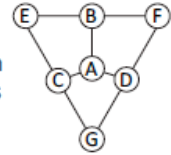


Warm-Up 17



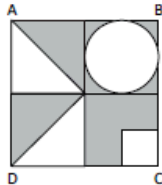
241. 4

Each of the letters A, B, C, D, E, F and G in the figure shown will be replaced with a different value from the set {1, 2, 3, 4, 5, 6, 7}. If the sums of the four numbers in each of the three quadrilaterals are each 15, what is the sum of all numbers that can replace A?



44-4π

242. _____ units²



Square ABCD, shown here, has side length 8 units and is divided into four congruent squares. One of these squares contains an inscribed circle, two other squares contain diagonals and the fourth square has perpendicular line segments drawn from the midpoints of adjacent sides to form a square in the interior. In square units, what is the total area of the shaded regions? Express your answer in terms of π .

243. 28

Five integers form an arithmetic sequence with a mean of 18. If the mean of the squares of the five integers is 374, what is the largest of the five original integers?

9

244. _____ whole numbers

The prime factorization of 75 is written, without exponents, as $3 \times 5 \times 5$. The sum of the prime factors is $3 + 5 + 5 = 13$. For how many whole numbers is the sum of each number's prime factors, without exponents, equal to 13?

30

245. _____ marbles

Xavier gave Yvonne and Zeena the same number of marbles as each already had. Then Yvonne gave Xavier and Zeena the same number of marbles as each already had. Then Zeena gave Xavier and Yvonne the same number of marbles as each already had. At that point, each person had 48 marbles. How many fewer marbles did Xavier have at the end than he had at the start?

49

246. \$ _____



The ratio of Barbara's cell phone bill to Tina's cell phone bill was 7:5. Barbara's bill was \$14 more than Tina's bill. How much was Barbara's bill?

72

247. _____ ways

In how many ways can four different positive integers be placed, one per box, so the sum of the integers is 13?



$-\sqrt{2}$

248. _____

Three numbers have a sum of 5 and the sum of their squares is 29. If the product of the three numbers is -10 , what is the least of the three numbers? Express your answer in simplest radical form.

$6/5$

249. _____

A box contains only quarters and dimes. If there were 10% more quarters, the total value of the money in the box would increase by 7.5%. What is the ratio of the number of quarters to the number of dimes in the box? Express your answer as a common fraction.



1008π

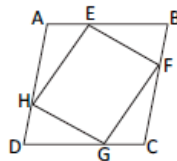
250. _____ units³

In trapezoid ABCD, angles A and D are right angles, and $AB = 4$ units, $DC = 16$ units and $BC = 15$ units. The trapezoid is revolved 360° around side AD to form the frustum of a cone. What is the volume of this frustum? Express your answer in terms of π .

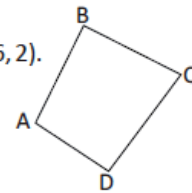


Warm-Up 18

251. 62,333 There are 240 pairs of numbers such as {7, 5318} or {17, 358} that can be formed using each of the digits 1, 3, 5, 7 and 8 exactly once. What is the largest possible product of two such numbers?
252. 40 ft If a rectangle with an area of 400 ft² is divided into two smaller rectangles with areas in the ratio of 3:1, what is the least possible value of the perimeter of the smaller rectangle?
253. 15 A set of seven different positive integers has a mean of 13. What is the positive difference between the largest and smallest possible values of its median?
254. 18 When written in a certain positive base b , 363 (base 10) is 123 (base b). What is the value of b ?
255. 100 units² Rhombus EFGH is inscribed in rhombus ABCD with point E on \overline{AB} , point F on \overline{BC} , point G on \overline{CD} and point H on \overline{AD} . If $AE:EB = BF:FC = CG:GD = DH:HA = 1:2$, and if the area of rhombus ABCD is 180 units², what is the area of rhombus EFGH?



256. 9 The solutions $x = u$ and $x = v$ of the quadratic equation $rx^2 + sx + t = 0$ are reciprocals of the solutions of the quadratic equation $(2 + a)x^2 + 5x + (2 - a) = 0$ for some integer a . If the GCF of r , s and t is 1, what is the value of $r + s + t$?
257. 5/8 A club with 22 students is forming a committee of either 4 or 5 students. What is the ratio of the number of different 4-person committees possible to the number of different 5-person committees possible? Express your answer as a common fraction.
258. 0 Quadrilateral ABCD has vertices at points $A(-9, 4)$, $B(-7, 8)$, $C(-3, 6)$ and $D(-6, 2)$. Quadrilateral WXYZ is congruent to quadrilateral ABCD and has vertices $W(2, -3)$, $X(4, 1)$ and $Y(8, -1)$ and a fourth vertex, Z . What is the sum of the coordinates of vertex Z ?



259. 210 units² A right triangle has integer side lengths a , b and c with $a < b < c$. If $a + c = 49$, what is the area of the triangle?
260. 4/3 units³ The cube with vertices A, B, C, D, E, F, G, H has edges of length 2 units. Point M is the midpoint of \overline{EH} and N is the midpoint of \overline{EF} . What is the volume of the tetrahedron with vertices A, C, M, N ? Express your answer as a common fraction.

