

NASTAVNI SAT IZ MATEMATIKE-

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NASTAVNA JEDINKA: Dvojni razlomci

DATUM: 23.3.2020.

RAZRED: VII.

Prisjetimo se: Dvojni razlomak jednak je razlomku kojemu je brojnik umnožak vanjskih, a nazivnik umnožak unutarnjih članova dvojnog razlomka.

$$\frac{\frac{a}{b}}{\frac{c}{d}} = \frac{a}{b} : \frac{c}{d} = \frac{a}{b} \cdot \frac{d}{c} = \frac{a \cdot d}{b \cdot c}$$

gdje su b, c i d prirodni brojevi.

Zadatak 1: Izračunaj:

a) $\frac{3\frac{1}{3} + 2.5}{2.5 - 1\frac{1}{3}}$

b) $\frac{(1 - \frac{1}{10}) \cdot (1 - \frac{1}{9})}{\frac{3}{5} + \frac{7}{10}}$

Rješenje:

a) $\frac{3\frac{1}{3} + 2.5}{2.5 - 1\frac{1}{3}} = \frac{\frac{10}{3} + \frac{5}{2}}{\frac{5}{2} - \frac{4}{3}} = \frac{\frac{10+5}{2}}{\frac{15-8}{6}} = \frac{20+15}{6} = \frac{35}{6} = \frac{35 \cdot 6}{6 \cdot 6} = 5$

b) $\frac{(1 - \frac{1}{10}) \cdot (1 - \frac{1}{9})}{\frac{3}{5} + \frac{7}{10}} = \frac{\frac{9}{10} \cdot \frac{8}{9}}{\frac{6+7}{10}} = \frac{\frac{8}{10}}{\frac{13}{10}} = \frac{8}{13}$

Zadatak 2: Izračunaj:

a) $\frac{(7 - 5\frac{1}{2}) : 0.03}{(\frac{1}{3} + 0.5) : 2\frac{1}{2} + 0.2}$

b) $\frac{1 + 2 \cdot [\frac{1}{3} - (0.5 - \frac{5}{6})]}{\frac{3}{4} + \frac{3}{4} \cdot (-\frac{1}{4} + 1)}$

Rješenje:

$$\frac{(7-5\frac{1}{2}):0.03}{(\frac{1}{3}+0.5):2\frac{1}{2}+0.2} = \frac{(7-\frac{11}{2}):\frac{3}{100}}{(\frac{1}{3}+\frac{1}{2}):\frac{5}{2}+\frac{2}{10}} = \frac{(\frac{14-11}{2}):\frac{3}{100}}{(\frac{2+3}{6}):\frac{5}{2}+\frac{2}{10}} = \frac{\cancel{3} \cdot \cancel{100}}{\cancel{2} \cdot \cancel{2}} = \frac{50}{3+5} = \frac{50}{8}$$

$$\frac{50}{8} = \frac{50 \cdot 15}{8 \cdot 15} = \frac{375}{4} = 93\frac{3}{4}$$

a)

$$\frac{1+2 \cdot \left[\frac{1}{3} - \left(0.5 - \frac{5}{6} \right) \right]}{\frac{3}{4} + \frac{3}{4} \cdot \left(-\frac{1}{4} + 1 \right)} = \frac{1+2 \cdot \left[\frac{1}{3} - \left(\frac{1}{2} - \frac{5}{6} \right) \right]}{\frac{3}{4} + \frac{3}{4} \cdot \left(\frac{-1+4}{4} \right)} = \frac{1+2 \cdot \left[\frac{1}{3} - \left(\frac{3-5}{6} \right) \right]}{\frac{3}{4} + \frac{3}{4} \cdot \frac{3}{4}} = \frac{1+2 \cdot \left[\frac{1}{3} - \left(-\frac{2}{6} \right) \right]}{\frac{3}{4} + \frac{9}{16}} =$$

$$\frac{1+2 \cdot \left[\frac{1}{3} + \frac{1}{3} \right]}{\frac{12+9}{16}} = \frac{1+2 \cdot \frac{2}{3}}{\frac{21}{16}} = \frac{1+\frac{4}{3}}{\frac{21}{16}} = \frac{\frac{3}{3} + \frac{4}{3}}{\frac{21}{16}} = \frac{\frac{7}{3}}{\frac{21}{16}} = \frac{16}{9} = 1\frac{7}{9}$$

b)

Zadatak 3: Izračunaj:

a) $\frac{1.2:0.375-0.2}{6\frac{4}{25}:15\frac{2}{5}+0.8}$

b) $\frac{\left[\frac{3}{5} \cdot \left(1 + \frac{1}{2} \right) - \left(\frac{6}{5} - 1 \right) \right] : \frac{1}{2} - \frac{1}{5}}{2 + \frac{1}{2} : \left[\frac{3}{4} \cdot \left(1 - \frac{3}{4} \right) + \frac{1}{5} \cdot 0.1 \right]}$

Rješenje:

a) $\frac{1.2:0.375-0.2}{6\frac{4}{25}:15\frac{2}{5}+0.8} = \frac{12 \cdot \frac{375}{1000} - \frac{2}{10}}{\frac{154}{25} : \frac{77}{5} + \frac{8}{10}} = \frac{\cancel{8} \cdot \frac{1}{5}}{\frac{154}{25} \cdot \frac{5}{7} + \frac{4}{5}} = \frac{16}{5} : \frac{22}{5} = \frac{16}{5} \cdot \frac{5}{22} = \frac{16}{22} = \frac{8}{11} = 2\frac{1}{2}$

b) $\frac{\left[\frac{3}{5} \cdot \left(1 + \frac{1}{2} \right) - \left(\frac{6}{5} - 1 \right) \right] : \frac{1}{2} - \frac{1}{5}}{2 + \frac{1}{2} : \left[\frac{3}{4} \cdot \left(1 - \frac{3}{4} \right) + \frac{1}{5} \cdot 0.1 \right]} = \frac{\left[\frac{3}{5} \cdot \frac{3}{2} - \frac{1}{5} \right] : \frac{1}{2} - \frac{1}{5}}{2 + \frac{1}{2} : \left[\frac{3}{4} \cdot \frac{1}{4} + \frac{1}{5} \cdot \frac{1}{10} \right]} = \frac{\left[\frac{9}{10} - \frac{1}{5} \right] : \frac{1}{2} - \frac{1}{5}}{2 + \frac{1}{2} : \left[\frac{3}{16} + \frac{1}{50} \right]} = \frac{\left[\frac{8}{10} - \frac{1}{5} \right] : \frac{1}{2} - \frac{1}{5}}{2 + \frac{1}{2} : \left[\frac{3}{16} + \frac{1}{50} \right]} =$

$\frac{\frac{12}{5} - \frac{1}{5}}{2 + \frac{1}{2} : 5} = \frac{\frac{11}{5}}{2 + \frac{1}{10}} = \frac{11}{21} = \frac{2}{21}$

b)

Zadatak 4: Za koliko je vrijednost izraza A veća od vrijednosti izraza B?

$$A = \frac{(2.5 - 1) \cdot \frac{1}{6} + \left(\frac{19}{4} - 2\right) \cdot \frac{1}{11} + \frac{16}{9} : (8 - \frac{8}{9})}{\frac{1}{3 - \frac{1}{3}} + \frac{1}{1 + \frac{1}{7}} - \frac{1}{\frac{8}{3} : 3}}$$

$$B = \frac{3\frac{1}{4} : 0.5 - \frac{3}{5} \cdot 3}{0.3 : \frac{1}{2} + \frac{3}{4} : 2.5} : \frac{0.3 \cdot 7 + \frac{1}{4}}{2\frac{1}{4} - 1\frac{1}{2} : \frac{1}{6}}$$

Rješenje:

$$A = \frac{(2.5 - 1) \cdot \frac{1}{6} + \left(\frac{19}{4} - 2\right) \cdot \frac{1}{11} + \frac{16}{9} : (8 - \frac{8}{9})}{\frac{1}{3 - \frac{1}{3}} + \frac{1}{1 + \frac{1}{7}} - \frac{1}{\frac{8}{3} : 3}} = \frac{\left(\frac{25}{10} - 1\right) \cdot \frac{1}{6} + \left(\frac{19 - 8}{4}\right) \cdot \frac{1}{11} + \frac{16}{9} : \left(\frac{72 - 8}{9}\right)}{\frac{1}{\frac{8}{3} + \frac{1}{8}} + \frac{1}{\frac{8}{7} - \frac{1}{3}} - \frac{1}{\frac{8}{3} \cdot \frac{1}{3}}}$$

$$= \frac{\frac{18}{10} \cdot \frac{1}{6} + \frac{11}{4} \cdot \frac{1}{11} + \frac{16}{9} \cdot \frac{9}{64}}{\frac{3}{8} + \frac{7}{8} - \frac{1}{8}} = \frac{\frac{1}{4} + \frac{1}{4} + \frac{1}{4}}{\frac{3}{8} + \frac{7}{8} - \frac{1}{8}} = \frac{\frac{3}{4}}{\frac{1}{8}} = 6$$

$$B = \frac{3\frac{1}{4} : 0.5 - \frac{3}{5} \cdot 3}{0.3 : \frac{1}{2} + \frac{3}{4} : 2.5} : \frac{0.3 \cdot 7 + \frac{1}{4}}{2\frac{1}{4} - 1\frac{1}{2} : \frac{1}{6}} = \frac{\frac{13}{4} \cdot \frac{2}{5} - \frac{9}{5}}{\frac{3}{10} : \frac{2}{4} + \frac{3}{4} : \frac{25}{10}} : \frac{\frac{3}{10} \cdot 7 + \frac{1}{4}}{\frac{9}{4} - \frac{3}{2} : \frac{1}{6}} = \frac{\frac{13 \cdot 2}{4 \cdot 5} - \frac{9}{5}}{\frac{3}{10} \cdot \frac{2}{4} + \frac{3}{4} \cdot \frac{25}{10}} : \frac{\frac{21}{10} + \frac{1}{4}}{\frac{9}{4} - \frac{3}{2} \cdot \frac{1}{6}} = \frac{\frac{13}{10} - \frac{9}{5}}{\frac{3}{10} \cdot \frac{1}{2} + \frac{3}{4} \cdot \frac{25}{10}} : \frac{\frac{21}{10} + \frac{1}{4}}{\frac{9}{4} - \frac{1}{4}} = \frac{\frac{13}{10} - \frac{18}{10}}{\frac{3}{20} + \frac{75}{40}} : \frac{\frac{21}{10} + \frac{2.5}{10}}{\frac{8}{4} - \frac{3}{4}} = \frac{\frac{-5}{10}}{\frac{3}{20} + \frac{15}{8}} : \frac{\frac{23.5}{10}}{\frac{5}{4}} = \frac{-1}{2} : \frac{47}{10} = -\frac{47}{10}$$

$$\frac{42+5}{\frac{20}{9-36}} = \frac{65-18}{\frac{10}{9}} : \frac{47}{\frac{20}{-27}} = \frac{47}{\frac{10}{9}} : \frac{-47}{135} = -15$$

$$A - B = 6 - (-15) = 6 + 15 = 21$$

Vrijednost izraza A veća je od izraza B za 21.

PREPISATI PRIMJERE ZADATAKA S RJEŠENJIMA U ŠKOLSKU BILJEŽNICU!

Zadatci rađeni u ovoj pripremi nalaze se u udžbeniku na 182. i 183. stranici, a to su: 1. (c), 2. (c), 3., 4. (a, c), 9.

Za zadaću uraditi 1. (a, b), 2. (a, b) i 6. zadatak na 182. stranici u udžbeniku.