

**30 GÜNDE DGS
TEKRAR
DGS-13**

- *Rasyonel Sayılar*
 - *Üslü Sayılar*
- 

1. $\frac{(1 + \frac{1}{3}) \cdot (2 - \frac{1}{4})}{(2 + \frac{1}{3})}$ (Paydalar eşitlenirse)

$$= \frac{\frac{4}{3} \cdot \frac{7}{4}}{\frac{7}{3}} = \frac{7}{7} = 1 \text{ bulunur.}$$

Cevap: C

2. $\frac{\frac{2}{3} - \frac{3}{4} \cdot \frac{5}{6}}{\frac{1}{2} - \frac{1}{6}} = \frac{\frac{2}{3} - \frac{5}{8}}{\frac{1}{2} - \frac{1}{6}} = \frac{\frac{16-15}{24}}{\frac{3-1}{6}} = \frac{1}{24} \cdot \frac{6}{2} = \frac{1}{8}$

Cevap: A

3. $\frac{1 + \frac{1}{4}}{2 - \frac{1}{2}} - \frac{1}{5} \cdot (2 - \frac{1}{3}) = \frac{\frac{5}{4}}{\frac{3}{2}} - \frac{1}{5} \cdot (\frac{5}{3})$

$$= \frac{5}{4} \cdot \frac{2}{3} - \frac{1}{5} \cdot \frac{5}{3}$$

$$= \frac{5}{6} - \frac{1}{3} = \frac{3}{6} = \frac{1}{2}$$

Cevap: A

4. $3\frac{5}{18} - 1\frac{1}{6} + 2\frac{1}{4} - 3$

$$\frac{59}{18} - \frac{7}{6} + \frac{9}{4} - \frac{3}{1} = \frac{118 - 42 + 81 - 108}{36}$$

$$= \frac{199 - 150}{36}$$

$$= \frac{49}{36}$$

Cevap: A

5. $(1 + \frac{1}{2}) \cdot (1 - \frac{1}{3}) \cdot (1 - \frac{1}{5}) \cdot (1 + \frac{1}{30}) \cdot (1 - \frac{1}{31})$

$$\frac{3}{2} \cdot \frac{2}{3} \cdot \frac{4}{5} \cdot \frac{31}{30} \cdot \frac{30}{31} = \frac{4}{5}$$

Cevap: A

6. $(\frac{1 + \frac{4}{5}}{1 - \frac{4}{5}}) : (1 - \frac{1}{4} - \frac{4}{5}) = \frac{9}{5} : (1 + \frac{5}{4})$

$$= \frac{9}{5} \cdot \frac{5}{1} : (\frac{9}{4})$$

$$= 9 \cdot \frac{4}{9} = 4$$

Cevap: E

7. $2 - \frac{1}{3 + \frac{1}{2 - \frac{1}{2}}} : \frac{9}{88} = 2 - \frac{1}{3 + \frac{1}{\frac{2}{2}}} : \frac{9}{88}$

$$= 2 - \frac{3}{11} \cdot \frac{88}{9}$$

$$= 2 - \frac{8}{3} = \frac{-2}{3}$$

Cevap: D

8. $(1 - \frac{1}{2})(1 - \frac{1}{3})(1 - \frac{1}{4}) \dots (1 - \frac{1}{a}) = \frac{1}{8}$

$$\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{3}{4} \dots \frac{a-1}{a} = \frac{1}{8}$$

$$\frac{1}{a} = \frac{1}{8} \Rightarrow a = 8$$

Cevap: B

9. $\frac{3}{4} + \frac{33}{44} + \frac{333}{444} + \dots + \frac{33333333}{444444444}$

$$\frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \dots + \frac{3}{4} = 8 \cdot \frac{3}{4} = 6$$

8 tane

Cevap: A

$$10. \frac{1}{1+\frac{1}{2}} \cdot \frac{1}{1+\frac{1}{3}} \cdot \frac{1}{1+\frac{1}{4}} \cdots \frac{1}{1+\frac{1}{n}} = \frac{2}{11}$$

$$\frac{1}{\frac{3}{2}} \cdot \frac{1}{\frac{4}{3}} \cdot \frac{1}{\frac{5}{4}} \cdots \frac{1}{\frac{n+1}{n}} = \frac{2}{11}$$

$$\frac{2}{3} \cdot \frac{3}{4} \cdot \frac{4}{5} \cdots \frac{n}{n+1} = \frac{2}{11}$$

$$\frac{2}{n+1} = \frac{2}{11} \Rightarrow n+1 = 11$$

$$n = 10$$

Cevap: C

$$11. \frac{0,34 - 1,6}{0,012} = \frac{\frac{34}{100} - \frac{16}{10}}{\frac{12}{1000}}$$

$$= \frac{\frac{340}{1000} - \frac{1600}{1000}}{\frac{12}{1000}}$$

$$= \frac{-1260}{1000} \cdot \frac{100}{12}$$

$$= -105$$

Cevap: D

$$12. \frac{0,2}{0,04} + \frac{0,6}{0,003} - \frac{2}{0,01} = \frac{20}{4} + \frac{600}{3} - \frac{200}{1}$$

$$= 5 + 200 - 200$$

$$= 5$$

Cevap: B

$$13. \left(\frac{0,6+0,03}{2,3-1,6} \right) \cdot \frac{5}{0,3} = \frac{0,63}{0,7} \cdot \frac{5}{0,3} = \frac{\frac{63}{100}}{\frac{7}{10}} \cdot \frac{5}{\frac{3}{10}} = \frac{15}{1} = 15$$

Cevap: E

$$14. \frac{2}{0,0001} \cdot (0,04 - 0,004) = \frac{2,0000}{0,0001} \cdot \left(\frac{4}{100} - \frac{4}{1000} \right)$$

$$= \frac{20000}{1} \cdot \left(\frac{40-4}{1000} \right)$$

$$= 20.000 \cdot \frac{36}{1000} = 720$$

Cevap: A

$$15. \frac{0,004x + 0,3}{0,007x + 0,05} = \frac{3}{4}$$

$$\frac{1000 \cdot (0,004x + 0,3)}{1000 \cdot (0,007x + 0,05)} = \frac{3}{4}$$

$$\frac{4x + 300}{7x + 50} = \frac{3}{4}$$

$$16x + 1200 = 21x + 150$$

$$1050 = 5x$$

$$210 = x$$

Cevap: C

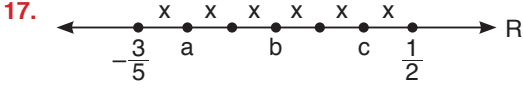
$$16. \frac{0,000a}{0,00a} + \frac{1}{10} + 0,8$$

$$\frac{10000(0,000a)}{10000(0,00a)} + \frac{1}{10} + \frac{8}{10}$$

$$\frac{a}{10a} + \frac{1}{10} + \frac{8}{10}$$

$$\frac{1}{10} + \frac{1}{10} + \frac{8}{10} = \frac{10}{10} = 1$$

Cevap: C



$$\frac{1}{2} - \left(-\frac{3}{5}\right) = 6x$$

$$\frac{1}{2} + \frac{3}{5} = 6x \Rightarrow \frac{11}{10} = 6x$$

$$x = \frac{11}{60}$$

$$a = -\frac{3}{5} + x = -\frac{3}{5} + \frac{11}{60} = -\frac{25}{60} = -\frac{5}{12}$$

$$b = -\frac{3}{5} + 3x = -\frac{3}{5} + \frac{11}{20} = -\frac{1}{20}$$

$$c = -\frac{3}{5} + 3x = -\frac{3}{5} + \frac{11}{20} = -\frac{1}{20}$$

$$\Rightarrow -\frac{5}{12} - \frac{1}{20} + \frac{19}{60} = \frac{-25-3+19}{60} = -\frac{9}{60} = -\frac{3}{20}$$

Cevap: C

18. $\frac{a+9}{3} + \frac{b+20}{5} + \frac{c-35}{7}$

$$= \frac{a}{3} + \frac{9}{3} + \frac{b}{5} + \frac{20}{5} + \frac{c}{7} - \frac{35}{7}$$

$$= \frac{a}{3} + \frac{b}{5} + \frac{c}{7} + 3 + 4 - 5$$

$$= 32 + 2 = 34$$

Cevap: B

19. $\frac{3a-2}{9}$ basit kesir ise

$$|3a-2| < 9 \text{ olmalı}$$

$$-9 < 3a-2 < 9$$

$$-7 < 3a < 11$$

$$-\frac{7}{3} < a < \frac{11}{3}$$

1, 2, 3 ve toplamları 1 + 2 + 3 = 6 olur.

Cevap: B

20. $\frac{5}{3} = a, \bar{b} \Rightarrow \frac{5}{3} = \frac{ab-a}{9}$

$$\frac{5}{3} = \frac{10a+b-a}{9} \Rightarrow \frac{5}{3} = \frac{ab-a}{9} \Rightarrow 15 = 9a + b$$

$$\Rightarrow b, a-0, a=6, 1-0, 1=6$$

Cevap: D

21. $-\frac{1}{A} = \frac{3}{4} + \frac{4}{5} + \frac{5}{6}$

$$+ \quad ? = \frac{19}{4} + \frac{24}{5} + \frac{29}{6}$$

$$? - A = \frac{16}{4} + \frac{20}{5} + \frac{24}{6}$$

$$? - A = 4 + 4 + 4$$

$$? = 12 + A$$

Cevap: A

22. $\frac{a}{c} \cdot \frac{c}{a} \cdot \left(1 + \frac{c}{b}\right)$

$$= \cancel{a} \cdot \frac{\cancel{b}}{\cancel{c}} \cdot \frac{\cancel{c}}{\cancel{a}} \cdot \frac{1}{\cancel{b}} \left(\frac{b+c}{b}\right)$$

$$= \frac{b+c}{b}$$

Cevap: E

23. Toplam 900 + 1200 = 2100 gr pastadan Ali Can'dan 300 gr fazla alacaksa

Ali = 1200 gr ve Can = 900 gr almalıdır.

Ali 1. pastanın iki dilimini almışsa

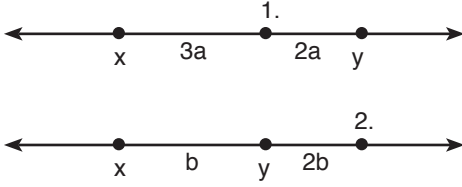
$$900 \cdot \frac{2}{3} = 600 \text{ gr almıştır.}$$

O halde 2. pastadan da 1200 - 600 = 600 gr almıştır.

$$2. \text{ pastanın } \frac{600}{1200} = \frac{1}{2} \text{ 'si alınmıştır.}$$

Cevap: A

24.



1. sayının 2. sayıya uzaklığı $2a + 2b = 3$
x ile y arası uzaklık $5a = b$

$$\begin{aligned} & \begin{array}{c} 5a \\ \downarrow \\ \Rightarrow 2a + 2b = 3 \\ 12a = 3 \\ a = \frac{1}{4} \\ \Rightarrow b = 5 \cdot a = 5 \cdot \frac{1}{4} = \frac{5}{4} \text{ olur.} \end{array} \end{aligned}$$

Cevap: B

25.

$$\frac{\overbrace{5-6-6-6\ldots}^{x \text{ hamle}}}{\underbrace{6-5-5-5\ldots}_{y \text{ hamle}}} = \frac{5}{6}$$

$$\frac{5-6x}{6-5y} = \frac{5}{6} \Rightarrow 30-36x = 30-25y$$

$$36x = 25y$$

en az $x = 25$

$$\begin{array}{r} + y = 36 \\ \hline x + y = 61 \text{ hamle} \end{array}$$

Cevap: E

26.

$$\frac{(-1)^4 + (-2)^3 - (-1)^3}{-3^2 - 2 \cdot (-2^2)} = \frac{1-8+1}{-9+2 \cdot 4} = \frac{-6}{-1} = 6$$

Cevap: D

27.

$$\begin{aligned} & \frac{0,8 \cdot 10^{-4} - 0,02 \cdot 10^{-3}}{6 \cdot 10^{-5}} \\ &= \frac{8 \cdot 10^{-5} - 2 \cdot 10^{-5}}{6 \cdot 10^{-5}} \\ &= \frac{6 \cdot 10^{-5}}{6 \cdot 10^{-5}} = 1 \end{aligned}$$

Cevap: D

28.

$$\frac{(x^{-1})^2 \cdot (-x^5)}{(-x)^{-8} \cdot (-x^4)} = \frac{x^{-2} \cdot -x^5}{x^{-8} \cdot -x^4} = \frac{-x^3}{-x^{-4}} = x^7$$

Cevap: C

29.

$$\begin{aligned} & \frac{\left(-\frac{1}{4}\right)^3 \cdot (-2^2)}{(4)^{-3}} = \frac{(-2^{-2})^3 \cdot (-2^2)}{(2^2)^{-3}} \\ &= \frac{-2^{-6} \cdot -2^2}{2^{-6}} \\ &= 2^2 \\ &= 4 \end{aligned}$$

Cevap: E

30.

$$\begin{aligned} & \frac{3^x + 3^x + 3^x + 3^x}{3^x \cdot 3^x \cdot 3^x} = \frac{4}{9} \Rightarrow \frac{4 \cdot 3^x}{(3^x)^3} = \frac{4}{9} \\ & \frac{3^x}{3^{3x}} = \frac{1}{9} \Rightarrow 3^{x-3x} = 3^{-2} \Rightarrow -2x = -2 \\ & x = 1 \end{aligned}$$

Cevap: A

31.

$$\begin{aligned} & \underbrace{x \cdot x \cdot x \cdot \ldots \cdot x}_{x \text{ tane}} = 256 \Rightarrow x^x = 256 = 4^4 \Rightarrow x = 4 \\ & \underbrace{y \cdot y \cdot y \cdot \ldots \cdot y}_{y \text{ tane}} = 27 \Rightarrow y^y = 27 = 3^3 \Rightarrow y = 3 \\ & \Rightarrow x + y = 4 + 3 = 7 \end{aligned}$$

Cevap: E

32. • $2^{x-2} + 2^x = 20$

$$2^x \left(\frac{1}{4} + 1 \right) = 20$$

$$2^x \cdot \frac{5}{4} = 20$$

$$2^x = 16 = 2^4 \Rightarrow x = 4$$

• $2^x + 3^y = 97$

$$2^4 + 3^y = 97$$

$$16 + 3y = 97 \Rightarrow 3^y = 81 = 3^4 \Rightarrow y = 4$$

Cevap: D

33. $(36)^x = 4^x \cdot 9^x = (2^x)^2 \cdot (3^x)^2 = m^2 \cdot n^2$

Cevap: D

34. $\left(1 - \frac{1}{2}\right) \cdot \left(1 - \frac{1}{3}\right) \cdot \left(1 - \frac{1}{4}\right) \cdot \dots \cdot \left(1 - \frac{1}{27}\right) = 3^x$

$$\frac{1}{2} \cdot \frac{2}{3} \cdot \frac{3}{4} \cdot \dots \cdot \frac{26}{27} = 3^x$$

$$\frac{1}{27} = 3^x \Rightarrow 3^{-3} = 3^x \Rightarrow x = -3$$

Cevap: E

35. $\frac{4}{4^{x-1} + 1} + \frac{208}{4^{x+1} + 16} = 1$

$$\frac{4}{\frac{4^x}{4} + 1} + \frac{208}{4(4^x + 4)} = 1$$

$$\frac{4 \cdot 4}{4^x + 4} + \frac{52}{4^x + 4} = 1$$

$$68 = 4^x + 4$$

$$4^x = 64 \Rightarrow x = 3$$

Cevap: B

36. $\frac{2^{a-1}}{3} + \frac{2}{2^{-a}} = \frac{52}{3}$

$$\frac{2^{a-1}}{3} + 2^{1+a} = \frac{52}{3}$$

$$\frac{2^{a-1} + 3 \cdot 2^{a+1}}{3} = 52$$

$$2^a \left(\frac{1}{2} + 3 \cdot 2 \right) = 52$$

$$2^a \cdot \frac{13}{2} = 52$$

$$2^a = 8 = 2^3 \Rightarrow a = 3 \text{ olur.}$$

Cevap: A

37. $\frac{3^{x+2} - 3^{x+1}}{9^{x+2}} = 18$

$$\frac{3^x \cdot 3^2 - 3^x \cdot 3^1}{9^x \cdot 9^2} = 18$$

$$\frac{3^x (9 - 3)}{3^{2x} (81)} = 18$$

$$3^{x-2x} = 81 \cdot 3 = 3^4 \cdot 3^1$$

$$3^{-x} = 3^5$$

$$-x = 5 \Rightarrow x = -5 \text{ bulunur.}$$

Cevap: A

38. $(a - 3)^8 = (2b + 3)^8$ için

$$|a - 3| = |2b + 3| \text{ olmalıdır.}$$

$$a < 0 < b \text{ olduğundan } -(a - 3) = 2b + 3 \text{ olur.}$$

$$-a + 3 = 2b + 3$$

$$-a = 2b$$

$$a = -2b \text{ bulunur.}$$

$$\text{Bu durumda } \frac{a}{b} = \frac{-2b}{b} = -2 \text{ olacaktır.}$$

Cevap: B

39. $2^x \cdot 9^y = 96$

$$\begin{aligned} 4^y \cdot 3^x &= 81 \\ 2^x \cdot 3^{2y} &= 2^5 \cdot 3 \\ X \quad 2^{2y} \cdot 3^x &= 3^4 \\ \hline 2^{x+2y} \cdot 3^{x+2y} &= 2^5 \cdot 3^5 \\ 6^{x+2y} &= 6^5 \Rightarrow x+2y = 5 \text{ olur.} \end{aligned}$$

Cevap: B

40.

$$\begin{aligned} 3^x &= \frac{5}{7} \\ 3^y &= \frac{21}{25} \\ 3^z &= 135 \\ \hline X \quad 3^x \cdot 3^y \cdot 3^z &= \frac{5}{7} \cdot \frac{21}{25} \cdot 135 \\ &= \frac{5}{7} \cdot \frac{21}{25} \cdot \frac{27}{1} \cdot \frac{5}{5} \end{aligned}$$

$$3^{x+y+z} = 81$$

$$3^{x+y+z} = 3^4 \Rightarrow x + y + z = 4$$

Cevap: B

41. $A = 1 + 2 + 2^2 + \dots + 2^{24}$

$$\begin{aligned} B &= 1 + 2A \\ &= 1 + 2(1 + 2 + 2^2 + \dots + 2^{24}) \\ &= 1 + 2 + 2^2 + \dots + 2^{24} + 2^{25} \\ &= (1 + 2 + 2^2 + \dots + 2^{24}) + 2^{25} \\ &= A + 2^{25} \\ B - A &= A + 2^{25} - A = 2^{25} \end{aligned}$$

Cevap: B

42. $8^x \cdot 625^y = 10^{12}$ (13 basamaklı en küçük sayı)

$$2^{3x} \cdot 5^{4y} = 10^{12} \Rightarrow 3x = 12 \text{ ve } 4y = 12$$

$$x = 4 \quad y = 3$$

$$\Rightarrow a = 2^4 \cdot 5^3 + 5^4 \cdot 2^3$$

$$a = 2 \cdot 10^3 + 5 \cdot 10^3$$

$$a = 7 \cdot 10^3 = 7000 \Rightarrow 4 \text{ basamaklı}$$

Cevap: B

43.

$$k = 1 + 2^x \Rightarrow 2^x = k - 1$$

$$L = 1 - \frac{1}{2^x} = 1 - \frac{1}{k-1} = \frac{k-1-1}{k-1} = \frac{k-2}{k-1}$$

Cevap: D

44. $K = 2^{72} \Rightarrow 2^{\frac{72}{24}} = 2^3 = 8$

$$L = 3^{48} \Rightarrow 3^{\frac{48}{24}} = 3^2 = 9$$

$$M = 4^{24} \Rightarrow 4^{\frac{24}{24}} = 4^1 = 4$$

$$\Rightarrow M < K < L$$

Cevap: B

45. $a = (33)^3$,

$$b = 3^{(3^3)} = 3^{27}$$

$$c = (3^3)^3 = 3^9$$

$$d = 3^{33}$$

$$\Rightarrow c < a < b < d$$

Cevap: D

46. $a = 2^{\frac{-1}{2}} \Rightarrow (2^{\frac{-1}{2}})^{12} = 2^{-6}$

$$b = 2^{\frac{-1}{3}} \Rightarrow (2^{\frac{-1}{3}})^{12} = 2^{-4}$$

$$c = 2^{\frac{-1}{4}} \Rightarrow (2^{\frac{-1}{4}})^{12} = 2^{-3}$$

$$\Rightarrow a < b < c$$

Cevap: A

47. $2^b < 2^a < 2^c$

$$17 < 19 < 33 \Rightarrow b < a < c$$

Cevap: B

48. $\left(\frac{y}{x}\right)^{n+4} < \left(\frac{x}{y}\right)^{2n-1}$

$$\left(\frac{y}{x}\right)^{n+4} < \left(\frac{y}{x}\right)^{1-2n}$$

$$n+4 < 1-2n$$

$$3n < -5$$

$$n < -\frac{5}{3}$$

→ n en fazla -2 olur.

Cevap: E

49. $2^{ab} = 4^3 = (2^2)^3 = 2^6 \Rightarrow a.b=6$

$$2^{a.c} = 8^3 = (2^3)^3 = 2^9 \Rightarrow a.c=9$$

$$2^{b.c} = 16^2 = (2^4)^2 = 2^8 \Rightarrow b.c=8$$

$$\Rightarrow \underbrace{6 < 8 < 9}_{a.b < b.c < a.c}$$

$$\Rightarrow a.b < b.c \quad b.c < a.c$$

$$\Rightarrow a < c \quad b < a$$

$$\Rightarrow b < a < c \text{ bulunur.}$$

Cevap: B

50. $0 < a < 1$ için

$$x = a^a \rightarrow a^a$$

a basit kesir olduğu için

$$y = a(a^a) \rightarrow a^{a+1}$$

$$a^2 < a^1 < a + 1$$

$$z = (a^a)^a \rightarrow a^{(a^2)}$$

$$y < x < z \text{ olur.}$$

Not: Basit kesirlerde kuvveti büyük olan sayı daha küçüktür.

Cevap: E