

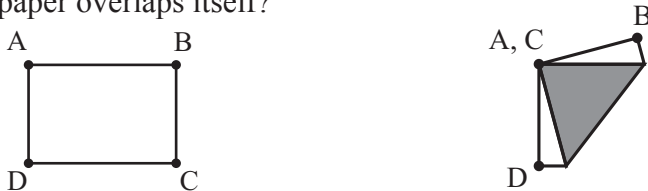
1. What is the largest five-digit integer whose digits have a product equal to the product $(7)(6)(5)(4)(3)(2)(1)$? 1. _____
2. In triangle ABC, the measure of $\angle A$ is 86 degrees. The measure of $\angle B$ is 22 degrees more than three times the measure of $\angle C$. What is the measure, in degrees, of $\angle C$? 2. _____ degrees
3. Given that a particular positive integer is a four-digit palindrome, what is the probability that it is a multiple of 99? Express your answer as a common fraction. 3. _____
4. What is the largest integer less than 2010 that has a remainder of 5 when divided by 7, a remainder of 10 when divided by 11, and a remainder of 10 when divided by 13? 4. _____
5. The measures of the interior angles of a convex hexagon form an increasing arithmetic sequence. How many such sequences are possible if the hexagon is not equiangular and all of the angle degree measures are positive integers less than 150 degrees? 5. _____ sequences

6. Six-digit integers will be written using each of the digits 1 through 6 exactly once per six-digit integer. How many different positive integers can be written such that all pairs of consecutive digits of each integer are relatively prime? (Note: 1 is relatively prime to all integers.)

6. _____ integers

7. A sheet of paper 12 inches by 18 inches is folded so that two opposite corners touch, as shown in the figures below. What is the area, in square inches, of the shaded triangle formed where the paper overlaps itself?

7. _____ sq inches



8. A rectangular box has a volume of 4320 cubic inches and a surface area of 1704 square inches. The sum of the lengths of its 12 edges is 208 inches. What would be the volume of the box, in cubic inches, if its length, width and height were each increased by one inch?

8. _____ cu inches

9. Two numbers between 0 and 1 on a number line are to be chosen at random. What is the probability that the second number chosen will exceed the first number chosen by a distance greater than $\frac{1}{4}$ unit on the number line? Express your answer as a common fraction.

9. _____

10. A square and isosceles triangle of equal height are side-by-side, as shown, with both bases on the x -axis. The lower right vertex of the square and the lower left vertex of the triangle are at $(10, 0)$. The side of the square and the base of the triangle on the x -axis each equal 10 units. A segment is drawn from the top left vertex of the square to the farthest vertex of the triangle, as shown. What is the area of the shaded region?

10. _____ sq units

