

## 5\_MATEMATIKA\_7\_NÁSOBENÍ A DĚLENÍ RACIONÁLNÍCH ČÍSEL - POKRAČOVÁNÍ.

### UČIVO: NÁSOBENÍ A DĚLENÍ RACIONÁLNÍCH ČÍSEL - POKRAČOVÁNÍ.

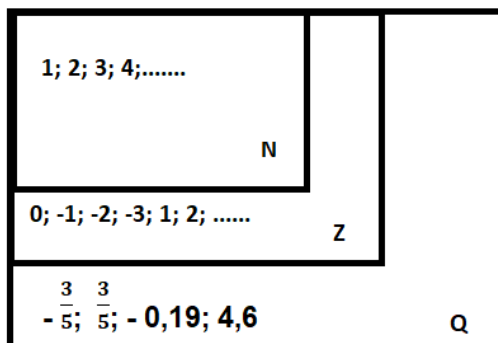
1) Zopakuj:

Značky číselných oborů.

N – přirozená čísla

Z – celá čísla

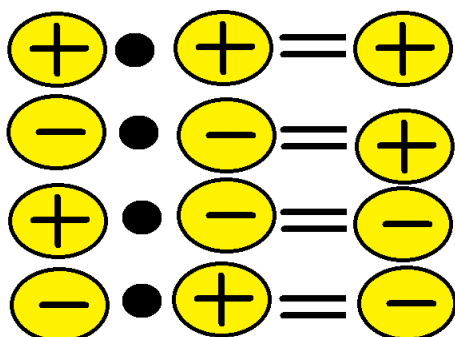
Q – racionální čísla



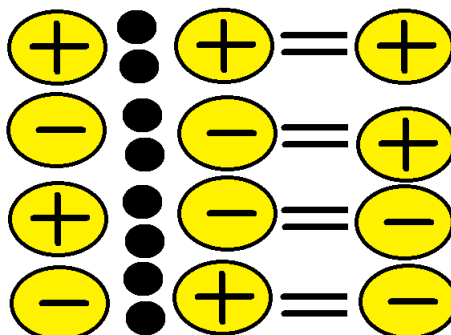
Pokud se v zadání vyskytnou zlomky, desetinná a celá čísla dohromady je nejlepší si nejdříve **všechna čísla převést** jenom na **ZLOMKY** nebo jenom na **DESETINNÁ ČÍSLA** a teprve pak příklad dopočítat.

**Pro znaménka platí:**

**Násobení**



**Dělení**



2) Do cvičného sešitu:

str. 83 / př. 6 g – l

str. 83 / př. 1 d – i

str. 84 / př. 2 a – l

str. 84 / př. 3 a – f

str. 84 / př. 4 a – i

str. 84 / př. 5 a – h ( tento příklad řeší jen ti šikovnější)



**Myslím na Vás.**

ŘEŠENÍ:

NÁSOBENÍ A DĚLENÍ RACIONÁLNÍCH ČÍSEL.

VÝSLEDKY:

str. 83 / př. 6 g-l

g)  $\left[-\frac{2}{3} - (-0,6)\right] \cdot \frac{1}{2} = \left[-\frac{2}{3} + \frac{6}{10}\right] \cdot \frac{1}{2} = \frac{-20+18}{30} \cdot \frac{1}{2} = \frac{-2}{30} \cdot \frac{1}{2} = \frac{-1}{30} \cdot \frac{1}{1} = \frac{-1}{30}$

h)  $\left(-\frac{2}{3}\right) \cdot \left(-0,6 - \frac{1}{2}\right) = -\frac{2}{3} \cdot \left(-\frac{6}{10} - \frac{1}{2}\right) = -\frac{2}{3} \cdot \left(-\frac{6-5}{10}\right) = -\frac{2}{3} \cdot \left(-\frac{11}{10}\right) = \left(-\frac{2}{3}\right) \cdot \left(-\frac{11}{5}\right) = +\frac{11}{15}$

i)  $\left(-\frac{9}{4}\right) \cdot (-0,8) + \frac{1}{4} = \left(-\frac{9}{4}\right) \cdot \left(-\frac{8}{10}\right) + \frac{1}{4} = \left(-\frac{9}{4}\right) \cdot \left(-\frac{2}{5}\right) + \frac{1}{4} = \left(-\frac{9}{4}\right) \cdot \left(-\frac{1}{5}\right) + \frac{1}{4} = \frac{9}{5} + \frac{1}{4} = \frac{36+5}{20} = \frac{41}{20} = 2\frac{1}{20}$

j)  $\left(-\frac{9}{4}\right) \cdot \left(-0,8 + \frac{1}{4}\right) = -\frac{9}{4} \cdot \left(-\frac{8}{10} + \frac{1}{4}\right) = \left(-\frac{9}{4}\right) \cdot \left(\frac{-16+5}{20}\right) = -\frac{9}{4} \cdot \frac{-11}{20} = \frac{99}{80} = 1\frac{19}{80}$

k)  $-\frac{9}{4} + (-0,8) \cdot \frac{1}{4} = -\frac{9}{4} + \left(-\frac{8}{10}\right) \cdot \frac{1}{4} = -\frac{9}{4} + \left(-\frac{2}{10}\right) \cdot \frac{1}{1} = -\frac{9}{4} + \left(-\frac{2}{10}\right) = -\frac{9}{4} + \left(-\frac{1}{5}\right) = \frac{-45+(-4)}{20} = \frac{-49}{20} = -2\frac{9}{20}$

l)  $\left[-\frac{9}{4} - (-0,8)\right] \cdot \frac{1}{2} = \left[-\frac{9}{4} + \frac{8}{10}\right] \cdot \frac{1}{2} = \frac{-90+32}{40} \cdot \frac{1}{2} = \frac{-58}{40} \cdot \frac{1}{2} = \frac{-29}{40} \cdot \frac{1}{2} = \frac{-29}{80}$

str. 83 / př. 1 d-i

d)  $\frac{2}{7} : (-4) = \frac{2}{7} : \left(-\frac{4}{1}\right) = \frac{2}{7} \cdot \left(-\frac{1}{4}\right) = \frac{1}{7} \cdot \left(-\frac{1}{2}\right) = -\frac{1}{14}$

e)  $-\frac{15}{8} : (-6) = -\frac{15}{8} : \left(-\frac{6}{1}\right) = -\frac{15}{8} \cdot \left(-\frac{1}{6}\right) = \frac{15}{48} = \frac{5}{16}$

f)  $(-0,4) : 8 = -\frac{4}{10} : \frac{8}{1} = -\frac{4}{10} \cdot \frac{1}{8} = -\frac{1}{10} \cdot \frac{1}{2} = -\frac{1}{20} = -0,05$

g)  $-\frac{3}{11} : (-12) = -\frac{3}{11} : \left(-\frac{12}{1}\right) = -\frac{3}{11} \cdot \left(-\frac{1}{12}\right) = -\frac{1}{11} \cdot \left(-\frac{1}{4}\right) = \frac{1}{44}$

h)  $-0,9 : 9 = -9 : 90 = -0,1$

i)  $\frac{3}{10} : (-15) = \frac{3}{10} : \left(-\frac{15}{1}\right) = \frac{3}{10} \cdot \left(-\frac{1}{15}\right) = \frac{1}{10} \cdot \left(-\frac{1}{5}\right) = -\frac{1}{50}$

str. 84 / př. 3 a-f

a)  $(-3) : \left(-\frac{1}{2}\right) = -3 : \left(-\frac{1}{2}\right) = -30 : (-5) = 6$

b)  $-10 : \frac{5}{4} = -\frac{10}{1} : \frac{5}{4} = -\frac{2}{1} \cdot \frac{4}{1} = -8$

c)  $12 : \left(-\frac{2}{9}\right) = \frac{12}{1} : \left(-\frac{2}{9}\right) = \frac{6}{1} \cdot \left(-\frac{9}{1}\right) = -54$

d)  $\left(-\frac{3}{8}\right) : \frac{1}{6} = -\frac{3}{8} : \frac{1}{6} = -\frac{3}{8} \cdot \frac{6}{1} = -\frac{3}{4} \cdot \frac{3}{1} = -\frac{9}{4} = -2\frac{1}{4}$

e)  $\left(-\frac{5}{14}\right) : \left(-\frac{20}{7}\right) = -\frac{5}{14} : \left(-\frac{20}{7}\right) = \left(-\frac{1}{2}\right) : \left(-\frac{1}{4}\right) = \frac{1}{8}$

f)  $\frac{13}{3} : \left(-\frac{26}{9}\right) = \frac{13}{3} : \left(-\frac{26}{9}\right) = \frac{1}{1} \cdot \left(-\frac{3}{2}\right) = -\frac{1}{2}$

str. 84 / př. 2 a-l

a)  $12 : (-0,3) = 12 : (-3) = -4$

b)  $(-0,12) : (-0,3) = -12 : (-30) = \frac{12}{30} = \frac{2}{5}$

c)  $(-1,2) : (0,03) = -120 : 3 = -40$

d)  $(-0,24) : (-0,8) = -24 : (80) = \frac{24}{80} = \frac{3}{10}$

e)  $24 : (-0,8) = 24 : (-8) = -3$

f)  $-24 : (0,08) = -240 : 8 = -30$

g)  $(-3,5) : 0,5 = -35 : 5 = -7$

h)  $3,5 : (-0,05) = -350 : 5 = -70$

i)  $(-0,35) : (-0,05) = -35 : (-5) = 7$

j)  $6,3 : (-0,63) = 630 : (-63) = -10$

k)  $(-6,3) : (-63) = 1$

l)  $(-0,63) : 6,3 = -63 : 630 = -0,1$

št. 84 / 4 a-i

- a)  $\frac{1}{5} : (-0,7) = \frac{1}{5} : (-\frac{7}{10}) = \frac{1}{5} \cdot (-\frac{10}{7}) = \frac{1}{1} \cdot (-\frac{2}{7}) = -\frac{2}{7}$
- b)  $(-0,6) : (-\frac{2}{9}) = -\frac{6}{10} \cdot (-\frac{9}{2}) = -\frac{3}{10} \cdot (-\frac{9}{1}) = \frac{+27}{10} = +2,7$
- c)  $-2,5 : \frac{5}{4} = -\frac{25}{10} \cdot \frac{4}{5} = -\frac{5}{5} \cdot \frac{2}{1} = -\frac{10}{5} = -2$
- d)  $\frac{8}{15} : (-0,4) = \frac{8}{15} : (-\frac{4}{10}) = \frac{8}{15} \cdot (-\frac{10}{4}) = \frac{2}{3} \cdot (-\frac{2}{1}) = -\frac{4}{3} = -1\frac{1}{3}$
- e)  $(-1,6) : (-\frac{12}{11}) = -\frac{16}{10} \cdot (-\frac{11}{12}) = -\frac{4}{10} \cdot (-\frac{11}{3}) = -\frac{2}{5} \cdot (-\frac{11}{3}) = \frac{-22}{15} = -1\frac{7}{15}$
- f)  $(-\frac{13}{6}) : 2,6 = -\frac{13}{6} : \frac{26}{10} = -\frac{13}{6} \cdot \frac{10}{26} = -\frac{1}{3} \cdot \frac{5}{2} = -\frac{5}{6}$
- g)  $(-2\frac{2}{5}) : (-1,2) = -\frac{12}{5} : (-\frac{12}{10}) = -\frac{12}{5} \cdot (-\frac{10}{12}) = -\frac{1}{1} \cdot (-\frac{2}{1}) = -2$
- h)  $-3\frac{1}{3} : 1,1 = -\frac{10}{3} : \frac{11}{10} = -\frac{10}{3} \cdot \frac{10}{11} = \frac{-100}{33} = -3\frac{1}{33}$
- i)  $1\frac{5}{7} : (-1,5) = \frac{12}{7} : (-\frac{15}{10}) = \frac{12}{7} \cdot (-\frac{10}{15}) = \frac{4}{7} \cdot (-\frac{2}{5}) = \frac{4}{7} \cdot (-\frac{2}{1}) = \frac{-8}{7} = -1\frac{1}{7}$

št. 84 / 5 a-h

POZOR NA POČETNÍ ÚKONY  $\Rightarrow$  POSTUP

- a)  $3\frac{4}{5} + \frac{2}{25} : (-\frac{2}{5}) = \frac{19}{5} + \frac{2}{25} \cdot (-\frac{5}{2}) = \frac{19}{5} + \frac{1}{5} \cdot (-\frac{1}{1}) = \frac{19}{5} + (-\frac{1}{5}) = \frac{19-1}{5} = \frac{18}{5} = 3\frac{3}{5}$
- b)  $(-\frac{10}{7}) : (5\frac{5}{9} - 4\frac{2}{7}) = (-\frac{10}{7}) : (\frac{50}{9} - \frac{30}{7}) = (-\frac{10}{7}) \cdot \frac{9}{50} - \frac{30}{7} = (-\frac{1}{7}) \cdot \frac{9}{5} - \frac{30}{7} = \frac{-9}{35} - \frac{30}{7} = \frac{-9-150}{35} = \frac{-159}{35} = -4\frac{19}{35}$
- c)  $(3\frac{4}{5} + \frac{2}{25}) : (-\frac{2}{5}) = \frac{19}{5} + \frac{2}{25} \cdot (-\frac{5}{2}) = \frac{19-1}{5} = \frac{18}{5} \cdot (-\frac{5}{2}) = \frac{97}{5} \cdot (-\frac{1}{2}) = \frac{-97}{10} = -9\frac{7}{10}$
- d)  $(-\frac{10}{7}) : (5\frac{5}{9} - 4\frac{2}{7}) = (-\frac{10}{7}) : (\frac{50}{9} - \frac{30}{7}) = -\frac{10}{7} \cdot \frac{350-270}{63} = -\frac{10}{7} \cdot \frac{80}{63} = -\frac{10}{7} \cdot \frac{63}{80} = -\frac{1 \cdot 9}{1 \cdot 8} = -\frac{9}{8} = -1\frac{1}{8}$
- e)  $(-1,7) : \frac{3}{20} + 0,4 = -\frac{17}{10} \cdot \frac{20}{3} + \frac{4}{10} = -\frac{17}{1} \cdot \frac{2}{3} + \frac{2}{5} = \frac{-34}{3} + \frac{2}{5} = \frac{-170+6}{15} = \frac{-164}{15} = -10\frac{14}{15}$
- f)  $1\frac{2}{3} - \frac{2}{3} : (-1,6) = \frac{5}{3} - \frac{2}{3} : (-\frac{16}{10}) = \frac{5}{3} - \frac{2}{3} \cdot (-\frac{10}{16}) = \frac{5}{3} - \frac{1}{3} \cdot (-\frac{10}{8}) = \frac{5}{3} + \frac{10}{24} = \frac{40+10}{24} = \frac{50}{24} = \frac{25}{12} = 2\frac{1}{12}$
- g)  $2\frac{1}{6} + (-4\frac{2}{3}) : 4,2 = \frac{13}{6} + (-\frac{14}{3}) : \frac{42}{10} = \frac{13}{6} + (-\frac{14}{3}) \cdot \frac{10}{42} = \frac{13}{6} + (-\frac{1}{3}) \cdot \frac{10}{3} = \frac{13}{6} + (-\frac{10}{9}) = \frac{39+(20)}{18} = \frac{19}{18}$
- h)  $(-3,3) : (2\frac{3}{4} - 1,5) = (-\frac{33}{10}) : (\frac{11}{4} - \frac{15}{10}) = (-\frac{33}{10}) \cdot \frac{4}{11} - \frac{15}{10} = (-\frac{3}{5}) \cdot \frac{2}{1} - \frac{15}{10} = -\frac{6}{5} - \frac{15}{10} = \frac{-12-15}{10} = \frac{-27}{10} = -2\frac{7}{10} = -2,7$