




Workout 7

201. _____ sides A regular polygon has interior angles between 128 degrees and 130 degrees. How many sides does the polygon have?

202. _____ cm  A cylinder has a volume of $240\pi \text{ cm}^3$ and a height of 15 cm. What is the distance between the center of one base and the edge of the other base? Express your answer as a decimal to the nearest hundredth.

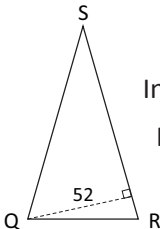
203. _____ laps Selina can run around the track 3 times in 8 minutes. Marta can run around the same track 2 times in 5 minutes. If Selina and Marta begin at the same time and the same place, what is the combined number of laps the girls both will have run when they next reach the starting point at the same time?

204. _____ girls This year, 200 boys and 250 girls attended Edison Middle School. If the number of boys enrolled were to increase by 10%, what is the maximum possible increase in the number of girls enrolled that would produce at most an 8% increase in the total student enrollment?

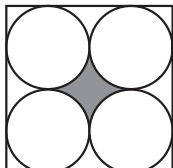
205. _____ unit cubes A cube consists of 64 white unit cubes. All exterior faces of the cube except the bottom face are painted red. How many of the unit cubes have exactly two faces painted red?

206. _____ cookies The four Mathletes® on the Descartes Middle School MATHCOUNTS team each calculated the mean number of cookies they brought for lunch on the days they brought bag lunches to school last month. Using the information in the chart, what was the mean number of cookies for all the bag lunches the four Mathletes brought last month? Express your answer as a decimal to the nearest hundredth.

Name	Mean Number of Cookies in Bag Lunch	Number of Bag Lunches Brought to School Last Month
Amy	2	16
Jerrold	4	12
Miguel	3	20
Patty	2	12

207. _____ mm  In isosceles triangle QRS, the length of base QR is $\frac{1}{5}$ the perimeter of the triangle. If the length of the altitude drawn from point Q to side SR is 52 mm, what is the perimeter of $\triangle QRS$? Express your answer as a decimal to the nearest tenth.

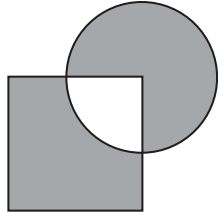
208. _____ What is the least positive integer n for which $\frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{n} > 2$?

209. _____ units²  In the figure shown, each circle is tangent to two other circles and to two sides of the square and has a radius of 7 units. What is the area of the shaded region? Express your answer as a decimal to the nearest hundredth.

210. _____ cm² What is the area of the largest possible quadrilateral with a perimeter of 24 cm?



Workout 8

231. _____ Quintavius adds the numbers 1 through 6 while Grizabella adds the numbers 1 through n . If Grizabella's sum is 5 times Quintavius' sum, what is the value of n ?
232. _____ °C The formula $T(h) = 100 - 0.0005h$, where h represents the number of feet above sea level, is an accurate estimate for the temperature, T , in degrees Celsius, at which water will boil. However, it provides a reasonable estimate only for $0 \leq h \leq 20,000$. What is the difference between the least and greatest values for $T(h)$ when h is within this range?
233. _____ units A circle is centered at one vertex of a square of side length 1 unit, as shown. If the areas of the two shaded regions are equal, what is the radius of the circle? Express your answer as a decimal to the nearest hundredth.
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234. _____ revolutions Jonathan's bicycle tires each have a diameter of 26 inches. If he rides his bicycle 100 feet in a straight line, how many complete revolutions will one of his tires make?
235. _____ A bag contains 4 blue and 3 yellow marbles. The marbles are removed from the bag one at a time without replacement. What is the probability that the fifth marble removed is yellow? Express your answer as a common fraction.
236. _____ The sequence 1, 3, 4, 7, ... is continued by adding the two preceding numbers to get the next term. What is the sum of the first 10 terms of this sequence?
237. \$ _____ A certain model of car decreases in value at a rate of 10% per year. If Helen paid \$25,000 for this model five years ago, how much is it worth now?
238. _____ numbers A shrinking number is a positive three-digit integer in which the hundreds digit is greater than the tens digit, and the tens digit is greater than the ones digit. In other words, for a three-digit number ABC , $A > B > C$. How many three-digit numbers are shrinking numbers?
239. _____ The raw scores on the physics group projects are 18, 29, 32, 35, 36, 49, 53, 64, 66. The teacher wants to rescale the scores using the linear formula $G = kR + c$, where G is the final grade and R is the raw score. She wants the highest score to scale to 100 and the median to scale to 80. What is the value of the product kc ? Express your answer as a common fraction.
240. _____ Rebecca cut shapes out of construction paper to create a face. The nose and mouth were created using an equilateral triangle and a semicircle, as shown. What is the ratio of the area of the nose to the area of the mouth if the perimeters of the nose and the mouth are equal? Express your answer as a decimal to the nearest hundredth.
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