Student Name: _____
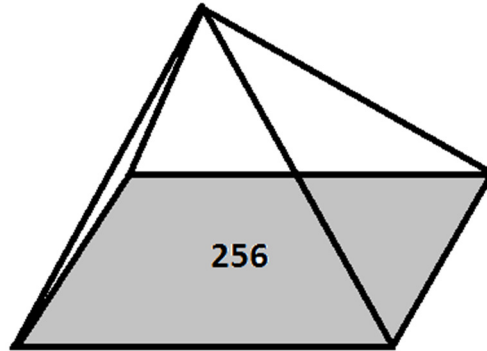
1. One day Cindy said, "I have been alive for all or part of four decades." Rounded to the nearest year, what is the youngest Cindy could have been?

   Answer: _____

2. A pyramid is constructed using a square base, and four equilateral triangles. If the area of the square (the base) is 256, what is the height of the pyramid?

   Answer: _____

3. Find the smallest positive integer that leaves a remainder of 1 when divided by 2, 3, 4, 5, and 6.

   Answer: _____

4. Bob wants to write down some of the natural numbers from 1 to 10 in strictly increasing order. For example, Bob could have only written 2, or he could have written 3, 4, 9, 10. How many possible sequences of numbers could he have written (Note: Bob has to write down at least one of the numbers from 1 to 10)?

   Answer: _____

5. Write $1 \times 2 \times 3 \times \ldots \times 15$ as a product of prime powers.

   Answer: _____

6. How many natural numbers less than 1000 contain at least one 9?

   Answer: _____

Student Name: _____

7. Brian shuffled a standard deck of cards (without the jokers) and randomly drew 4 cards. What is the probability that he drew at least one Ace? (A standard deck of cards contains 52 cards)

Answer: _____

8. Three real numbers x, y and z are randomly chosen between 0 and 1 inclusive. What is the probability that $x^2 + y^2 + z^2 \leq 1$?

Answer: _____