

**Summer Math Skills for 7th Grade going into 8th Grade (Must Show All Work and Attach Scrap paper for Full Credit)**

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

1.  $m - 8$  when  $m = 12$
2.  $11y$  when  $y = 5$
3.  $a + (b - 4)$  when  $a = 24$  and  $b = 7$

**Evaluate the expression.**

4.  $23 - (9 - 5)^2$
5.  $\frac{17 - 8}{6 + 12}$
6.  $52 \div (13 \times 2)$
7.  $-5 \cdot 8 \cdot \left(\frac{1}{5}\right)$
8.  $\frac{1}{3}(1.3) + \frac{1}{3}(1.7)$
9.  $9^2 - 16 \times 3$
10.  $9.83 + (8.2)(7.01)$

**Find the sum, difference, product, or quotient.**

11.  $3.24 + 5.48$
12.  $21.73 - 14.87$
13.  $2.4 \times 0.125$
14.  $15.3 - 0.09$

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

16.  $7\frac{2}{5} - 4\frac{7}{10}$

17.  $2\frac{1}{3} \cdot 3\frac{3}{4}$

18.  $\frac{7}{12} - \frac{14}{15}$

19.  $-11 + (-17)$

20.  $21 - 32$

21.  $10(-3)$

22.  $-54 \div (-6)$

**Write the number in scientific notation.**

23. 61,500

24. 17,540,000

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

25. 7 less than a number is 15.

26. 3 times the sum of a number and 2 is 12.

**Simplify the expression.**

27.  $4x - 8 - 7x - 3$

28.  $17z + 3(4z - 5)$

29.  $5(3m + 1) - 8(2m + 3)$

30.  $-3 - 4b + b - 8$

**Solve the equation. Check your solution.**

31.  $w - 4 = -2$

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

33.  $4y - 2 = 7$

34.  $-9 = -9(2z - 3)$

**Solve the inequality.**

35.  $15 > m + 8$

36.  $-7x \leq 21$

**Solve the proportion.**

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

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

39. 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.**

40. 31.5%

41. 210%

42. 0.0125

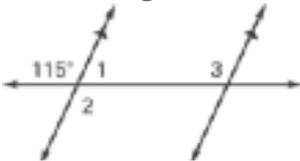
43. What number is 45% of 520?

44. 75 is what percent of 30?

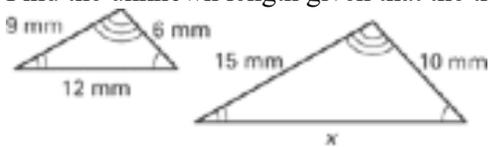
**Identify the percent of change as an increase or a decrease. Then find the percent of change.**

45. Original: 60  
New: 45
46. Original: 75  
New: 90
47. A store has a pair of boots that originally cost \$56 marked down 25%. How much will the boots cost on sale?
48. 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.**



49.  $m\angle 1$
50.  $m\angle 2$
51.  $m\angle 3$
52. Find the unknown length given that the triangles are similar.



53. 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  $y = 15$ .**

54.  $-\sqrt{12x}$
55.  $\sqrt{y-2x+7}$

**Solve the equation.**

56.  $a^2 - 16 = 48$

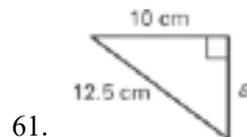
57.  $3b^2 - 7 = 68$

58.  $15 + c = -3$

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

60.  $4 + t^2 = 68$

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



**Evaluate the expression for the given value of the variable.**

63.  $12 - x + 7$ , when  $x = 5$

64. 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.**

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

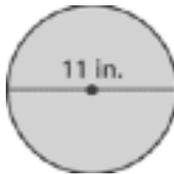
**Evaluate the expression when  $a = -5$ ,  $b = 7$ ,  $c = -2$ , and  $d = 3.2$ .**

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

**Solve the following proportion problem.**

67. You can walk 2 miles in 24 minutes. How long will it take you to walk 5 miles?
68. Your bill at a restaurant comes to \$56. You want to leave a 15% tip. How much should you leave?

**Find the circumference and area of the circle. Use 3.14 for  $\pi$ .**



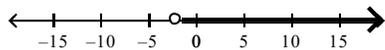
69.

Solve the inequality. Then graph its solution.

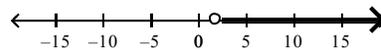
70.  $x - 4 > 15$

71.  $6x - 8 < -20$

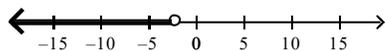
a.  $x > -2$



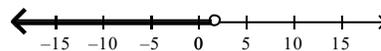
c.  $x > 2$



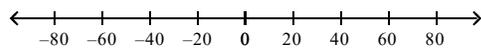
b.  $x < -2$



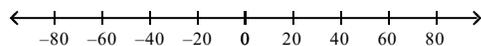
d.  $x < 2$



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



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



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

74.  $-13 + c + b$

- a. -15  
b. -22  
c. -1

d. 1

75.  $c + b$

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

77. 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.
- a. \$13 loss
  - b. \$8 profit
  - c. \$44 profit
  - d. \$18 profit

78. 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.

79.  $-26 - (-9)$

80.  $-24 - (-10)$

Find the change in temperature.

81. From  $-13^{\circ}\text{C}$  to  $15^{\circ}\text{C}$ .
- a.  $-28^{\circ}\text{C}$
  - b.  $-2^{\circ}\text{C}$
  - c.  $28^{\circ}\text{C}$
  - d.  $2^{\circ}\text{C}$

82. From  $-1^{\circ}\text{F}$  to  $-20^{\circ}\text{F}$ .

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

83.  $-5 - x - z$

Evaluate the expression for the given values of the variables.

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

Find the quotient.

85.  $-272 \div (-8)$



95.  $s - 45 = 127$

96.  $164 = x - 59$

Solve the equation.

97.  $14x = -728$

a.  $-\frac{1}{52}$

b.  $\frac{1}{52}$

c. 52

d. -52

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

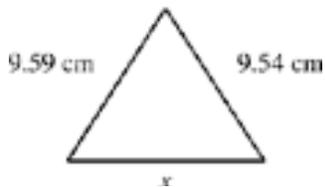
99.  $7x = 182$

100.  $\frac{g}{4} = 23$

101.  $4x = 24$

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

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



**Solve the equation. Check your solution.**

104.  $-x + 6 = 8$

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



117.  $7 - \frac{x}{5} < 27$

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

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

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

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

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

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

120. Make a factor tree for 420.

**Factor the monomial.**

121.  $27m^2o$

**Find the greatest common factor of the monomials.**

122.  $108a^4b^3, 64a^3b$

a.  $4a^4b^3$

b.  $4a^3b$

c.  $2a^3b$

d.  $4a^3b^3$

123.  $15f^6g^5, 60f^2g^0$

**Find the least common multiple of the monomials.**

124.  $10uv, 6u^2$

a.  $30u^2v$

b.  $15u^2v$

c.  $2u$

d.  $30uv$

125.  $12c^3d^4, 7c^4d^5$

**Find the product. Write your answer using exponents.**

126.  $3^4 \cdot 3^7$

a.  $3^{28}$

b.  $9^{28}$

c.  $9^{11}$

d.  $3^{11}$

**Simplify the expression. Write your answer using exponents.**

127.  $\frac{t^{15}}{t^{13}}$

a.  $t^2$

c.  $t^{28}$

b.  $t^{105}$

d. none of these

128.  $p^{11} \cdot p^5$

**Simplify the expression.**

129.  $3g^6 \cdot 3^3 g^9$

130.  $\frac{5x^2 y^0 \cdot 6xy^3}{3x^3 y}$

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

\_\_\_\_\_ 131.  $x - y$

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

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

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

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

\_\_\_\_\_ 132.  $y + x$

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

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

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

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

Evaluate the expression.

133.  $-5\frac{2}{3} + \frac{1}{9} - \frac{15}{18}$

Solve the equation. Check your solution.

\_\_\_\_\_ 134.  $50 = \frac{5}{2}x$

a. 25

c. 20

b. 125

d. 10

\_\_\_\_\_ 135.  $-\frac{2}{7}x = 36$

a. 126

c. -126

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

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

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

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

138.  $2\frac{1}{3}t - 22 = 41$

**Use the percent equation to answer the question.**

139. 12 is 20% of what number?

140. What percent of 25 is 7?

141. What number is 21% of 300?

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

**Find the new amount.**

\_\_\_ 143. Increase 30 by 80%.

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

\_\_\_ 144. Decrease 40 by 20%.

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

Solve the equation. Check your answer.

\_\_\_ 145.  $11x - 2 = 75$

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

\_\_\_ 146.  $4m + 7 = 35$

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

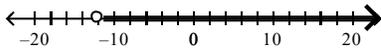
Solve the equation. Check your answer.

\_\_\_ 147.  $\frac{r}{4} + 14 = 46$

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

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

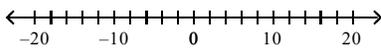
149. Which inequality is represented by the graph?



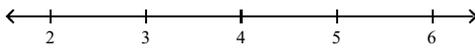
- a.  $m \leq -12$       b.  $m > -12$       c.  $m \geq -12$       d.  $m < -12$

Solve the inequality. Then graph its solution.

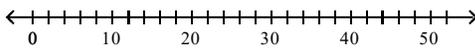
150.  $x - 28 \leq -9$



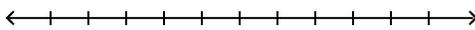
151.  $x - 4 \leq 0.9$



152.  $w + 8 \leq 18$



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

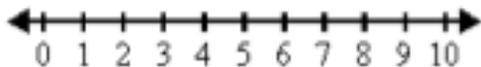


Write the inequality for the following sentence.

154. 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.

155.  $m \geq 6$



156. Find the mean of the integers.

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

\_\_\_\_ 157. 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

\_\_\_\_ 158. 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

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

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

161. 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?

**Use the given information to find the new amount.**

\_\_\_\_ 162. Original price: \$15  
Discount percent: 30%

- a. \$19.50                      b. \$10.50                      c. \$4.50                      d. \$14.55

163. 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?

164. 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?

165. Evaluate the expression  $\frac{5^2 - 1}{20 - 4^3 + 2}$ . Simplify the answer.

