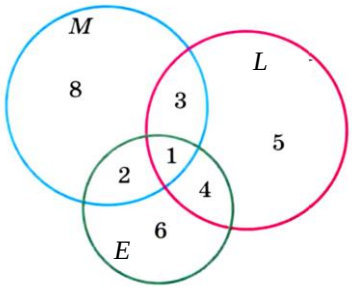
A and G 1. Class work 27.

Algebra.

Revew of sets.

1. A set is a collection of well defined objects. We can create a set just by listing all of its elements. For example, set A contains 2,5, v, n, •, ◊. We denote, $A = \{2,5, v, n, \bullet, \Diamond\}$. The second way to create a set is to describe a rule, which is applicable to all elements in the set. For example: set N is the set of natural numbers.
2. If *B* is a set and *x* is one of the objects of *B*, this is denoted $x \in B$, and is read as "x belongs to B", or "x is an element of B". If *y* is not a member of *B* then this is written as $y \notin B$, and is read as "y does not belong to B".
3. $C = \{2, 5\}$, $C \subset A$
   Each element of the set C is also an element of set A, so C is subset of A.
   C is also a subset of N, since 2 and 5 are natural numbers. We can write $C \subset N$.
   The empty set is a subset of every set and every set is a subset of itself:
   - $\emptyset \subset A$.
   - $A \subset A$.
4. A set, containing elements which are common elements of two sets is called intersection of the two sets. $C = A \cap B$.
5. Two sets can be "added" together. The *union* of *D* and *M*, denoted by $D \cup M$, is the set of all things that are members of either *D* or *M*
6. We can divide set into two or more subsets in such a way that each element of the set will be in only one of these subsets, intersection of any two subsets will be an empty set. The set of non-intersecting subsets is called partition of the set. For example, the set of natural numbers N can be partitioned into two sets, of even and odd numbers. Each natural number is easer even or odd.
7. $M = \{x|\ x > 5\},\ K = \{x|x < 20\}$
   $M \cap K =$
8. $A = \{a, b, c, d\},\ B = \{c, d, e, f\}, C = \{c, e, g, k\}.$
   $(A \cap B) \cap C =$
   $(A \cup B) \cup C =$

9. In the picture on the right, set M represents students of the 7-th grade, who participated in the math Olympiad, set L represents 7-th graders who participated in the Literature Olympiad, and set E represents the English Art Olympiad participants. How many students,
   a. Participated in the Math Olympiad?
   b. In the Math and English Olympiads?
   c. In the Literature and English Olympiads?
   d. In any of the three Olympiads?
   e. In all three Olympiads?
   f. In any two Olympiads?
   g. How many 7-th graders did take part in Olympiads?
   h. How many students did not participate in any Olympiad, if there are 60 students in the 7th grade?



Problems Revew.

1. Two pipes fill together a pool in 1 h and 20 minutes. If the fist pipe is open for 10 minutes, and the second pipe is open for 12 minutes, the pool will be filled on 2/15. How fast each pipe will fill the pool?
2. Simplify the expression:

   $(x^2 + y^2 + x + y)(x + y + xy) =$

3. In a restaurant, customer can order a cheese platter for $15 or $20. For $15 platter, you can choose 3 different kind of cheese out of 15 and for $20 platter you can choose 5 different kind of cheese. How many different ways are there to create these two cheese platters?
4. Using the algebraic identities calculate:
   $a.$ $91 \cdot 89$; $b.$ 61^2;

   $c.$ $\left(\sqrt{10} + \sqrt{11}\right)\left(\sqrt{11} - \sqrt{10}\right)$;

5. Simplify:

   $\left(\sqrt{28} - 3\sqrt{5}\right) - \left(\sqrt{7} + \sqrt{20}\right)$