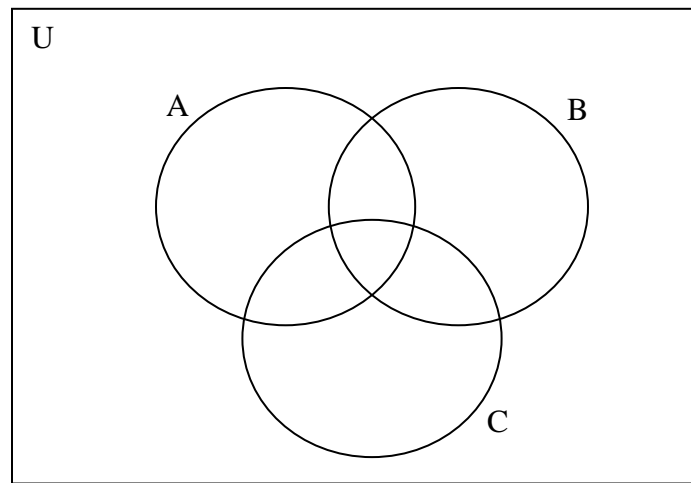


There are 15 problems on this exam. Only those problems that say “explain” require explanations. Answers that require explanations will be given at most half credit without the required explanation. Be sure to follow all directions.

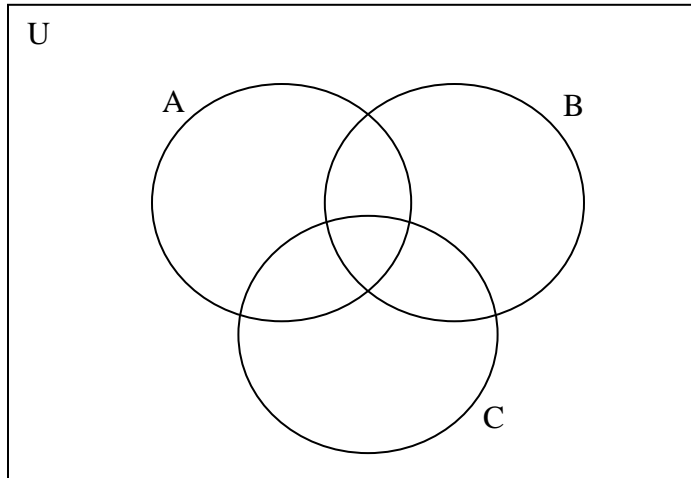
1. One hundred people attended the Simon family reunion. Fifty people brought apple pies to the reunion and forty brought cherry pies. Twelve people brought apple and banana pies. Sixteen people brought banana and cherry pies. Eight people brought only cherry pies and six people brought only banana pies. One person brought all three types of pies. Determine how many of the hundred people fit in each section of the following Venn diagram and then answer the questions below. (16 points)



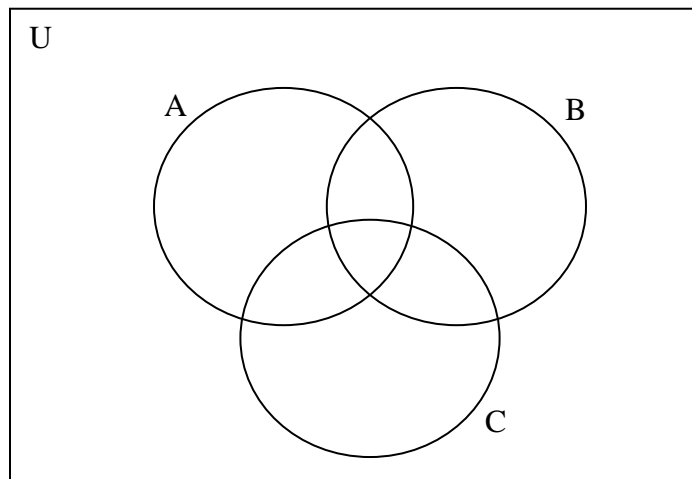
- (a) How many people brought none of these types of pies to the reunion?
- (b) How many people brought banana pies to the reunion?
- (c) How many people are in $A \cup B$?
- (d) How many people are in $\overline{B} \cap \overline{C}$?

2. Shade the region(s) of the Venn diagram corresponding to the given set. Briefly explain how you decided which region(s) to shade. (5 points each)

(a) $(A \cup B) \cap C$



(b) $(B \cup C) - A$



In problems 8-12 use an appropriate model to solve the problem. BRIEFLY explain your model in the context of the problem and be sure to answer the question(s) posed by the problem. (8 points each)

8. Mary's little lamb grew up. She now has a sheep farm. She has two pens in which she keeps her sheep. One pen holds eight sheep and the other holds four sheep. How many sheep does Mary have?

9. The Owl and the Pussycat make four trips across Moon Lake. Each trip covered a total of two miles. How far did the Owl and the Pussycat travel?

10. Cinderella is redecorating the palace. She wants to make a coverlet for her bed. If the bed measures two yards by three yards, how much fabric will she need for the coverlet?

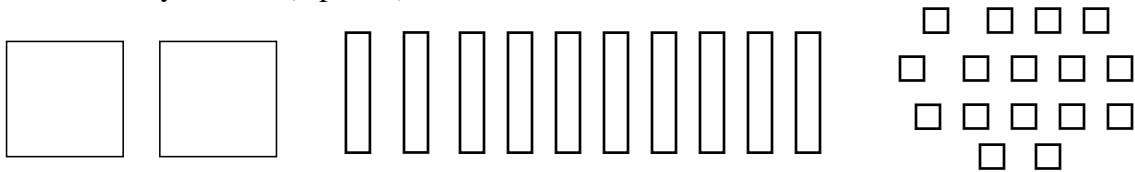
11. Billy gives three carrots to each of his two goats daily. If he has a package of twenty carrots, how many days can he feed the goats? Will there be any carrots left?

12. Belle went to the masquerade ball. She danced with five of the twelve charming men that were in attendance. If she wants to dance with each of the men, how many more dances will she have to complete?

13. Start at 42 and count by ones in Base Six. Record your counting in the boxes. (5 pts)

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14. What number is represented by the Base Six blocks shown below? Show any necessary trades. (5 points)



15. What property is illustrated in each of the following diagrams? Spell correctly and be specific. Diagrams are not drawn to scale. (2 points each)

(a)

Red	Red	Dark Green
Purple		Dark Green
Orange		

Red	Red	Dark Green
Red	Brown	
Orange		

(b)

