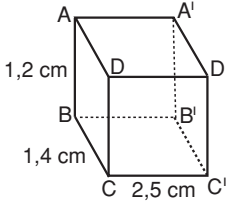


# Katı Cisimlerin Alan ve Hacimleri

## TEST 3

1.



$$V = 1,2 \times 2,5 \times 1,4$$

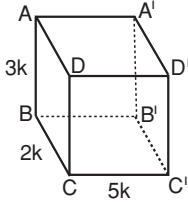
$$= \frac{12}{10} \cdot \frac{25}{10} \cdot \frac{14}{10}$$

$$= \frac{6 \cdot 5 \cdot 7}{5 \cdot 2 \cdot 5} = \frac{21}{5} = 4,2 \text{ m}^3$$

$$= 4200 \text{ lt}$$

**Cevap: D**

2.



$$V = 1920$$

$$\Rightarrow 30k^3 = 1920$$

$$\Rightarrow k^3 = 64$$

$$\Rightarrow \boxed{k = 4} \text{ bulunur.}$$

$$\text{Alan} = 2 \cdot A(\text{ABCD}) + 2 \cdot A(\text{ABB}'\text{A}') + 2 \cdot A(\text{BCB}'\text{C}')$$

$$= 2 \cdot (3k \cdot 2k + 5k \cdot 2k + 5k \cdot 3k)$$

$$= 2 \cdot (6k^2 + 10k^2 + 15k^2)$$

$$= 2 \cdot 31k^2 = 62k^2$$

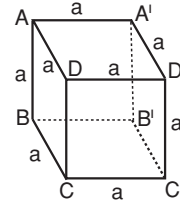
$$\Rightarrow 62k^2 = 62 \cdot 4^2$$

$$= 62 \cdot 16$$

$$= 992 \text{ cm}^2$$

**Cevap: A**

3.



Bir kenarı a cm olsun

$$V = a \times a \times a = a^3$$

$$a^3 = 125$$

$$\boxed{a = 5} \text{ bulunur.}$$

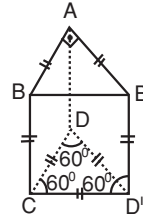
$$\text{Alan} = 6 \cdot A(\text{ABCD})$$

(Küpün 6 tane kare olan yüzeyi vardır. Alanı bu yüzeylerin alanları toplamıdır.)

$$\text{Alan} = 6 \cdot 5^2 = 150 \text{ cm}^2$$

**Cevap: C**

4.



Bütün kenarlar eşit olsun

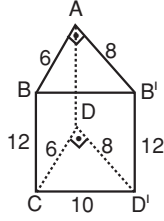
Prizmanın hacmi = Taban Alanı x Yükseklik

$$V = \frac{8^2 \cdot \sqrt{3}}{4} \cdot 8$$

$$= 128\sqrt{3}^3 \text{ cm olur.}$$

**Cevap: B**

5.



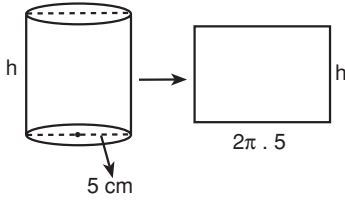
$$\text{Alan} = 2 \cdot \frac{6 \cdot 8}{2} + 12 \cdot 6 + 12 \cdot 8 + 10 \cdot 12$$

$$= 48 + 72 + 96 + 120$$

$$= 336 \text{ cm}^2$$

Cevap: A

6.



Silindirin Alanı = 2 tane taban

Alanı + (Silindir açıldığında oluşan dikdörtgenin alanı)

$$\begin{aligned} \text{Silin Alanı} &= 2\pi \cdot 5^2 + 2\pi \cdot 5 \cdot h \\ &= 50\pi + 10\pi h = 130\pi \end{aligned}$$

$$\Rightarrow 50 + 10h = 130$$

$$10h = 80$$

h = 8 bulunur.

Silindirin hacmi = V = Taban Alanı x Yükseklik

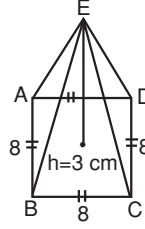
$$= \pi 5^2 \cdot h$$

$$= \pi 5^2 \cdot 8$$

$$= 200\pi \text{ cm}^3$$

Cevap: C

7.



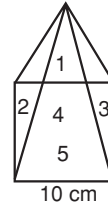
ABCD karedir.

$$V = \frac{\text{Taban Alan} \times \text{Yükseklik}}{3}$$

$$V = \frac{8^2 \cdot 3}{3} = 64 \text{ cm}^3$$

Cevap: D

8.



Kare dik piramittir.

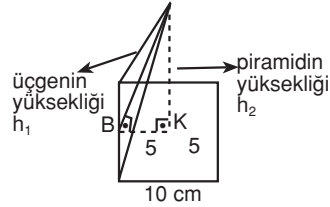
5 yüzey vardır. Biri tabandır. Kare olan tabanın alanı:

$$\begin{aligned} A &= 10^2 \\ &= 100 \text{ cm}^2 \end{aligned}$$

$$360 - 100 = 260 \text{ cm}^2$$

$$\frac{260}{4} = 65 \text{ cm}^2$$

Eşit üçgenel yüzeylerde her birinin alanıdır.



$$\frac{10 \cdot h_1}{2} = 65$$

$$10h_1 = 130$$

$$h_1 = 13$$

 $\widehat{ABC}$  dik üçgeninde

$$h_1^2 = h_2^2 + 5^2 \Rightarrow h_2^2 = 12^2 \Rightarrow h_2 = 12$$

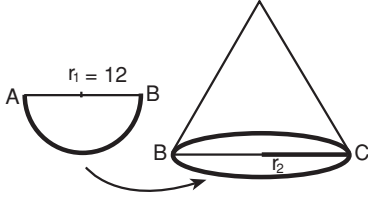
Piramidin hacmi

$$= \frac{1}{3} \cdot (\text{Karenin alanı}) \cdot h_2$$

$$= \frac{1}{3} \cdot 100 \cdot 12 = 400$$

Cevap: C

9.



Koninin kapalı hâli yukarıdaki gibidir.

$$\text{Yan alan} : \frac{\pi \cdot r^2}{2} = \frac{144 \pi}{2} = 72\pi$$

$$2\pi r_1 = 2\pi \cdot 12$$

$$= 24\pi$$

$$\frac{24\pi}{2} = 12\pi$$

$$12\pi = 2\pi r_2$$

$$r = 6 \text{ (Koninin daire olan tabanının yarı çapı)}$$

$$\text{Alan} = \pi r^2$$

$$= \pi 6^2$$

$$= 36\pi$$

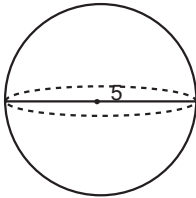
$$\text{Tüm alan} = \text{Yan alan} + \text{Taban alan}$$

$$= 72\pi + 36\pi$$

$$= 108\pi$$

**Cevap: B**

10.



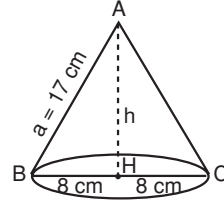
$$\text{Karenin alanı} = 4\pi r^2$$

$$= 4\pi 5^2$$

$$= 100\pi$$

**Cevap: A**

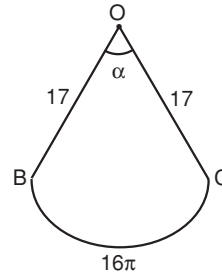
11.



$$h^2 + 8^2 = 17^2$$

$$h = 15 \text{ bulunur. } (\widehat{AHB}) \text{ de pisagor}$$

Açılmış hali



O merkezli daire dilimi elde ederiz.

$$\text{O merkezli dairenin çevresi} = 2\pi \cdot 17$$

$$= 34\pi$$

$$\text{Dairenin alanı} = \pi \cdot 17^2 = 289\pi$$

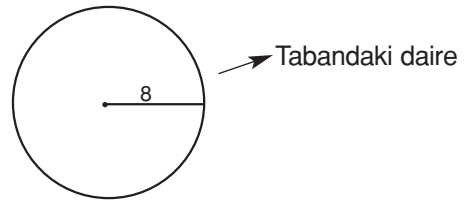
$$34\pi \text{ lik dilim için}$$

$$289\pi \text{ alan}$$

$$16\pi \text{ lik dilim için}$$

$$x$$

$$x = 136\pi \text{ olur.}$$



$$\text{için alan} = \pi r^2 = 64\pi$$

$$\text{Toplam alan} = 136\pi + 64\pi$$

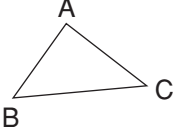
$$= 200\pi$$

**Cevap: D**

12. A) Şıkkı doğrudur. Örneğin bir sayfa üzerine kibrit kutusunu dikine koyduğunuzda iki köşesi yukarıda kalır.

B) Şıkkı da doğrudur.

C)

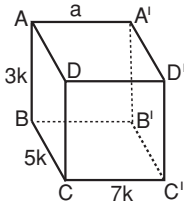


ABC bir düzlemdir.

D) Doğru düzlem belirtmez!

**Cevap: D**

13.



$$|CC'| = 7k$$

$$|BC| = 5k$$

$$|AB| = 3k$$

$$\text{Alan} = 2 \cdot (7k \cdot 5k + 5k \cdot 3k + 7k \cdot 3k)$$

$$= 2 \cdot (35k^2 + 15k^2 + 21k^2)$$

$$= (142k^2)$$

$$= 142k^2 = 568$$

$$k^2 = 4$$

$$k = 2 \text{ bulunur.}$$

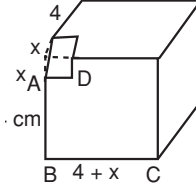
$$V = \text{Taban Alan} \times \text{Yükseklik}$$

$$= (7k \cdot 5k) \cdot 3k = 1054k^3 = 105 \cdot 2^3$$

$$V = 105 \cdot 8 = 840 \text{ cm}^3$$

**Cevap: C**

14.



Kalan tahtanın hacmi = (Büyük küpün hacmi) – (Küçük küpün hacmi)

$$= (4 + x)^3 - x^3 = 208$$

$$= x^3 + 12x^2 + 48x + 64 - x^3 = 208$$

$$= 12x^2 + 48x + 64 = 208$$

$$= 12x^2 + 48x - 144 = 0$$

$$= x^2 + 4x - 12 = 0$$

$$\begin{array}{cc} \swarrow & \searrow \\ +6 & -2 \end{array}$$

$$(x + 6)(x - 2) = 0$$

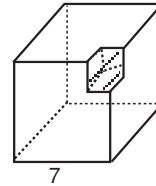
$$\Rightarrow x - 2 = 0$$

$$x = 2 \text{ bulunur.}$$

$$|BC| = 4 + x = 4 + 2 = 6$$

**Cevap: A**

15.



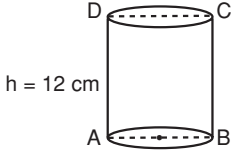
V = (Büyük küpün hacmi) – küçük küpün hac.

$$= 7^3 - (3)^3$$

$$= 343 - 27 = 316 \text{ cm}^3$$

**Cevap: B**

16.



Yukarıdaki şekildeki silindir gibi 12 kalem 2 sıra halinde 6 şar dizilecek

Kutunun uzunluğu  $\rightarrow 6 \cdot 1 = 6$

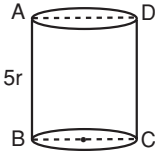
Kutunun genişliği  $\rightarrow 2 \cdot 1 = 2$

Kutunun yüksekliği  $\rightarrow 12$  cm olur.

Kutunun hacmi  $= 6 \cdot 2 \cdot 12$   
 $= 144 \text{ cm}^3$  bulunur.

Cevap: D

17.



Silindirin Yanal Alanı  $= 2\pi r \cdot 5r$

$= 10\pi r^2 = 250\pi$

$r^2 = 25$

$r = 5$  cm bulunur.

$V = \text{Taban Alan} \times \text{Yükseklik}$

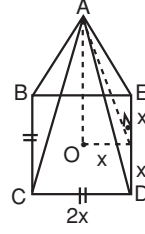
$= \pi r^2 \cdot 5r$

$= \pi \cdot 5^2 \cdot 5 \cdot 5$

$= 625\pi \text{ cm}^3$

Cevap: A

18.



BCDE bir kare,

$\widehat{ABC}$ ,  $\widehat{ADE}$ ,  $\widehat{ACD}$ ,  $\widehat{ABE}$  eşkenar üçgendir.

$[AK] = h$  çizilir.

$\widehat{ADE}$  eşkenar üçgende

$[AK]$  yükseklik olur.

$$|AK| = \frac{2x \cdot \sqrt{3}}{2} = x\sqrt{3}$$

$\widehat{AOK}$ 'inde

$$|AK|^2 = |AO|^2 + |OK|^2$$

$$(x\sqrt{3})^2 = h^2 + x^2$$

$$2x^2 = h^2$$

$$h = x\sqrt{2} \text{ olur.}$$

$$\text{Hacim} = \frac{\text{Karenin Alanı} \times \text{Yükseklik}}{3}$$

$$V = \frac{4x^2 \cdot x\sqrt{2}}{3} = 36\sqrt{2}$$

$$= 4x^3 = 3 \cdot 36 = 108$$

$$\Rightarrow x^3 = 27$$

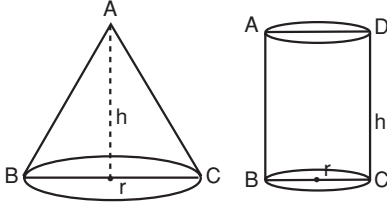
$$x = 3 \text{ bulunur.}$$

$$\Rightarrow \text{Taban alanı} = (2x)^2$$

$$= (2 \cdot 3)^2 = 36 \text{ cm}^2$$

Cevap: B

19.



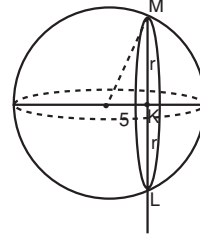
$$\begin{aligned} \text{Koninin hacmi} &= \frac{\text{Taban Alan} \times \text{Yükseklik}}{3} \\ &= \frac{\pi r^2 \cdot h}{3} \end{aligned}$$

$$\begin{aligned} \text{Silindirin hacmi} &= \text{Taban Alanı} \times \text{Yükseklik} \\ &= \pi r^2 \cdot h \end{aligned}$$

$$\begin{aligned} \Rightarrow \frac{\text{Koninin hacmi}}{\text{Silindirin hacmi}} &= \frac{\frac{\pi r^2 \cdot h}{3}}{\pi r^2 \cdot h} \\ &= \frac{1}{3} \text{ buluruz.} \end{aligned}$$

Cevap: B

20.



IKMI = IKLI = r (kesilenkısımda oluşan dairenin yarıçapı olsun.)

$$\text{Kesit dairesinin alanı} = \pi r^2 = 24\pi$$

$$\boxed{r^2 = 24} \text{ bulunur.}$$

IOMI → Kürenin yarıçapı

$\widehat{OMK}$ 'ninde;

$$\begin{aligned} \text{IOMI}^2 &= r^2 + 5^2 \\ &= 24 + 25 \end{aligned}$$

$$\text{IOMI}^2 = 49$$

$$\text{IOMI} = 7 \text{ bulunur.}$$

Cevap: D