

## Kertausta ja syventämistä

## 2 PERUSLASKUTOIMITUKSIA

## Tuntitehtävien ratkaisut

18. a)  $5 - 8 \cdot 2 = 5 - 16 = -9$   
 b)  $10 \cdot (6 - 13) = 10 \cdot (-7) = -70$   
 c)  $14 + 20 : 4 = 14 + 5 = 19$
19. a)  $12 + 3 \cdot (-6) = 12 - 18 = -6$   
 b)  $7 \cdot (-2) - (-5) \cdot 10 = -14 + 50 = 36$   
 c)  $-8 \cdot 12 : (-4) = -96 : (-4) = 24$
20. a)  $\frac{1}{6} + \frac{1}{3} = \frac{1}{6} + \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$   
 b)  $\frac{4}{7} - \frac{1}{14} = \frac{8}{14} - \frac{1}{14} = \frac{7}{14} = \frac{1}{2}$   
 c)  $\frac{8}{9} \cdot \frac{9}{32} = \frac{8 \cdot \overset{1}{\cancel{9}}}{\underset{1}{\cancel{9}} \cdot 32} = \frac{8}{32} = \frac{1}{4}$
21. A1, B3, C2, D4
22. a)  $8 - 9 \cdot 2 = 8 - 18 = -10$   
 b)  $(-2 + 12) \cdot 4 = 10 \cdot 4 = 40$   
 c)  $\frac{2+3 \cdot 4}{7} = \frac{2+12}{7} = \frac{14}{7} = 2$
23. a)  $3,5 + 14,3 = 17,8$   
 b)  $-6,8 - 3,2 = -10,0$   
 c)  $-4 \cdot (-5) = 20$   
 d)  $24 : (-6) = -4$
24. a)  $4 \cdot (20 - 8) : 2 = 4 \cdot 12 : 2 = 48 : 2 = 24$   
 b)  $4 \cdot (20 - 8 : 2) = 4 \cdot (20 - 4) = 4 \cdot 16 = 64$   
 c)  $4 \cdot 20 - 8 : 2 = 80 - 4 = 76$
25. a)  $6^2 + 8^2 = 36 + 64 = 100$   
 b)  $12 \cdot 10^3 = 12 \cdot 1\,000 = 12\,000$   
 c)  $\left(\frac{3}{7}\right)^2 = \frac{9}{49}$

26. a)  $\frac{7}{10} = 0,7$

b)  $0,8 = \frac{8}{10} = \frac{4}{5}$

c)  $0,25 = \frac{25}{100} = \frac{1}{4}$

27. a)  $8 \cdot \frac{3}{4} = \frac{24}{4} = 6$

b)  $\frac{5}{8} \cdot \frac{4}{25} = \frac{5 \cdot 4}{8 \cdot 25} = \frac{20}{200} = \frac{1}{10}$

c)  $\frac{1}{2} \cdot \left( \frac{2}{9} + \frac{4}{9} \right) = \frac{1}{2} \cdot \frac{6}{9} = \frac{1 \cdot 6}{2 \cdot 9} = \frac{6}{18} = \frac{1}{3}$

28.  $\frac{15}{16} - \frac{3}{8} = \frac{15}{16} - \frac{6}{16} = \frac{9}{16}$

29. a)  $2 \cdot \frac{1}{3} + 2 \cdot \frac{9}{10} = \frac{2}{3} + \frac{18}{10} = \frac{20}{30} + \frac{54}{30} = \frac{74}{30} = \frac{37}{15} = 2 \frac{7}{15}$

b)  $\frac{9}{10} \cdot \frac{1}{3} = \frac{9 \cdot 1}{10 \cdot 3} = \frac{9}{30} = \frac{3}{10}$

30.  $24 \cdot 33 \frac{1}{3} = 24 \cdot \frac{100}{3} = \frac{2\,400}{3} = 800$

Levy pyörii 800 kierrosta.

31. a)  $4 \cdot (7 - 2) \cdot 6 = 4 \cdot 5 \cdot 6 = 20 \cdot 6 = 120$

b)  $(4 \cdot 7 - 2) \cdot 6 = (28 - 2) \cdot 6 = 26 \cdot 6 = 156$

c)  $4 \cdot (7 - 2 \cdot 6) = 4 \cdot (7 - 12) = 4 \cdot (-5) = -20$

32. a)  $-0,6 + \frac{3}{5} = -\frac{6}{10} + \frac{3}{5} = -\frac{3}{5} + \frac{3}{5} = 0$

b)  $-\frac{1}{3} - \left( -\frac{7}{9} \right) = -\frac{3}{9} + \frac{7}{9} = \frac{4}{9}$

c)  $-2 \cdot \left( -\frac{5}{6} \right) = \frac{10}{6} = \frac{5}{3} = 1 \frac{2}{3}$

d)  $7,2 : (-0,9) = 72 : (-9) = -8$

33. a)  $2 \cdot \frac{3}{10} - \frac{4}{5} = \frac{6}{10} - \frac{4}{5} = \frac{3}{5} - \frac{4}{5} = -\frac{1}{5}$   
 b)  $\frac{2}{7} \cdot \left( \frac{1}{4} + \frac{5}{8} \right) = \frac{2}{7} \cdot \left( \frac{2}{8} + \frac{5}{8} \right) = \frac{2}{7} \cdot \frac{7}{8} = \frac{14}{56} = \frac{1}{4}$   
 c)  $\left( \frac{13}{15} - \frac{5}{3} \right) \cdot \frac{7}{8} = \left( \frac{13}{15} - \frac{25}{15} \right) \cdot \frac{7}{8} = \frac{-12}{15} \cdot \frac{7}{8} = \frac{8}{15} \cdot \frac{15}{8} = \frac{120}{120} = 1$
34.  $24 \frac{1}{2} + 2 \cdot 1 \frac{3}{4} = \frac{49}{2} + 2 \cdot \frac{7}{4} = \frac{49}{2} + \frac{14}{4} = \frac{49}{2} + \frac{7}{2} = \frac{56}{2} = 28$
35. a)  $2^4 - (6 + 2)^2 = 16 - 8^2 = 16 - 64 = -48$   
 b)  $(7 + 1)^2 + (1 - 4)^3 = 8^2 + (-3)^3 = 64 - 27 = 37$   
 c)  $-4^2 + 2 \cdot (4 - 6)^3 = -16 + 2 \cdot (-2)^3 = -16 + 2 \cdot (-8) = -16 - 16 = -32$
36. a)  $\left( \frac{3}{5} \right)^3 = \frac{27}{125}$   
 b)  $6 \cdot \left( \frac{3}{5} \right)^2 = 6 \cdot \frac{9}{25} = \frac{54}{25} = 2 \frac{4}{25}$
37. a)  $\frac{5^2 + 3^3}{(3-1)^2} = \frac{25 + 27}{2^2} = \frac{52}{4} = 13$   
 b)  $\frac{4^2}{9} - \left( \frac{2}{3} \right)^2 = \frac{16}{9} - \frac{4}{9} = \frac{12}{9} = \frac{4}{3} = 1 \frac{1}{3}$   
 c)  $\left( \frac{3}{4} + \frac{7}{8} \right)^2 - \frac{7}{8} = \left( \frac{6}{8} + \frac{7}{8} \right)^2 - \frac{7}{8} = \left( \frac{13}{8} \right)^2 - \frac{7}{8} = \frac{169}{64} - \frac{7}{8} = \frac{169}{64} - \frac{56}{64} = \frac{113}{64} = 1 \frac{49}{64}$
38. a)  $400 \text{ mg} : 2 = 200 \text{ mg}$   
 b)  $400 \text{ mg} : 2 : 2 = 100 \text{ mg}$   
 c)  $400 \text{ mg} : 2 : 2 : 2 : 2 = 25 \text{ mg}$
39. a)  $\left( \frac{1}{2} + \frac{3}{4} \right) \cdot \left( \frac{5}{6} - \frac{4}{5} \right) = \left( \frac{2}{4} + \frac{3}{4} \right) \cdot \left( \frac{25}{30} - \frac{24}{30} \right) = \frac{5}{4} \cdot \frac{1}{30} = \frac{5}{120} = \frac{1}{24}$   
 b)  $\frac{24}{49} - \left( \frac{3}{7} - \frac{13}{14} \right) = \frac{24}{49} - \left( \frac{6}{14} - \frac{13}{14} \right) = \frac{24}{49} + \frac{7}{14} = \frac{48}{98} + \frac{49}{98} = \frac{97}{98}$   
 c)  $\frac{1+3^2}{18} : \left( \frac{5}{9} \right)^2 = \frac{1+9}{18} : \frac{25}{81} = \frac{10}{18} : \frac{25}{81} = \frac{10}{18} \cdot \frac{81}{25} = \frac{10 \cdot 9}{18 \cdot 25} = \frac{18}{25} = \frac{9}{10} = 1 \frac{4}{5}$