There are 10 problems on this exam. Only those problems that say “explain” require explanations. Answers that require explanations will be given at most half credit without the required explanation. Be sure to follow all directions. Give all approximate answers correct to the nearest hundredth.

1. On the centimeter grid dot paper below accurately draw the net for a triangular prism whose height is 2 cm and whose base is a right triangle with legs of length 3 cm and 4 cm. (6 points)

   ![Diagram of a triangular prism net](image)

2. What is the surface area of the prism in problem 1? Show all necessary calculations to explain. (6 points)

3. What is the volume of the prism in problem 1? Show all necessary calculations to explain. (5 points)
4. On the centimeter grid dot paper below accurately draw the net for a square pyramid whose height is 2 cm and whose base has sides of length 3 cm. (6 points)

5. What is the surface area of the pyramid in problem 4? Show all necessary calculations to explain. (6 points)

6. What is the volume of the pyramid in problem 4? Show all necessary calculations to explain. (5 points)
7. (a) Draw the net for a closed cone with a base diameter of 2.4 cm and a slant height of 3.7 cm. Drawing does not have to be drawn to scale. (3 points)

(b) Determine the surface area and the volume of this cone. (12 points)

   Surface Area = __________________________

   Volume = ______________________________

8. (a) Draw the net for a closed cylinder with a base diameter of 8 cm and a height of 7 cm. (3 points)

(b) Determine the surface area and the volume of this cylinder. (12 points)

   Surface Area = __________________________

   Volume = ______________________________
9. There are eight men and twelve women members of a local club. Determine the following. Briefly explain each answer. (4 points each)

(a) In how many different ways can the club select a President, Vice-President, Secretary and Treasurer?

(b) In how many different ways can six members of the club be selected to plan an upcoming charity event?

(c) In how many ways can the six members be selected in part (b) if the same number of men and women must be selected?

(d) In how many ways can the six members be selected in part (b) if more men than women must be selected?
10. Consider the experiment of selecting a four-card hand from a special deck consisting of 10 red cards, 10 blue cards, 8 green cards and 4 yellow cards. Determine the following. Briefly explain each answer. (5 points each)

(a) What is the probability that each card in the hand is red?

(b) What is the probability that the cards in the hand are different colors?

(c) What is the probability that the hand contains two red cards and two green cards?

(d) What is the probability that none of the cards in the hand are green?

(e) What is the probability that the cards in the hand are the same color?