

Student Name: _____

1. If $ac + ad + bc + bd = 42$ and $c + d = 3$, what is the value of $a + b + c + d$?

Answer: _____

2. In multiplying two positive integers X and Y, Mike reversed the digits of the two-digit number X. His erroneous product was 91. What is the correct value of the product of X and Y?

Answer: _____

3. How many zeros are at the end of $25!^2$ when evaluated? ($n! = 1 \times 2 \times 3 \times \dots \times n$)

Answer: _____

4. Two points are randomly chosen on a circle. What is the probability that the distance between them is less than the radius of the circle?

Answer: _____

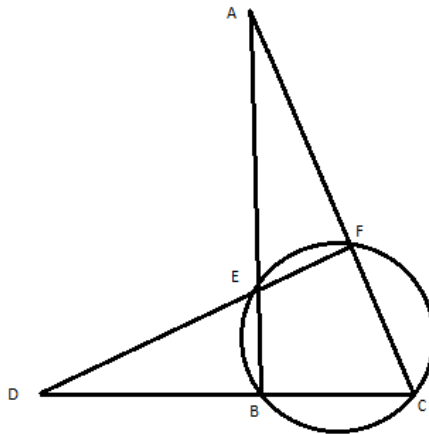
5. A cube has side length 7. Tunnels are dug through the cube in the following way: a square hole of side length 1 is drilled from the centre of each face across to the centre of the opposite face. What is the volume of the resulting solid?

Answer: _____

6. Suppose that $4^a = 5$, $5^b = 6$, $6^c = 7$, $7^d = 8$. What is the value of $a \times b \times c \times d$?

Answer: _____

7. EFCB a quadrilateral inscribed to a circle. Given $\angle BAC = 32^\circ$ and $\angle BEF = 120^\circ$, what is the measure of $\angle CDF$?



Answer: _____

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8. The 9 reindeer of Santa put their names in a hat and each of them draws one at random, without replacement. Each reindeer grabs the tail of the reindeer it draws (possibly itself). What is the probability the reindeer will end up in a single loop of 9?

Answer: _____