

b.) perimeter =  $2 \cdot 4.3 + 2 \cdot 2.4 = 13.4$  cm.

c.) area =  $4.3 \cdot 1.9 = 8.17$  sq. cm.

91. a.) bottom =  $1\frac{1}{8}$  in., top =  $2\frac{1}{4}$  in., slant height =  $1\frac{3}{8}$  in., height =  $1\frac{1}{4}$  in.

b.) perimeter =  $1\frac{1}{8} + 2(1\frac{3}{8}) + 2\frac{1}{4} = 6\frac{1}{8}$  in.

c.) area =

$$\left(\frac{1}{2}\right)\left(1\frac{1}{4}\right)\left(1\frac{1}{8} + 2\frac{1}{4}\right) = \left(\frac{1}{2}\right)\left(\frac{5}{4}\right)\left(\frac{9}{8} + \frac{9}{4}\right) = \left(\frac{1}{2}\right)\left(\frac{5}{4}\right)\left(\frac{9}{8} + \frac{18}{8}\right) = \left(\frac{5}{8}\right)\left(\frac{27}{8}\right) = \frac{135}{64} = 8\frac{7}{16}$$

92. a.) length = 2 in., width =  $\frac{3}{4}$  in.

b.) perimeter =  $2 \cdot 2 + 2 \cdot \frac{3}{4} = 5\frac{1}{2}$  inches

c.) area =  $2 \cdot \frac{3}{4} = 1\frac{1}{2}$  sq.in.

93. a.) obtuse angle of  $135^\circ$

b.) an acute angle of  $33^\circ$

94. a.) a right angle of  $90^\circ$

b.) an obtuse angle of  $116^\circ$

95. a.) an acute angle of  $11^\circ$

b.) an obtuse angle of  $99^\circ$

96.  $335 \times 1.6 = 536$  kilometers

97.  $1758 \cdot 1.6 = 2812.8$  or about 2813 kilometers

98.  $\left(\frac{9}{5}\right)(25) + 32 = 45 + 32 = 77^\circ$

99. d

100.  $\frac{5}{9}(83 - 32) = \frac{5}{9}(51) = \frac{255}{9}$  about equal to  $28^\circ$ .

101.  $6 \cdot 3.785 = 22.71$  liters. This is not enough. Two cans would give you just a little more than enough.

102.  $20 \cdot (0.264) = 5.28$  gallons.

103. living room is  $20 \times 18 = 360$  sq.ft., bedrooms are  $2 \times 12 \times 14 = 336$  sq. ft, hallway is  $3 \times 10 = 30$  sq. ft.  $360 + 336 + 30 = 726$  sq. ft.  $726 \div 9 = 80.67$  sq. yd.

104. a.)  $80 \div 16 = 5$  pounds

b.)  $4000 \div 2000 = 2$  tons

c.)  $8 \div 4 = 2$  gallons

d.)  $12 \div 2 = 6$  pints

105. a.)  $5 \times 4 = 20$  quarts

b.)  $4 \times 2 = 8$  cups

c.)  $2.5 \times 16 = 40$  ounces

d.)  $6.25 \times 8 = 50$  ounces

106. b

107. c

108. c

109. c

110. 5 ft. 4 in. tall

111. b

112. d

113. d

114. a

115. a

116.  $8 \times 8 = 64$  ounces per day       $64 - 12 = 52$  ounces left to drink       $52 \div 8 = 6.5$   
cups or 6 cups, 4 ounces left to drink

117. a

118. 15 min. =  $\frac{1}{4}$  hour       $\frac{1}{4}$  of 65 =  $.25 \times 65 = 16.25$  miles

119. b

120. b

121. b

122. a

123.  $50 \times 2.5 = 125$  miles apart

124.  $5x = 20$ , so  $x = 4$  cm.

125.  $60x = 420$ , so  $x = 7$  inches

126. c

127. d

128.  $25 \div 5 = 5$ ,  $5 \times \frac{1}{4} = 1\frac{1}{4}$  inches

129. a

130. b

131. The scale drawing should measure 3.25 in. by 4.5 in.

132. b

133. b

134. 9:45 to 11:45 is 2 hours, 11:45 to 12:30 is 45 minutes, so 2 hours and 45 minutes.

135. 5 hrs + 6 hrs is 11 hrs    15 min. + 50 min. = 65 min.      65 min. = 1 hour 5 min.  
You worked 12 hours 5 minutes

136. b

137. c

138. 6:15 less 5 hours is 1:15 and 1:15 less 1/2 hour is 12:45. Put the turkey in at 12:45.

139. 8:15 to 12:15 is 4 hours and 12:15 to 3:15 is 3 more hours or 7 hours. 3:15 to 3:45 is  $7\frac{1}{2}$  hours. The bus gets in at 3:45 P.M.

140. 1:05 – 1 hour is 12:05 and 12:05 – 1/2 hour is 11:35. You need to be at the airport at 11:35 PM

141. a.) It is 2 hours later in Montana, or 8:00 A.M.

b.) You need to call at 8:30 A.M.

142. a.) \$2.51 in change

b.) \$22.49, 22.50, 22.75, 23.00, 24.00, 25.00

c.) 1 penny, 2 quarters, 2 ones

143. He has: \$5.00

3.00

1.75

.20

.05

.06

\$10.06

144. c

145. a.)  $\$42.50 + 58.00 + 71.95 = \$172.45$  You will have to give the clerk 2 \$100 bills.

b.) Your change should be  $\$200.00 - 172.45$  or \$27.55.

146. a

147. You bought  $2(30) + 3(12) + 45.75 = \$141.75$

148. b

149. c            3 quarters, 2 dimes, 1 penny

150. a

151. a

152. d

153. b

154. a.) \$2 x 20 gallons is about \$40 to fill up the car.

b.) This estimate is probably a little lower than the actual cost because the cost of gas is higher than the estimate used and the car may take a little more than 20 gallons if it says empty.

155. c

156. c

157. b

158. c

159. b

160. d

161. a.)  $\$500 \times 50 = \$25,000$

b.) This estimate is lower than the actual amount.

c.) It is lower because I used 500 rather than 515 and I only used 50 weeks rather than 52 weeks for the year.

162. a.) About 700 out of about 2800 is  $\frac{1}{4}$  or .25 or 25% of the juniors.

b. & c.) My estimate is higher than the actual percentage because I rounded both numbers up to make my estimate.

163. c

164. b

165. a

166. c

167. a

168. a

169. c

170. d

171. a

172. d

173. b

174. b

175. b

176. c

177. a

178. d

179. d

180. c

181. b

182. d

183. b

184. d

185. d

186.  $\$45 \div 375 = 0.12$  This is 12% of his earnings.

187. b

188. c

189. a

190. a.)  $T = 12s$

b.)  $T = 12 \cdot 25, T = \$300$

191. a

192. b

193. The 11<sup>th</sup> term is 33. The pattern is to add three. If you want the 11<sup>th</sup> term, you will add three 10 times.  $3 + 10 \cdot 3 = 33$ .

194. c

195. d

196.  $70000 \times 80000 = 5600000000$  The 2<sup>nd</sup> sentence had 1 zero with the 7 and the 8 and the sum of the zeros with the 56. So, the 5<sup>th</sup> term will have 4 zeros with the 7 and 8 and 8 zeros with the 56.

197. c

198. A.) a B.)  $T = (45)(4) + (.12)(650) = 180 + 78 = \$258$

199. a.)  $T = 8.25 h$  b.)  $264 = 8.25 h$   $h = 32$  hours

200. a.)  $M \leq 65.00 - 7.95$  b.)  $M \leq \$57.05$  Joslene can spend \$57.05 or less.

201. b

202. c

203. c Hugo will have \$250 in 7.14 months, so he will have to save for 8 months.

204. a.)  $T = (.20)(50)h$  b.)  $T = (.20)(50)(7)$   $T = \$70$

205. A.)  $M = [(4.5)(5) + (6.5)(2)]w$  B.) c

206. a.)  $T = (4.50 - 1.75) b$  b.)  $T = (2.75)(120)$   $T = \$330$

207. A.) a B.) Regie caught 14 fish and Petunia caught 42 fish.

208.  $C + N = 175$   $N = 19 + C$  Clancy earned \$78 and Nate earned \$97.

209.  $B + J = 46$        $J = B - 8$ , so substituting you get  $B + B - 8 = 46$        $2B = 54$ ,  
Blake = 27 points and Justin = 19 points.

210. c

211. d

212.  $a + b = 6$

$$\frac{a - b = 32}{2a} = 38$$

$$2a = 76$$

$$a = 38, b = 13$$

213.  $3x - 2 = -4x - 2$

$$7x - 2 = -2$$

$$7x = 0$$

$$x = 0$$

$$y = 3x - 2, \text{ so } y = -2$$

214. d

215. S.A. =  $4\pi r^2$

$$\text{S.A.} = 4(3.14)(16)$$

$$\text{S.A.} = 200.96 \text{ sq. in.}$$

216.  $d = 0.042(50^2) + 1.1(50)$

$$d = 106 \text{ feet}$$

$d = 0.042(30^2) + (1.1)(20)$

$$d = 70.8 \text{ feet}$$

$$106 - 70.8 = 35.2 \text{ feet further}$$

217. a

218. b

219.  $P = 2(22.50) + 1.55$

$$P = 45.00 + 1.55$$

$$P = \$46.55$$

220. b

221. 15-gon, decagon, octagon, hexagon, pentagon, quadrilateral, triangle

222. b

223. c

224. 134

225.  $72^\circ$

226. d

227. c

228. 8.5 inches; a radius is one-half the length of the diameter so  $17 \div 2 = 8.5$
229.  $AB = 12$  cm since a rhombus has four equal side lengths. The measure of angle D is  $100^\circ$  since consecutive angles are supplementary (or since the four angles must add up to  $360^\circ$  and opposite angles are equal, we know that  $80^\circ + 80^\circ + 100^\circ + 100^\circ = 360^\circ$ )
230. Both a regular pentagon and regular quadrilateral are polygons with all equal sides and angles. They differ in that a regular pentagon has five sides whereas a quadrilateral has four sides.
231. A sphere is three-dimensional whereas a circle is two-dimensional. Both figures have diameters and radii. If take a cross-section of a sphere, you will get a circle.
232. A cube is three-dimensional whereas a square is two-dimensional. A cube has six faces, twelve edges, and eight vertices. A square has four sides (or edges) and four vertices.
233. A triangle is two-dimensional whereas a triangular pyramid is three-dimensional. A triangle pyramid is formed using four triangular faces. A triangle has three sides, whereas a triangular pyramid has four triangular faces.
234. A regular heptagon is a polygon with seven sides. All seven sides have the same side length and the seven angles have the same angle measure.
235. A square pyramid has a base that is a square and has four lateral faces that are triangles. It has eight edges, five vertices and a total of five faces.
236. b
237. a
238. b
239. a
240.  $TH = 9$ ,  $m\angle T = 82^\circ$ ,  $m\angle H = 83^\circ$ ,  $RS = 7.2$ ,  $OK = 4.8$ ,  $m\angle = 78^\circ$ ,  $m\angle = 117^\circ$

Similar figures have corresponding angles that are congruent, so I used the given angle measures to match up the angle measures that were not given. Similar figures have corresponding sides that are in the same proportion. In this case, the side lengths of ROKS are 0.6 that of the side lengths of MATH. For example,  $OK = 0.6 * AT = 0.6 * 8 = 4.8$ .

241.  $m\angle M = 75^\circ$ ,  $m\angle P = 70^\circ$ ,  $LN = 11.3$  m,  $QP = 3$  m,  $MN = 10.5$  m

Congruent figures have corresponding angles and sides that are congruent, so I used the given angle and side measures to match up the measurements that were not given. For example, angle M and angle Q are corresponding angles so angle M must be the same as angle Q, namely  $75^\circ$ .

242. d

243. b

244. Circumference =  $9\pi$  cm since the circumference of a circle is equal to the diameter of the circle multiplied by  $\pi$ ; Area =  $20.25\pi$  square cm since the radius is one-half of nine cm or 4.5 cm and the area of a circle is equal to the radius squared multiplied by  $\pi$ .

245. 78 square feet since a cube has six faces and  $6 \times 13$  square feet = 78 square feet.

246. 12 square feet; since the perimeter is  $2L + 2W$ , I knew that  $2 \cdot 3 + 2W = 14$ ,  $2W = 8$  and  $W = 4$ . Since the area of a rectangle is  $L \cdot W$ , I took  $3 \cdot 4$  to get 12 square feet.

247. 2 inches; since the volume of a cylinder is  $V = \pi r^2 h$ , I substituted in four inches for the radius and the given volume.  $32\pi = \pi r^2 h$ ,  $32\pi = \pi 16h$ ,  $\frac{32\pi}{16\pi} = h$ , so  $h = 2$  inches.

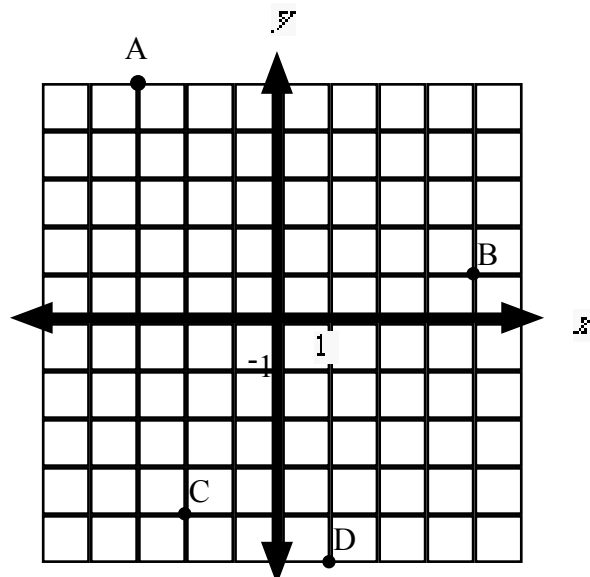
248. c

249. c

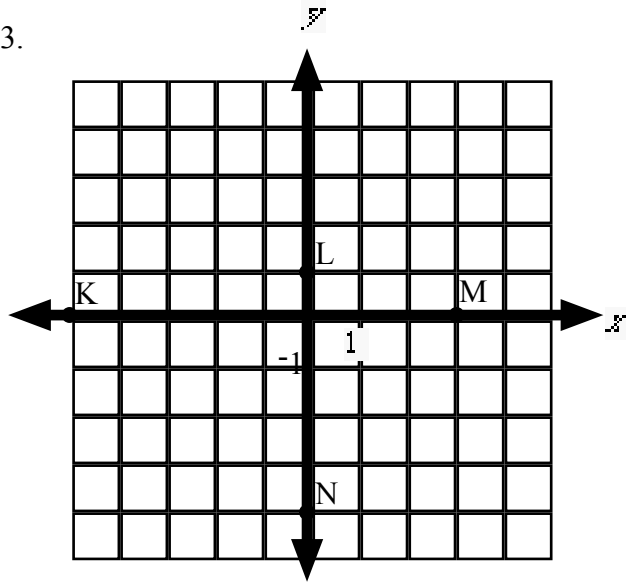
250. a

251. c

- 252.



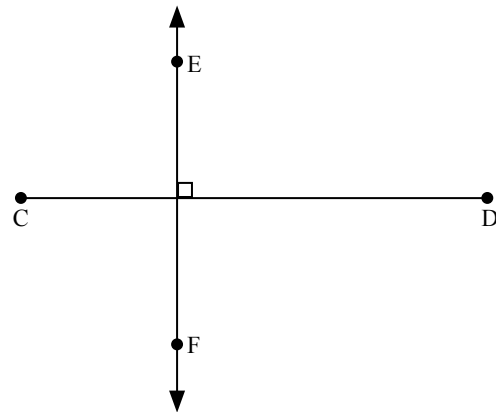
253.



254.



255.



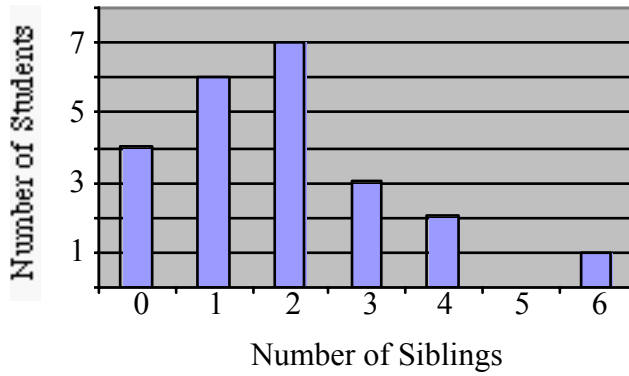
256. b

257. 5 cm; The point M should be at the 2.5 cm mark on the line segment

258. Lines that are parallel never touch. Lines that are perpendicular intersect to form  $90^\circ$  angles.

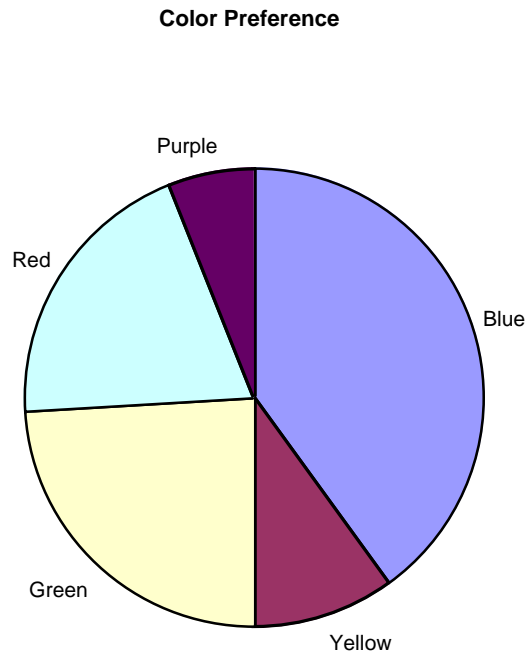
259. b

260.



261. d

262.



263. 48 people; Since 12 out of 50 people preferred the color green, I set up a ratio

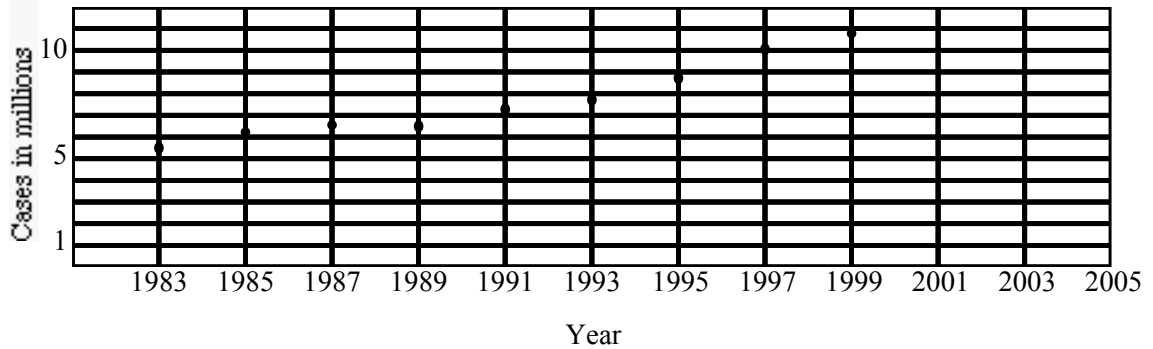
$$\frac{12}{50} = \frac{x}{200}$$

I solved the ratio to find that 48 people (or  $12 \cdot 4$ ) out of two

hundred would probably prefer green.

264. d

265.



In 2005, I estimate there will be approximately 14 million cases.

266. mean = 8, median = 8, mode = 8

To find the mean, add up all the shoe sizes and divide by the number of shoes sold ( $88 \div 11$ ). To find the median, order the shoe sizes from least to greatest. In this case there are two shoe sizes in the middle, so add them together ( $8 + 8 = 16$ ) and divide by two ( $16 \div 2$ ). The mode shoe size is 8 since there were four pairs sold that were size eight which outnumbered any other shoe size sold. I think that the owner would be most interested in the mode since he is interested in selling the most number of shoes. If more people buy size 8, he should probably order the most of this shoe size when he stocks his store. In this case, the mean, median and mode are the same so the owner can probably conclude that he should order the larger sizes (7's, 8's and 9's) for his store.

267. c

268. d

269. a

270. b

271. b

272. mean = 141, median = 150, mode = 150

To find the mean, add up all scores and divide by the number of games played ( $705 \div 5$ ). To find the median, order the scores from least to greatest. In this case there is one score in the middle, 150. The mode score is 8 since Joe scored 150 in two games. I think that the mean best describes Joe's performance since the low scores of 110 and 130 brought down his average. (Note: any valid explanation is acceptable.)

273. Since Joe's mean score before the sixth game is 141 ( $705 \div 5$ ), a score of 145 will raise his mean score slightly ( $850 \div 6 \approx 141.7$ ). Whenever a score is higher than his current mean, it will raise the mean; whenever a score is lower than his current mean, it will lower the mean.

274. Since Joe's median score before the sixth game is 150, a score of 145 will lower his median score slightly since there would be two middle scores, 145 and 150. To calculate the new median, take the mean of 145 and 150 to get 147.5. Therefore, the median score is lower.

275. Since the mode of this data set before the sixth game is 150, a score of 145 will not affect the mode. There is not another score of 145, so the mode remains 150 since there are more scores of 150 than any other score in the data set.

276. c

277. d

278. a

279. c

280. d

281. c

282. c

283. c

284. b

285. a

286. c

287. d

288. d

289.  $5/36$

There are 36 possible outcomes:

1-1, 1-2, 1-3, 1-4, 1-5, 1-6

2-1, 2-2, 2-3, 2-4, 2-5, 2-6

3-1, 3-2, 3-3, 3-4, 3-5, 3-6

4-1, 4-2, 4-3, 4-4, 4-5, 4-6

5-1, 5-2, 5-3, 5-4, 5-5, 5-6

6-1, 6-2, 6-3, 6-4, 6-5, 6-6

There are only five possible outcomes that sum to 6:

1-5, 5-1, 2-4, 4-2, 3-3

290.  $1/14$

There are 28 possible outcomes:

1-2, 1-3, 1-5, 1-6, 1-7, 1-8, 1-9

2-3, 2-5, 2-6, 2-7, 2-8, 2-9

3-5, 3-6, 3-7, 3-8, 3-9

5-6, 5-7, 5-8, 5-9

6-7, 6-8, 6-9

7-8, 7-9

8-9

There are only two possibilities that have a product of six: 1-6 and 2-3 so the probability is  $2/28$  which reduces to  $1/14$

291.  $3/13$

There are 52 cards in the deck which means there are 52 possible outcomes.

There are only 12 cards in the deck with a jack, queen or king on the cards. So the probability is  $12/52$  which reduces to  $3/13$ .