



Mixture Stretch

1. _____ teaspoons



Ming's recipe for sweet tea calls for 4 teaspoons of sugar. If Ming wants to make the tea 25% less sweet, how much less sugar should he use?

2. _____

Carla is mixing cherry, grape and lime candies in a bowl. Since her favorite flavor is cherry, she wants $\frac{2}{5}$ of the candies to be cherry. Since her least favorite flavor is lime, she wants $\frac{1}{4}$ of the candies to be lime. What fraction of the candies will be grape? Express your answer as a common fraction.

3. _____

A paving company makes concrete by adding water to a mix that is 1 part cement, 3 parts sand and 3 parts aggregate (stone). What fraction of this mix is aggregate? Express your answer as a common fraction.

4. _____ ounces

A beef stew recipe calls for 12 ounces of beef, 4 ounces of carrots, 7 ounces of potatoes, 4 ounces of peas and 5 ounces of beef stock. Given that there are 16 ounces in a pound, how many ounces of potatoes are needed to make 4 pounds of this stew?



5. _____ %

Jin adds 1 gallon of a water-and-bleach mixture that is 4% bleach to 2 gallons of a water-and-bleach mixture that is 10% bleach. What percent of the final mixture is bleach?

6. \$ _____



Cashews cost \$2.36 per pound, almonds cost \$1.48 per pound and peanuts cost \$0.98 per pound. To make a 20% profit, how much should Myrna charge per pound for a mixture that is 1 part cashews, 1 part almonds and 2 parts peanuts?

7. _____ gallons

Manny's cleaning supply store receives a mixture of 80% detergent and 20% water in 15-gallon buckets. Manny would like a mixture of 60% detergent and 40% water in 5-gallon buckets. To make this, he combines some 80/20 mixture with some pure water in each 5-gallon bucket. How many gallons of pure water does Manny add to each 5-gallon bucket? Express your answer as a decimal to the nearest hundredth.

8. _____ buckets

Based on the information in problem 7, how many 5-gallon buckets of 60/40 solution can Manny make from one 15-gallon bucket of 80/20 solution?

9. _____ quarts



Dara is mixing her own paint color, using 3 parts green paint to 2 parts blue to 1 part white. Given that there are 4 quarts in a gallon, if she needs 3 gallons of her paint, how many quarts of white paint should she buy?

10. _____ g/cm³

To make a sand sculpture, Arthur used 2 cm³ of red sand with a density of 4 g/cm³, 7 cm³ of yellow sand with a density of 5 g/cm³ and 5 cm³ of brown sand with a density of 6 g/cm³. What is the average density of this sculpture in grams per cubic centimeter? Express your answer as a decimal to the nearest tenth.



Statistics Stretch

11. _____ A class of 28 students had a mean score of 72 on a math test. After the teacher realized that one of the questions had an alternative correct answer, he gave 4 points each to the 7 students who had given the alternative answer. What is the new mean test score?

12. _____ pages

stem	leaf
1	27 52 82
2	25 57 63 82 97
3	37 51 68 75

1|27 = 127 pages

The stem-and-leaf plot shows the number of pages in each book that Kalem read last summer. How many pages did Kalem read last summer?

13. _____ Based on the information in problem 12, what portion of the pages that Kalem read were in books having more than 275 pages? Express your answer as a common fraction.

14. _____ % A cafeteria offers apples, oranges and bananas with lunch. A student may take at most one of each fruit. Of the 61 students who got fruit with lunch, 5 students got only an apple and 7 got only an orange. Of the 16 students who got an apple and an orange, the 17 who got an orange and a banana, and the 20 who got an apple and a banana, 6 got all three fruits. What portion of the fruit taken by the 61 students were bananas? Express your answer to the nearest whole percent.

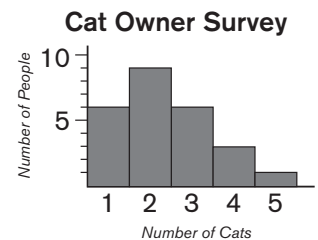
15. _____ **Chess Club Membership**

	6th	7th	8th
Beginners	1	?	5
Advanced	2	?	6

The table shows the grade and skill level of members of the chess club. If half of the members are eighth graders and one-third of the beginners are seventh-graders, what fraction of chess club members are advanced chess players? Express your answer as a common fraction.

16. _____ If A , M and R represent the arithmetic mean, median and range of the set $\{13, 16, 18, 23, 25, 28, 30, 31\}$, what is the value of $A + M - R$?

17. _____ cats This graph shows results of a survey of 25 cat owners. What is the mean number of cats per person surveyed? Express your answer as a decimal to the nearest hundredth.



18. _____ A total of 44 Mathletes competed in a MATHCOUNTS competition. The mean score for all the competitors was 28. The mean score for all competitors *except* the 16 highest scorers was 20. What was the mean score for the 16 highest scorers?

19. _____ % Bryce orders 6 bats, 60 baseballs and 8 gloves. If each bat costs \$29.95, a pack of 12 baseballs costs \$39.95 and a glove costs \$69.95, what portion of the total cost of this order is for the gloves? Express your answer to the nearest whole percent.

20. _____ % The graph shows the price for a popular running shoe over five months. What is the absolute difference of the percent change in price from February to April and the percent change in price from April to June? Express your answer to the nearest tenth of a percent.

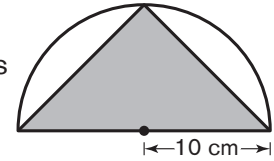




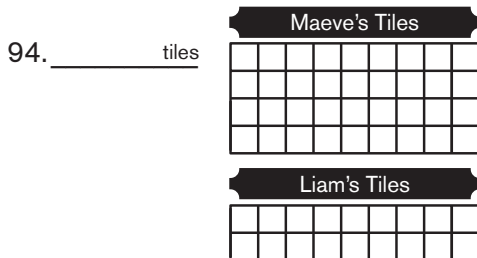
Warm-Up 7

91. _____ students This school term, 25% of the students in Ms. Norton's class earned a final grade of A. If 7 students earned an A this term, how many students are in Ms. Norton's class?

92. _____ cm² The figure shows an isosceles triangle inscribed in a semicircle of radius 10 cm. What is the area of the triangle?



93. _____ What is the integer value of $\frac{1.4 \times 10^5}{7 \times 10^2}$?

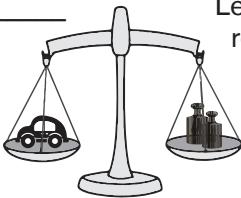


Maeve creates a design by painting $\frac{1}{3}$ of her square tiles. Liam creates a design by painting $\frac{5}{9}$ of his square tiles. What is the combined number of painted tiles in Maeve's and Liam's designs?

95. _____ If $\frac{a}{b} = \frac{2}{3}$ and $a + b = 100$, what is the value of b ?

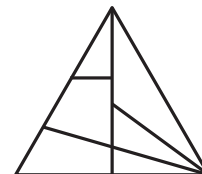
96. _____ The mean, median and unique mode of a list of five positive integers are all equal to 5. What is the greatest possible value of an integer in this list?

97. _____ Leah puts a toy car weighing 6 ounces on the left side of a balance. Then, reaching into a bag that contains four weights, measuring 1, 2, 4 and 5 ounces, she randomly removes two weights, without replacement. If she places the two weights on the right side of the balance, what is the probability that the balance levels? Express your answer as a common fraction.



98. _____ What is the value of $\frac{7^4 - 3^4}{7^2 + 3^2}$?

99. _____ triangles How many triangles of any size are in the figure shown?



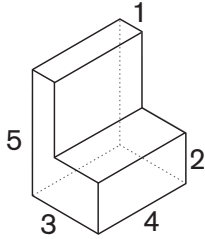
100. _____ arrange-
ments Sara and Ben make a playlist for a road trip. Each chooses 5 songs for the playlist, and they order the songs so that no two consecutive songs were added to the list by the same person. How many such song arrangements are possible for their playlist, assuming no song is repeated?



Warm-Up 8

101. _____ What number is one-third of two-fifths of 90?

102. _____ units³



What is the volume of the figure shown, in which all adjacent edges are perpendicular?

103. _____ When a number n is divided by -6 and the quotient is increased by 6 , the result is 3 . What is the value of n ?

104. _____ What common fraction is equivalent to $1 + \frac{1}{1 + \frac{1}{1 + \frac{1}{3}}}$?

105. _____ What is the absolute difference between the slope of the line passing through the points given in this table and the slope of the line given by $2x - y = 4$? Express your answer as a common fraction.

x	y
1	2
4	7
7	12

106. _____ What is the value of $2^5 \times 4^{-2}$?

107. _____ years old

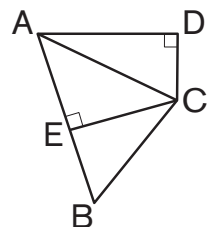


Armin's 13th birthday was on Saturday, July 4, 2020. How old will Armin be when his birthday next falls on a Saturday?

108. _____ What is the value of a in the geometric sequence $-1, 3, -9, a, -81$?

109. _____ Suppose that N is an integer such that 3^N is a factor of $10!$. What is the greatest possible value of N ?

110. _____ units In the figure shown, $CD = 6$ units, $m\angle CAD = 30^\circ$, $m\angle ACE = 45^\circ$ and $m\angle ABC = 60^\circ$. What is the length of segment EB ? Express your answer in simplest radical form.





Warm-Up 9

111. _____



A bag contains 12 hair bows: 5 red, 4 white and 3 blue. Jo Jo reaches into the bag and randomly pulls out two bows without replacement. What is the probability that those two bows are the same color? Express your answer as a common fraction.

112. _____

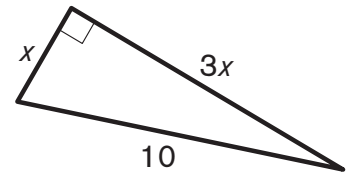
If $4\left(\frac{5}{8}x - \frac{1}{2}\right) = 3$, what is the value of x ?

113. _____

A fair coin is flipped 5 times. What is the probability that no two consecutive flips have the same result? Express your answer as a common fraction.

114. _____

A right triangle has side lengths x , $3x$ and 10, as shown. What is the value of x ? Express your answer in simplest radical form.



115. _____

What is the value of $4^{12} \times 125^7$? Express your answer in scientific notation.

116. _____ cm

Rachelle draws a rectangle of perimeter 46 cm and area 90 cm^2 . Evan draws a rectangle with twice the perimeter and half the area of Rachelle's rectangle. What is the smaller dimension of Evan's rectangle?

117. _____ coins

Tonya found \$2.25 in nickels and quarters in her sofa cushions. If the number of nickels Tonya found is five more than three times the number of quarters she found, what is the total number of coins Tonya found?

118. _____

A line passes through the points $(-7, 1)$, $(5, 7)$ and $(0, b)$. What is the value of b ? Express your answer as a common fraction.

119. _____

Every positive integer can be expressed in the form $6n + k$, where $0 \leq k \leq 5$. If 1841 is expressed in this form, what is the value of $n + k$?

120. _____ in^3

A lamp's base and shade are both cylindrical as shown. The shade has circumference 18π inches, which is three times that of the lamp's base. If the lamp's base is made of solid brass and has height 9 inches, what is the volume of brass in the lamp's base? Express your answer in terms of π .

