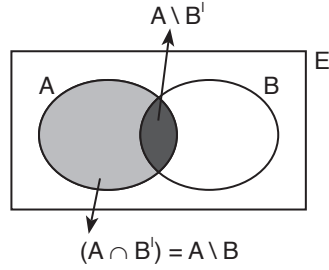
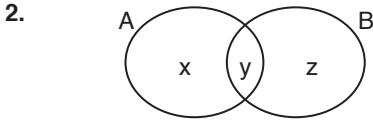


1.  $A \subset E, B \subset E$   
 $(A \cap B^c) \cup (A^c \cap B)$   
 $= (A \setminus B) \cup (A^c \cap B)$   
 $= \boxed{A}$



Cevap: A



$$n(A \cup B) = x + y + z = 28$$

$$n(A \setminus B) + n(B \setminus A) = 6n(A \cap B) \Rightarrow x + z = 6y \Rightarrow x + z = ?$$

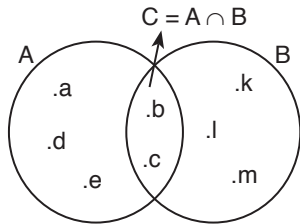
$$x + y + z = 28 \Rightarrow \underbrace{x + z + y}_{6y} = 28 \Rightarrow 7y = 28$$

$$\Rightarrow y = 4$$

$$\Rightarrow x + z = 6y \Rightarrow x + z = 6 \cdot 4 = \boxed{24}$$

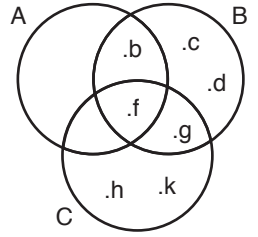
Cevap: E

3.  $A = \{a, b, c, d, e\}$   
 $B = \{b, c, k, l, m\}$   
 $C = A \cap B = \{b, c\}$
- $$B \cup \underbrace{(A \cap C)}_C = B \cup C = B$$



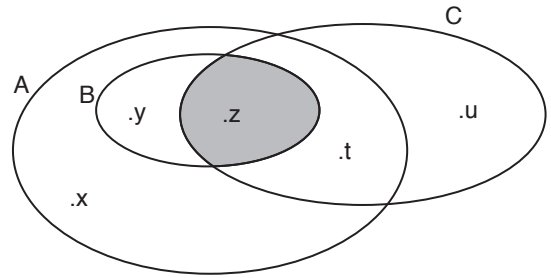
Cevap: A

4.  $A/B = \{x \mid x \in A \wedge x \notin B\}$   
 $B/C = \{x \mid x \in B \wedge x \notin C\}$   
 $\underbrace{(A/C)} \cap \underbrace{(A/B)}$   
 $\{a, b\} \cap \{a, e\} = \boxed{a}$



Cevap: D

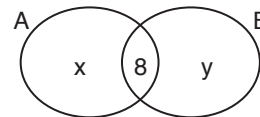
- 5.



$$A - \underbrace{(B \cap C)}_z = \{x, y, z, t\} - \{z\} = \{x, y, t\}$$

Cevap: D

- 6.



$$s(A \cup B) = x + y + 8 = 29$$

$$\Rightarrow \boxed{x + y = 21}$$

$$s(A) - s(B) = \frac{s(A \setminus B)}{4}$$

$$s(A) = x + 8 = ?$$

$$(x + 8) - (y + 8) = \frac{x}{4}$$

$$x - y = \frac{x}{4} \Rightarrow y = \frac{3x}{4}$$

$$x + y = x + \frac{3x}{4} = \frac{7x}{4} = \frac{3}{4} \cdot 21$$

$$\boxed{x = 12}$$

$$\Rightarrow s(A) = x + 8 = 12 + 8 = \boxed{20}$$

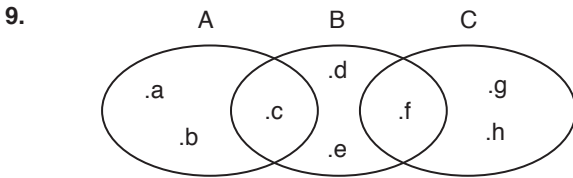
Cevap: E

7.  $A = \{x \mid 2 \leq x < 98, x = 2k, k \in \mathbb{N}\} = \{2, 4, 6, \dots, 96\}$   
 $B = \{y \mid 15 \leq y \leq 120, y = 5m, m \in \mathbb{N}\} = \{15, 20, 25, \dots, 120\}$   
 $A \cap B = (2k) \cap (5m) = 10l$  (10'un katı olan sayılar)  
 $B - A = B - (A \cap B)$   
 $= \{15, 20, 25, \dots, 120\} - \{20, 30, 40, \dots, 90\}$   
Terim =  $\frac{120 - 15}{5} + 1$  sayısı = 22  
Terim =  $\frac{90 - 20}{10} + 1$  sayısı = 8  
 $\Rightarrow s(B - A) = 22 - 8 = 14$

Cevap: E

8.  $A = \{x \mid |x| < 4, x \in \mathbb{R}\} \Rightarrow -4 < x < 4$   
 $B = \{x \mid -2 \leq x \leq 7, x \in \mathbb{Z}\} = \{-2, -1, 0, 1, 2, \dots, 7\}$   
 $s(A \cap B) = 6$

Cevap: C



$$n((B - C) \cap (B - A)) = ?$$

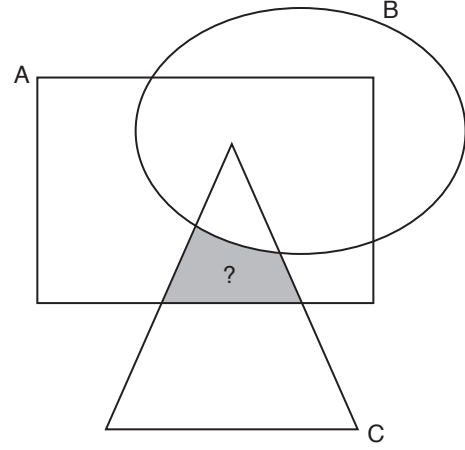
$$B - C = \{c, d, e\}, \quad B - A = \{d, e, f\}$$

$$(B - C) \cap (B - A) = \{d, e\}$$

$$\Rightarrow n((B - C) \cap (B - A)) = 2$$

Cevap: B

10.



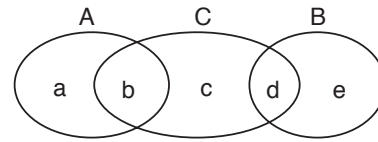
Şekli incelersek; taralı bölgenin içinde B kümesinden hiçbir kısım yok.

Buna göre şıkları incelersek; B kümesinin çıkarıldığı E) şıkkı sorumuzun cevabıdır.

$$\text{Taralı bölge} = (A \cap C) \setminus B$$

Cevap: E

11.



$$n(A) = a + b = 30$$

$$n(B) = d + e = 12 \Rightarrow e = 8$$

$$\downarrow$$

$$4$$

$$n(C) = \underbrace{b + c + d}_{20} = 24 \Rightarrow d = 4$$

$$n(C \setminus B) = b + c = 20$$

$$n(A \cup C) = \underbrace{a + b + c + d}_{30} = 45 \Rightarrow c + d = 15 \Rightarrow c = 11$$

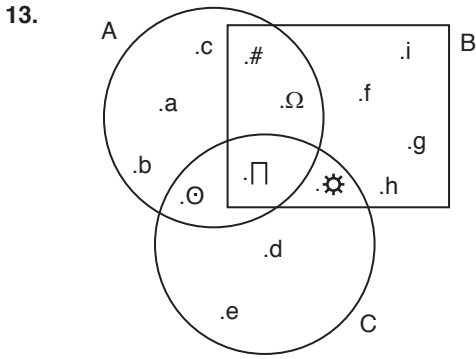
$$n((C \setminus A) \cup (B \setminus C)) = c + d + e = 11 + 4 + 8 = 23$$

Cevap: C

12.  $A = \{n : n < 75, n = 3k, k \in \mathbb{Z}^+\} = \{3, 6, 9, \dots, 72\}$   
 $B = \{n : n < 100, n = 4k, k \in \mathbb{Z}^+\} = \{4, 8, 12, \dots, 96\}$   
 $n(A \cap B) = 12k = \{12, 24, 36, \dots, 72\}$   
 $n(A \cup B) = n(A) + n(B) - n(A \cap B) = 24 + 24 - 6 = \boxed{42}$

$$\left. \begin{aligned} n(A) &= \frac{72-3}{3} + 1 = 24 \\ n(B) &= \frac{96-4}{4} + 1 = 24 \\ n(A \cap B) &= \frac{72-12}{12} + 1 = 6 \end{aligned} \right\} \text{Terim sayısı formülünden}$$

Cevap: B



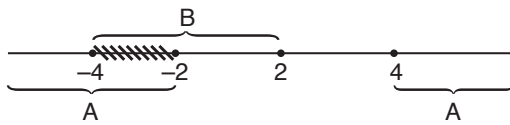
$$A \cup B = \{a, b, c, \emptyset, \square, \Omega, \#, \odot, f, g, h, i\}$$

$$C^c = \{a, b, c, \Omega, \square, f, g, h, i\}$$

$$\Rightarrow [(A \cup B) \setminus C^c] = \{\emptyset, \square, \odot\}$$

Cevap: D

14.  $A = \{x : x \in \mathbb{R}, |x-1| \geq 3\}$   
 $|x-1| \geq 3 \Rightarrow x-1 \geq 3 \text{ ve } x-1 \leq -3$   
 $\boxed{x \geq 4} \quad \boxed{x \leq -2}$   
 $B = \{y : y \in \mathbb{R}, |y+1| \leq 3\}$   
 $|y+1| \leq 3 \Rightarrow -3 \leq y+1 \leq 3$   
 $\boxed{-4 \leq y \leq 2}$

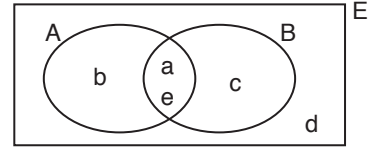


$$\Rightarrow A \cap B = [-4, -2]$$

Cevap: A

15.  $E = \{a, b, c, d, e\}$   
 $A \cup B \subset E$   
 $x^c = E \setminus x$   
 $A \setminus B = \{b\}$   
 $A^c \cap B^c = \{d\}$   
 $A^c \cup B^c = \{b, c, d\}$   
 $B = ?$

Venn şeması çizerek verilen kümeleri şekil üzerinde gösterelim.



Buna göre;  $B = \{a, c, e\}$

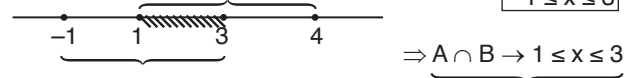
Cevap: A

16.  $A = \{x : x \in \mathbb{R}, x^2 - 5x \leq -4\} \Rightarrow x^2 - 5x + 4 \leq 0$   
 $\downarrow \quad \downarrow$   
 $x \quad -4$   
 $x \quad -1$   
 $(x-4) \cdot (x-1) \leq 0$   
 $x-4=0 \Rightarrow x=4$   
 $x-1=0 \Rightarrow x=1$   
 $\Rightarrow \boxed{1 \leq x \leq 4}$

$$B = \{x : x \in \mathbb{R}, |x-1| \leq 2\} \Rightarrow -2 \leq x-1 \leq 2$$

$$-2+1 \leq x \leq 2+1$$

$$\boxed{-1 \leq x \leq 3}$$



Şıkları inceleyip buradaki ifadeyi elde etmeye çalışalım

- A)  $|x+1| \leq 2 \rightarrow -2 \leq x+1 \leq 2 \rightarrow -3 \leq x \leq 1$  olmaz!  
 B)  $|x+2| \leq 2 \rightarrow -2 \leq x+2 \leq 2 \rightarrow -4 \leq x \leq 0$  olmaz!  
 C)  $|x+1| \leq 3 \rightarrow -3 \leq x+1 \leq 3 \rightarrow -4 \leq x \leq 2$  olmaz!  
 D)  $|x-2| \leq 2 \rightarrow -2 \leq x-2 \leq 2 \rightarrow 0 \leq x \leq 4$  olmaz!  
 E)  $|x-2| \leq 1 \rightarrow -1 \leq x-2 \leq 1 \rightarrow 1 \leq x \leq 3$  olur.

Cevap: E

17.  $A = \{a, b, c, d, e, f\} \rightarrow$  en az 4 elemanlı kaç tane alt kümesi vardır?

$$4 \text{ elemanlı} \rightarrow \binom{6}{4} = \binom{6}{2} = \frac{6 \cdot 5}{2} = \boxed{15}$$

$$5 \text{ elemanlı} \rightarrow \binom{6}{5} = \binom{6}{1} = \boxed{6}$$

$$6 \text{ elemanlı} \rightarrow \binom{6}{6} = \boxed{1}$$

$$\Rightarrow 15 + 6 + 1 = \boxed{22} \text{ tane}$$

Cevap: E

18.  $A = \{0, 2, 4, 6, 8, 10\}$

$B = \{(x, y) \mid x + y = 10, x \in A, y \in A\} \rightarrow$  eleman sayısı = ?

$$\left. \begin{array}{l} x + y = 10 \\ \downarrow \downarrow \\ 0 \ 10 \\ 10 \ 0 \\ 2 \ 8 \\ 8 \ 2 \\ 4 \ 6 \\ 6 \ 4 \end{array} \right\} \text{ 6 tane } (x, y) \text{ ikilisi var. O halde B kümesinin eleman sayısı 6'dır.}$$

Cevap: E

19.  $A = \{x \mid 1 \leq x \leq 150, x = 4(\text{mod } 5)\} \rightarrow$  x'in 5'e bölümünden kalan 4

$$A = \{9, 14, 19, 24, \dots, 149\}$$

$B = \{y \mid 75 \leq y \leq 200, y = 2(\text{mod } 3)\} \rightarrow$  y'nin 3'e bölümünden kalan 2

$$B = \{77, 80, 83, 86, 89, \dots, 200\}$$

89 sayısının 3'e bölümünden kalan "2"  
5'e bölümünden kalan "4"

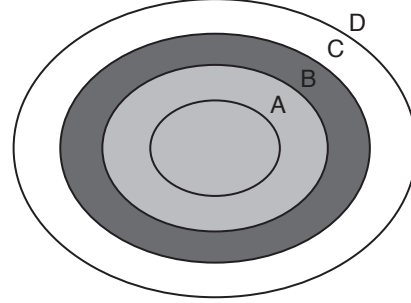
$A \cap B$ 'yi bulmak için ilk eleman olan 89'a 15 ekleyerek devam etmemiz yeterli.

$$A \cap B = \{89, 104, 119, 134, 149, 164, 179, 194\}$$

$$\Rightarrow s(A \cap B) = \boxed{8}$$

Cevap: E

20.  $A \subset B \subset C \subset D$



$$A \cup B = B$$

$$(A \cup B) \cap (C \setminus B) = \emptyset$$

$$\underbrace{[(A \cup B) \cap (C \setminus B)]}_{\emptyset} \cup D = \boxed{D}$$

Cevap: E