



Warm-Up 15

211. 325 studs

A total of 1500 middle school students were surveyed. The results showed that $\frac{1}{4}$ of the students have a pet living in their homes, $\frac{1}{5}$ have a grandparent living in their homes and $\frac{1}{3}$ have a baby living in their homes. What is the least possible number of students who have no pets, grandparents or babies living in their homes?

212. 3

The first term in a sequence is 5, and each subsequent term in the sequence is the units digit of 2 more than the square of the preceding term. What is the 100th term in the sequence?

213. 56 studs

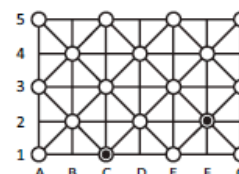


Seventy-eight students participate in one or more of three sports: baseball, tennis and golf. Four students participate in all three sports. Five students play only baseball and golf. Two students play only tennis and golf. Three students play only baseball and tennis. If seven students play only tennis, and one student plays only golf, what is the total number of students who play only baseball?

85, 84

214. or
84, 85

The lines in the grid shown indicate "sight lines." A soldier standing at one location can see a soldier standing at another location only if the soldiers are on the same sight line. Two soldiers are located at C1 and F2, respectively. What are the locations of two other soldiers if none of the four soldiers are able to see any of the others?



215. 200

A right triangle has legs of length $\frac{3}{2}$ units and $\frac{20}{3}$ units. If the triangle has a perimeter of x units and an area of y units², what is the value of $x^2 - y^2$?

216. 90

What is the coefficient of $x^2y^2z^2$ in the expansion of $(x + y + z)^6$?

217. 16/45

A two-digit positive integer is randomly selected. What is the probability that the units digit is a multiple of the tens digit? Express your answer as a common fraction.

218. 11 coins

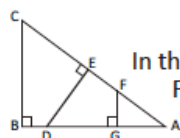
In Quaternion, the coin with the least value is the qua. Four quas equal one quab, four quabs equal one quac, four quacs equal one quad, four quads equal one quae and four quaes equal one quaf. What is the least number of coins that have a combined value of 2012 quas?



219. 2450 prs

How many different pairs of numbers (m, n) can be formed using numbers from the list of integers $\{1, 2, 3, \dots, 99, 100\}$ such that $m < n$ and $m + n$ is even?

220. 7 units



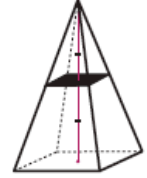
In the figure shown, right angles are as marked, $AG = 4$ units and $FG = FE$. If $FG:DE:CB = 1:2:3$, what is the length of CE ?



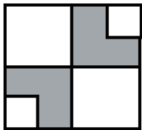
Warm-Up 16

221. 4 ints How many positive two-digit integers each have the property that the integer's value increases by 75% when its digits are reversed?

222. 8 cm³ The square pyramid shown has a volume of 64 cm³. A plane parallel to the base of the pyramid bisects its altitude and divides the pyramid into two sections, as shown. What is the volume of the smaller pyramid?



223. 4 If $x + \frac{4}{x} = y + \frac{4}{y}$ and $x \neq y$, then what is the value of the product xy ?

224. 37.5%  A large square is divided into four congruent squares. Then those four squares are each divided into four smaller congruent squares, some of which are shaded, as shown. What is the probability that a dart thrown at random that lands in the largest square will also land in a shaded region? Express your answer as a percent to the nearest tenth.

225. 1540 dance teams A 4-person dance team composed of 2 boys and 2 girls is to be selected from a group of 8 girls and 11 boys. How many different dance teams are possible?


226. 85 points Mrs. Garcia allowed each student in her class to drop the lowest of their five test scores. When Matt dropped the lowest of his test scores, a 60, his test average increased by 5 points. What is Matt's new test average?

227. 82 blocks What is the maximum number of 3" × 1" × 1" blocks that will fit into a box with interior dimensions of 5" × 5" × 10"?

228. 120 ° Using five identical index cards, the following structure can be created on a flat, level surface. What is the sum of the two marked angles on the side view of this construction?



229. 26 mi/h A cruise ship must average 22 mi/h for 10 hours to make its next port on schedule. During the first 4 hours, bad weather caused it to reduce its speed to 16 mi/h. What should its speed be for the remainder of the trip to make it to the next port on schedule?

230. 7/19  Ms. Robinson gives the following homework assignment: You must write an essay by tomorrow. You may work alone or in boy-girl pairs. As it turned out, $\frac{2}{3}$ of the boys and $\frac{3}{5}$ of the girls worked in pairs. What portion of the class worked alone? Express your answer as a common fraction.