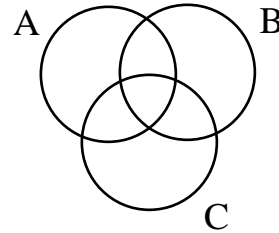


1. On a line mark two points. How many segments were formed? Add one point. How many segments are there now? Add one more point. How many segments are there now? How many segments 6 points will form on the line? 10? 99?
2. 3 lines intersect at 1 point and form 6 angles. One is  $44^\circ$ , another is  $38^\circ$ . Can you find all other angles? Draw the picture. Use protractor and ruler.
3. The length of the segment  $[MN] = 12$  cm. Point B divides the segment  $[MN]$  into two segments. Find the distance between the centers of these two segments. Explain your answer.

4. Draw Venn diagram for sets A, B, and C as on the picture. Shade the following areas;

- a.  $A \cap B$ ;
- b.  $A \cap C$ ;
- c.  $A \cup B$ ;
- d.  $A \cup C$ ;
- e.  $(A \cap B) \cup C$ ;
- f.  $A(\cup) \cap C$ ;
- g.  $(A \cap C) \cup (B \cap C)$



5. Set  $A = \{2, 5, 6, 8, 12, 19, 24, 32, 45, 47\}$ .

Write subsets of the set A

- a. of prime numbers
- b. of composite numbers
- c. divisors of 24
- d. not multiples of 2
- e. multiples of 3 and 5
- f. multiples of 3 or multiples of 5
- g. divisors of 8 or divisors of 12
- h. divisors of 8 and 12.

6. Simplify the following expressions (rewrite the expressions without parenthesis, combine like terms);

Example:

$$(2x + 3) \cdot (x + 7) = 2xx + 2x \cdot 7 + 3x + 3 \cdot 7 = 2x^2 + 17x + 21$$

a.  $(x - 1)(x + 1)$ ;

b.  $(a + 1)(a + 1)$ ;

c.  $(x + 5)(x + y + 3)$

d.  $(k - 1 + d)(k - d)$ ;

e.  $\frac{2}{3} + 2x\left(\frac{1}{2} - \frac{1}{3}y\right) - x - \frac{1}{3}(2 - 2xy)$

f.  $2x^2(x + y) - 3x^2(x - y)$ ;

7. Sea water contains 5% salt (by weight). How many kilograms of fresh water should be added to 40 kg of sea water to obtain a solution with 2% salt?

8. Positive or negative value of  $m$  will make the following equalities true statements?

$$|m| = m$$

$$m = -m$$

$$|m| = -m$$

$$m + |m| = 0$$

$$-m = |-m|$$

$$m + |m| = 2m$$

$$m = |-m|$$

$$m - |m| = 2m$$

