
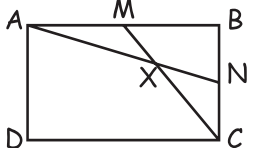
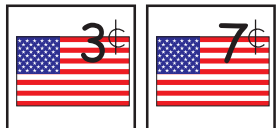


Warm-Up 15

- _____ cm A ball is dropped from a height of 120 cm and always bounces upwards $\frac{2}{3}$ of the height from which it falls. How high does the ball go between the third and fourth bounces? Express your answer to the nearest whole number.
- _____ Tom's graduating class has 288 students. At the graduation ceremony, the students will sit in rows with the same number of students in each row. If there must be at least 10 rows and at least 15 students in each row, then there can be x students in each row. What is the sum of all possible values of x ?
- _____ Suppose a regular hexagon has a perimeter equal to the circumference of a circle. What is the ratio of a side of the hexagon to the radius of the circle? Express your answer as a common fraction in terms of π .
- _____ There is a method traditionally used in some Russian villages to see which of the young women in the village are to be married the next year. Three blades of grass are folded in half and held in such a way that the six ends of the blades are visible but the rest of the blades are hidden. A young woman ties the ends together in pairs at random such that there are three knots and each end is tied to exactly one other end. If, on release, a three-blade loop is formed, the woman will be married the next year. What is the probability of getting a three-blade loop? Express your answer as a common fraction. 
- (_____, _____) The point $A(\frac{5}{2}, 0)$ is reflected over the line $y = \frac{1}{2}x$ to the point A' . What are the coordinates of A' ? Express any non-integer coordinate as a common fraction.
- _____ triangles How many different right triangles with integer side lengths have one leg 15 units long?
- _____ The sum of the reciprocals of three prime numbers is $\frac{167}{285}$. What is the sum of the three prime numbers?
- _____ Points M and N are the midpoints of sides AB and BC , respectively, of rectangle $ABCD$. If segments AN and CM intersect at point X , what fraction of the area of rectangle $ABCD$ lies in the quadrilateral $BNXM$? Express your answer as a common fraction. 
- _____ arr Diane has one stamp of each positive integer value 1 cent through 9 cents, inclusive. She wants to put 10 cents worth of postage in a row across the top of an envelope. If arrangements of the same stamps in a different order are considered different, how many arrangements are possible? 
- _____ integers How many positive three-digit integers have the property that the tens digit is greater than or equal to the hundreds digit and the ones digit is greater than or equal to the tens digit?

Problem #2 is from the 2007 National Competition Sprint Round.