



Dear Parents,

This math packet is for rising 8th grade students and is designed to help your son practice his math skills over the summer months. We hope that by completing this packet your son will get off to a strong start in math in August. The problems in the packet should be familiar to him. If he does not understand something, please encourage him to watch a video about it on YouTube or to search for the topic on the Internet.

The packet should give you an idea of the different topics your son may need to review prior to the opening of school in August. He can use Khan Academy to get additional practice if he needs it.

We hope you and your family enjoy these summer months, and we look forward to welcoming your son back to Young Men's Preparatory Academy!

Sincerely,

Pierre R. Edouard

Pierre Edouard

**Summer Math Skills for rising 8th grade students
(Must Show All Work and Attach Scrap paper for Full Credit)**

Copy and complete the statement using $<$, $>$, or $=$.

1. 17.1 g ? 1.71 mg
2. 6.3 cm ? 63 mm
3. 1250 mL ? 12.5 kL

Evaluate the expression for the given value(s) of the variables(s).

4. $m - 8$ when $m = 12$
5. $11y$ when $y = 5$
6. $a \div (b - 4)$ when $a = 24$ and $b = 7$

Evaluate the expression.

7. $23 - (9 - 5)^2$
8. $\frac{17 - 8}{6 + 12}$
9. $52 \div (13 \times 2)$
10. $-5 \cdot 8 \cdot \left(\frac{1}{5}\right)$
11. $\frac{1}{3}(1.3) + \frac{1}{3}(1.7)$
12. $9^2 - 16 \times 3$
13. $9.83 + (8.2)(7.01)$

Name: _____

ID: A

Find the sum, difference, product, or quotient.

14. $3.24 + 5.48$

15. $21.73 - 14.87$

16. 2.4×0.125

17. $15.3 \div 0.09$

18. $\frac{11}{16} + \frac{3}{4}$

19. $7\frac{2}{5} - 4\frac{7}{10}$

20. $2\frac{1}{3} \cdot 3\frac{3}{4}$

21. $\frac{7}{12} \div \frac{14}{15}$

22. $-11 + (-17)$

23. $21 - 32$

24. $10(-3)$

25. $-54 \div (-6)$

Write the number in scientific notation.

26. 61,500

27. 17,540,000

Find the mean, median, mode(s), and range of the data.

28. 23, 19, 32, 28, 17, 21, 28
29. 2.4, 1.7, 2.1, 1.5, 2.3, 2.1, 1.9, 1.2

Use a factor tree to write the prime factorization of the numbers. Then find the GCF and the LCM of the numbers.

30. 45, 150
31. 68, 102

Write the decimal as a fraction or mixed number. Simplify

32. 0.04
33. 2.35

Order the integers from least to greatest.

34. $-6, 3, -4, 0, -11, 9$
35. $42, -36, 17, -28, 21, -16$
36. Write the integer that represents a loss of 52 pounds. Then write the opposite of that integer.

Write the verbal sentence as an equation. Let x represent the number.

37. 7 less than a number is 15.
38. 3 times the sum of a number and 2 is 12.

Simplify the expression.

39. $4x - 8 - 7x - 3$
40. $17t + 3(4t - 5)$

41. $5(3m+1) - 8(2m+3)$

42. $-3 - 4b + b - 8$

Solve the equation. Check your solution.

43. $w - 4 = -2$

44. $\frac{2}{3}x = -10$

45. $4y - 2 = 7$

46. $-9 = -9(2z - 3)$

Solve the inequality.

47. $15 > m + 8$

48. $-7x \leq 21$

Solve the proportion.

49. $\frac{x}{15} = \frac{3}{7.5}$

50. $\frac{12}{16} = \frac{y}{12}$

51. A map uses a scale of 1 in. : 25 mi. If the distance between two cities on the map is 3.5 inches, what is the actual distance between the cities?

Write the percent as a decimal or the decimal as a percent.

52. 31.5%

53. 210%

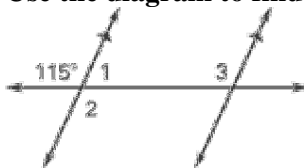
54. 0.0125

55. What number is 45% of 520?
56. 75 is what percent of 30?

Identify the percent of change as an increase or a decrease. Then find the percent of change.

57. Original: 60
New: 45
58. Original: 75
New: 90
59. A store has a pair of boots that originally cost \$56 marked down 25%. How much will the boots cost on sale?
60. You deposit \$1200 in an account. The annual interest rate is 3%. How long will it take you to earn \$108 in simple interest?

Use the diagram to find the unknown angle measures.

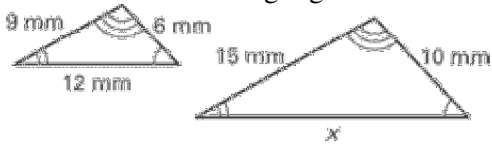


61. $m\angle 1$
62. $m\angle 2$
63. $m\angle 3$

Classify the triangle by its side lengths.

64. 5, 5, 5
65. 7, 3, 5
66. Given that $\triangle EFG \cong \triangle HIJ$, name the corresponding sides and corresponding angles.

67. Find the unknown length given that the triangles are similar.



68. The shadow cast by a house is 55 feet long. At the same time, a flagpole that is 15 feet tall casts a 25 foot long shadow. How tall is the house?

Evaluate the expression when $x = 3$ and $y = 15$.

69. $-\sqrt{12x}$

70. $\sqrt{y - 2x + 7}$

Solve the equation.

71. $a^2 - 16 = 48$

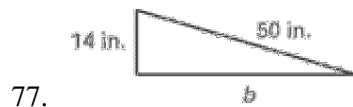
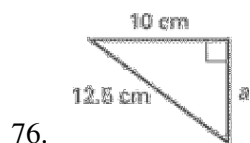
72. $3b^2 - 7 = 68$

73. $15 + c = -3$

74. $\frac{3}{4}x = 12$

75. $4 + t^2 = 68$

**Find the unknown length. (Hint: Pythagorean Theorem)
Round to the nearest tenth if necessary.**

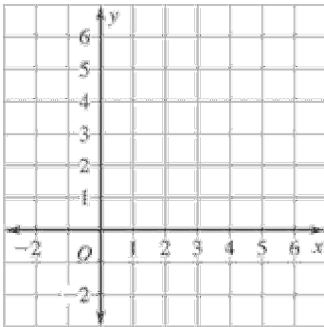


Use the following information. A bag contains the letters from the words SUMMER VACATION.
(Refers to questions 102, 103, and 104)

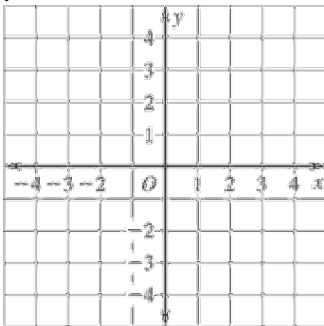
78. You randomly choose a letter. What is the probability that you choose the letter M?
79. You randomly choose a letter C, replace it, and then choose a letter M. What is the probability of this happening?
80. You randomly choose a letter A, and do not replace it. Then you choose another letter A. What is the probability that both letters are A's?

Graph the function.

81. $y = .5x$



82. $y = -3x + 1$



Evaluate the expression for the given value of the variable.

83. $12 - x + 7$, when $x = 5$
84. A rectangular garden has a length of 10.25 feet and a width of 6.2 feet. Another rectangular garden has a length of 20.5 feet and a width of 12.4 feet. How many times greater is the area of the larger garden than the area of the smaller garden?

Find the quotient.

85. Evaluate the expression $\left(\frac{1}{2}\right)^2 \div \frac{2}{3}$.

Evaluate the expression when $a = -5$, $b = 7$, $c = -2$, and $d = 3.2$.

86. $a^2 - b + (4.7 - d) - c$

Find the unit rate.

87. $\frac{\$18}{4 \text{ people}}$

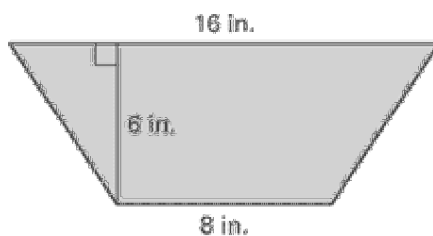
Solve the following proportion problem.

88. You can walk 2 miles in 24 minutes. How long will it take you to walk 5 miles?

89. In the jazz band, 8 out of 24 students are in eighth grade. What percent of the students are not in eighth grade?

90. Your bill at a restaurant comes to \$56. You want to leave a 15% tip. How much should you leave?

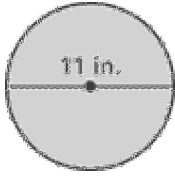
Find the area of the figure.



Find the unknown length. (Hint: Pythagorean Theorem)



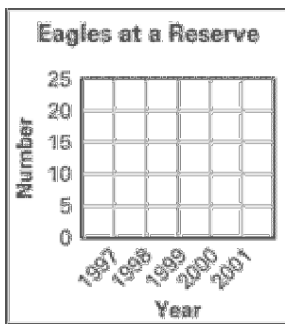
Find the circumference and area of the circle. Use 3.14 for π .



93.

94. Make a line graph of the number of bald eagles at a national wildlife reserve.

Year	1997	1998	1999	2000	2001
Eagles	6	8	17	14	20

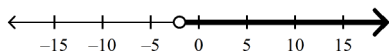


Solve the inequality. Then graph its solution.

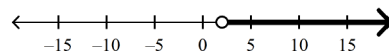
95. $x - 4 > 15$

96. $6x - 8 < -20$

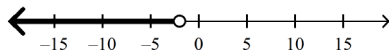
a. $x > -2$



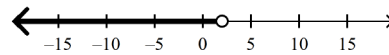
c. $x > 2$



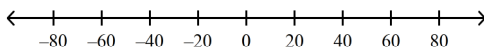
b. $x < -2$



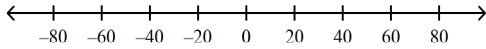
d. $x < 2$



97. $-\frac{x}{7} \leq 8$



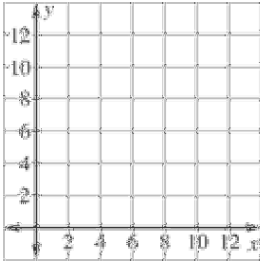
98. $\frac{x}{9} < -9$



Write a function rule for the input-output table. Then graph the function.

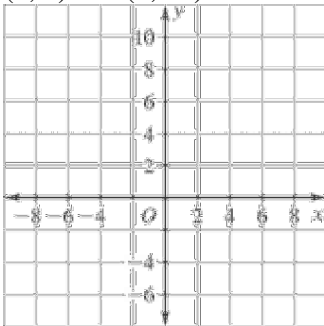
99.

Input, x	1	2	3	4
Output, y	3	6	9	12



Draw the graph of the line that passes through the two points. Then find the slope of the line.

100. (1, 4) and (4, 10)



Evaluate the expression when $a = -6$, $b = -13$ and $c = 4$.

- _____ 101. $-13 + c + b$
- 15
 - 22
 - 1
 - 1

102. $c + b$

103. $a + (-5) + b$

- ____ 104. Susan owns a small business. There was a loss of \$11 on Monday and a profit of \$18 on Tuesday. On Wednesday, there was a loss of \$7 and on Thursday, there was a profit of \$8. Find the total profit or loss.
- \$13 loss
 - \$8 profit
 - \$44 profit
 - \$18 profit

105. The Badgers played football against the Raiders. The Badgers had a gain of 7 yards on their first play and a loss of 15 yards on their second play. On the third play there was a loss of 18 yards. Find the total gain or loss for the 3 plays.

Find the difference.

106. $-26 - (-9)$

107. $-24 - (-10)$

Find the change in temperature.

- ____ 108. From -13°C to 15°C .
- -28°C
 - -2°C
 - 28°C
 - 2°C

109. From -1°F to -20°F .

Evaluate the expression when $x = -4$, $y = 10$, and $z = -9$.

- ____ 110. $x - y - z$
- 5
 - 23
 - 15
 - 24

111. $-5 - x - z$

Evaluate the expression for the given values of the variables.

112. $-c - p$, when $c = -33$ and $p = 20$

Find the product.

113. $-2(-16)$

114. $-7(3)(-1)$

Find the quotient.

115. $-272 \div (-8)$

Evaluate the expression.

116. $\frac{x}{y}$, when $x = -72$ and $y = -2$

117. A deep-sea diver must descend and ascend in short steps to equalize pressure on her body. If the diver rises toward the surface too quickly, she may suffer from a physical condition called "the bends." Suppose the diver descends to the bottom in three steps of 12 feet each. Write and simplify an expression to describe the diver's change in elevation.

Use the distributive property and mental math to find the product.

____ 118. $7(6.1)$

a. 427	c. 4.27
b. 43.4	d. 42.7

119. $4(51)$

- ____ 120. Kaye runs a small business with three employees. She pays one employee \$2300 a month, another \$1700 a month, and the third \$1400 a month. How much does she pay her employees in a year?
- | | |
|-------------|-------------|
| a. \$31,900 | c. \$30,700 |
| b. \$63,600 | d. \$64,800 |

Use the distributive property to write an equivalent variable expression.

____ 121. $4(x + 3)$

a. $4x + 12$	c. $4x + 3$
b. $4x - 12$	d. $7x + 3$

122. $3(3 - 7x)$

123. You and three friends go to a movie. The tickets cost \$5.50 each. You each buy a drink for \$2.50 and a box of popcorn for \$4.00. Write an expression that represents the total amount of money spent. Then evaluate the expression.

124. $-4(x + 3)$

125. Consider the rectangle shown.



- a. Write an expression for the area of the rectangle.
b. Find the area for $x = 2$.

Identify the terms, like terms, coefficients, and constant terms. Then simplify the expression.

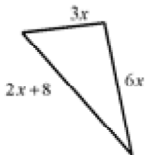
126. $3n - 13 - 5n + 6n$

Simplify the expression.

127. $7 - 7(5 + x) - 9x$

128. $4 + 10x + 5 - 9x$

129. Write and simplify an expression for the perimeter of the figure. (The figure may not be drawn to scale.)

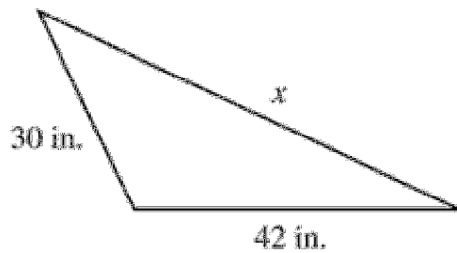


Solve the equation. Check your solution.

130. $s - 45 = 127$

131. $164 = x - 59$

132. The perimeter of the triangle is 131 inches. Write an equation to find the side length labeled x . Then solve the equation.



Solve the equation.

_____ 133. $14x = -728$

- a. $-\frac{1}{52}$
- b. $\frac{1}{52}$
- c. 52
- d. -52

134. $\frac{t}{3} = 9$

135. $7x = 182$

136. $\frac{e}{4} = 23$

137. $4x = 24$

138. $\frac{c}{24} = 19$

- _____ 139. You receive \$68 for mowing lawns for 8 hours. What equation can you use to find how much you make per hour?

- a. none of these
- b. $68x = 8$
- c. $\frac{x}{8} = 68$
- d. $8x = 68$

140. A person-hour is a unit of measure representing one person working for one hour. A construction foreman estimates that it will take 2880 person-hours to build a new library. If 12 workers are scheduled to work on the project at the same time, how many hours will it take to complete the project?

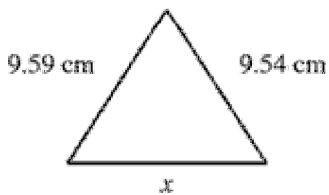
Perform the indicated operation.

141. $-8(2.25)$

Solve the equation.

142. $1.87 = x + 11.04$

143. The perimeter of the figure is 28.01 centimeters. Find the value of x .



Solve the equation. Check your solution.

144. $-x + 6 = 8$

145. $-\frac{q}{4} + 3 = 18$

146. $\frac{t}{14} + 9 = 13$

147. $-\frac{w}{7} - 2 = 19$

- ____ 148. The vice-president of a bank earns \$1635 per week. This is \$55 more than two times the weekly wage of a bank manager. Write an equation and a solution that show the weekly wage of a bank manager.
- | | |
|-----------------------------|-----------------------------|
| a. $1635 = 2x + 55$; \$790 | c. $1635 = 55 - 2x$; \$780 |
| b. $1635 = 2x - 55$; \$845 | d. none of these |

Solve the equation.

149. $2(2x - 3) = x + 7$

150. $3(x + 5) + 1 = 2(x + 5) + 4$

151. $x + 6 = 5(3x - 1)$

152. $11 - 2x = 5x - 12$

Write the verbal sentence as an equation. Then solve the equation.

_____ 153. Fifteen plus twice a number is equal to 3 times the number.

a. $15 + 2x = 3x; 15$

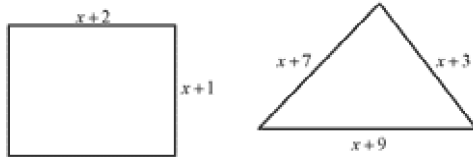
c. $15 = 2x + 3x; 3$

b. $15 + 3x = 2x; -1$

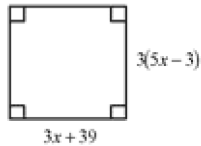
d. none of these

154. Eighteen minus 8 times a number is equal to -6 times the number.

155. Find the value of x so that the rectangle and the triangle have the same perimeter. What is the perimeter?

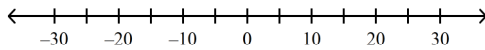


156. Find the value of x so that the figure is a square.



Solve the inequality. Then graph the solution.

157. $-4x + 10 > 2$



158. $7 - \frac{x}{5} < 27$

159. $\frac{m}{2} + 1 \geq -1$

160. The width of a rectangle is 21 centimeters. The perimeter is at least 316 centimeters. Write an inequality that represents all possible values for the length of the rectangle. Then solve the inequality.

_____ 161. Write the prime factorization of 55.

a. $5^2 \cdot 11^2$

c. $5 \cdot 11$

b. $5^2 \cdot 11$

d. $5 \cdot 11^2$

_____ 162. Write $56k^2l^3$ in factored form.

a. $2 \cdot 2 \cdot 2 \cdot 7 \cdot k \cdot k \cdot l \cdot l$

c. $2 \cdot 2 \cdot 2 \cdot 7 \cdot k \cdot k \cdot k \cdot l \cdot l \cdot l$

b. $2 \cdot 2 \cdot 2 \cdot 7 \cdot k \cdot k \cdot l \cdot l \cdot l$

d. $2 \cdot 2 \cdot 7 \cdot k \cdot k \cdot l \cdot l \cdot l$

163. Make a factor tree for 420.

Write the prime factorization of the number.

164. 336

Factor the monomial.

165. $27n^2o$

Find the greatest common factor of the numbers.

_____ 166. 72, 96

a. 144

b. 3

c. 24

d. 13

167. 30, 20, 40

Find the greatest common factor of the monomials.

_____ 168. $108a^4b^3$, $64a^3b$

a. $4a^4b^3$

b. $4a^3b$

c. $2a^3b$

d. $4a^3b^3$

169. $15f^6g^5$, $60f^2g^8$

Find the least common multiple of the numbers.

_____ 170. 3, 15, 33

a. 99

b. 3

c. 165

d. 495

Find the least common multiple of the monomials.

- ____ 171. $10uv, 6u^2$
a. $30u^2v$ b. $15u^2v$ c. $2u$ d. $30uv$
- ____ 172. $4x^3yz^2, 18xy^5z$
a. $36x^3y^5z^2$ c. $36x^4y^6z^3$
b. $72x^4y^6z^3$ d. $72x^3y^5z^2$
173. $12c^3d^4, 7c^4d^5$

Find the missing exponent.

- ____ 174. $4^? \cdot 4^3 = 4^{12}$
a. 15 b. 9 c. 4 d. 2
175. $\frac{15^?}{15^2} = 15^3$

Find the product. Write your answer using exponents.

- ____ 176. $3^4 \cdot 3^7$
a. 3^{28} b. 9^{28} c. 9^{11} d. 3^{11}

Simplify the expression. Write your answer using exponents.

- ____ 177. $\frac{t^{15}}{t^{13}}$
a. t^2 c. t^{28}
b. t^{195} d. none of these
178. $p^{11} \cdot p^5$

Simplify the expression.

- ____ 179. $2a^2b^5 \cdot 6a^9b^3$
a. $8a^{11}b^8$ c. $12a^{18}b^{15}$
b. $8a^8b^{11}$ d. $12a^{11}b^8$

____ 180. $\frac{m^9 p^{16}}{m^3 p^{12}}$

a. $\frac{1}{m^6 p^4}$

b. $m^6 p^4$

c. $m^{12} p^{28}$

d. mp^4

181. $3g^6 \cdot 3^3 g^9$

182. $\frac{5x^7 y^8 \cdot 6xy^3}{3x^2 y}$

Copy and complete the statement using $<$, $>$, or $=$.

183. 5^4 ____ $5^3 \cdot 5^2$

184. 7^9 ____ $7^7 \cdot 7^2$

Find the sum or difference.

____ 185. $6\frac{1}{4} - 3\frac{1}{6}$

a. $2\frac{1}{12}$

b. $3\frac{1}{12}$

c. 4

d. $4\frac{1}{24}$

186. $9\frac{2}{3} + 8\frac{3}{8}$

187. $\frac{1}{5} + \frac{6}{20}$

Evaluate the expression when $x = \frac{2}{7}$ and $y = -\frac{3}{4}$.

____ 188. $x - y$

a. $-\frac{13}{28}$

b. $1\frac{2}{3}$

c. $\frac{5}{11}$

d. $1\frac{1}{28}$

____ 189. $y + x$

a. $\frac{13}{28}$

b. $\frac{1}{28}$

c. $-\frac{13}{28}$

d. $\frac{5}{28}$

Evaluate the expression.

190. $-5\frac{2}{3} + \frac{1}{9} - \frac{15}{18}$

Solve the equation. Check your solution.

____ 191. $50 = \frac{5}{2}x$

a. 25

b. 125

c. 20

d. 10

____ 192. $-\frac{2}{7}x = 36$

a. 126

b. $10\frac{2}{7}$

c. -126

d. $-10\frac{2}{7}$

193. $\frac{1}{2}y - 2 = 4$

194. $\frac{9}{10}g = \frac{5}{9}$

195. $2\frac{1}{3}t - 22 = 41$

Use the percent equation to answer the question.

196. 12 is 20% of what number?

197. What percent of 25 is 7?

198. What number is 21% of 300?

199. Luis makes a 4% commission on his sales in a sporting goods store. For a \$70 purchase, how much commission does Luis earn?

Identify the percent of change as an *increase* or a *decrease*. Then find the percent of change. Round your answer to the nearest tenth if necessary.

200. Original: 236
New: 223

201. Original: 276
New: 296

Find the new amount.

- ____ 202. Increase 30 by 80%.

a. 6 b. 54 c. 24 d. 110

- ____ 203. Decrease 40 by 20%.

a. 20 b. 32 c. 8 d. 48

204. The table shows the number of guests at Bonnie's Bed and Breakfast for several years. What was the percent increase from 1992 to 1994? Round your answer to the nearest whole percent.

Year	1991	1992	1993	1994
Guests	310	349	407	481

205. The table shows the revenue of a local automobile dealership. Find the percent of increase in the revenue from 1998 to 2001. Round to the nearest tenth of a percent.

Year	Revenue
1992	95,000
1996	145,000
1998	105,000
2001	315,000

Solve the equation. Check your answer.

- ____ 206. $11x - 2 = 75$

a. 73 b. 7 c. 4 d. 16

_____ 207. $4m + 7 = 35$

- a. 10.5 b. 112 c. 7 d. 168

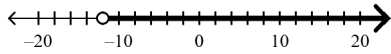
Solve the equation. Check your answer.

_____ 208. $\frac{r}{4} + 14 = 46$

- a. 16,015 b. 240 c. 8 d. 128

209. $\frac{w}{7} - 4 = 9$

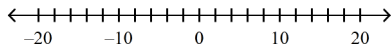
_____ 210. Which inequality is represented by the graph?



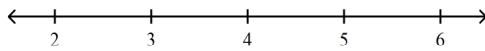
- a. $m \leq -12$ b. $m > -12$ c. $m \geq -12$ d. $m < -12$

Solve the inequality. Then graph its solution.

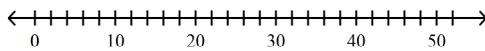
211. $x - 28 \leq -9$



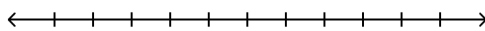
212. $x - 4 \leq 0.9$



213. $w + 8 \leq 18$



214. $w + \frac{3}{2} < 3$

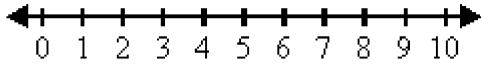


Write the inequality for the following sentence.

215. A number decreased by 7 is more than 3.

Write a verbal phrase to describe the inequality. Then graph the inequality on a number line.

216. $m \geq 6$



217. Find the mean of the integers.

44, 63, -17, 28, -30, -24, 19, 51, -8

- ____ 218. During the hockey season, Pete scored goals on 15% of the shots he took. If he scored 75 goals, how many shots did he take?

a. 113 b. 1125 c. 50 d. 500

- ____ 219. What is a salesperson's commission on a \$1000 sale if the commission rate is 20%?

a. \$20,000 b. \$1020 c. \$200 d. \$20

220. A man buys 12 shirts at \$24.69 each. There is also a 6% sales tax. Find his total bill.

221. The sales tax rate in a certain state is 5%. Find the total price paid for a pair of shoes that costs \$39.

222. You and three friends share a meal at a restaurant. The bill, including 5% sales tax, comes to \$34.02.

a. How much is the food bill before sales tax? What was your portion of the food bill?

b. You and your friends decide to leave a 20% tip. How much does each person need to leave for the tip?

c. One of your friends says that each person needs to leave a total of \$9.72. Explain why this amount is incorrect.

d. What is the total cost of the meal including the tip?

Name: _____

ID: A

Use the given information to find the new amount.

- ____ 223. Original price: \$15
Discount percent: 30%
- a. \$19.50 b. \$10.50 c. \$4.50 d. \$14.55
224. You have \$40.00. You wish to buy a T-shirt costing \$14.50 and a pair of jeans costing \$23.95. There is a 4% sales tax on clothing. Do you have enough money to pay for both?
225. You have \$40.00. You wish to buy a T-shirt costing \$14.50. You would also like to buy a pair of jeans. There is a 6% sales tax on clothing. What is the top tag price (excludes sales tax) you could pay for the jeans?