

M₇ Sčítání a odčítání zlomků

23. 11.

jak sčítáme zlomek a celé číslo?

... a dále stejné

$$\text{př: } 3 + \frac{2}{5} = \frac{3}{1} + \frac{2}{5} = \frac{5 \cdot 1 = 5 \quad 5 \cdot 3 = 15 \quad 5 \cdot 5 = 1 \quad 1 \cdot 2 = 2}{15 + 2} = \frac{17}{5} = 3\frac{2}{5}$$

... protože celé číslo můžeme takto napísat jako zlomek...

... př: $3 = \frac{3}{1}$ $8 = \frac{8}{1}$ $12 = \frac{12}{1}$ $128 = \frac{128}{1}$... atd...

zlomky odčítáme stejným principem jako je sčítání

př:
$$\frac{3}{4} - \frac{2}{3} = \frac{9 - 8}{12} = \frac{1}{12}$$

Pozor! ale
$$\frac{2}{3} - \frac{3}{4} = \frac{8 - 9}{12} = -\frac{1}{12}!$$
 $8 - 9 = -1!$

1. Vypočítejte.

a) $\frac{1}{4} + \frac{2}{4} =$

b) $\frac{1}{8} + \frac{4}{8} =$

c) $\frac{5}{8} + \frac{3}{8} =$

$\frac{3}{16} + \frac{7}{16} =$

$\frac{6}{11} - \frac{2}{11} =$

$\frac{9}{20} - \frac{5}{20} =$

$\frac{7}{9} - \frac{5}{9} =$

$\frac{13}{15} - \frac{8}{15} =$

$\frac{74}{100} - \frac{28}{100} =$

2. Vypočítejte z paměti.

a) $\frac{1}{5} + \frac{3}{5} - \frac{2}{5} =$

b) $\frac{7}{12} - \frac{2}{12} - \frac{1}{12} =$

c) $\frac{15}{43} + \frac{8}{43} + \frac{9}{43} =$

3. Upravte na společného jmenovatele a vypočítejte. Výsledek upravte do základního tvaru.

$\frac{1}{2} + \frac{1}{8} =$

$\frac{1}{9} + \frac{1}{3} =$

$\frac{1}{3} + \frac{1}{15} =$

$\frac{1}{7} + \frac{1}{70} =$

$\frac{1}{60} + \frac{1}{15} =$

$\frac{1}{4} + \frac{1}{5} =$

$\frac{3}{7} + \frac{3}{2} =$

$\frac{1}{4} + \frac{4}{3} =$

$\frac{3}{5} + \frac{2}{3} =$

$\frac{3}{16} + \frac{4}{5} =$

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

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

$\frac{1}{4} - \frac{1}{5} =$

$\frac{1}{3} - \frac{1}{9} =$

$\frac{5}{7} - \frac{1}{2} =$

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

$\frac{3}{2} - \frac{7}{8} =$

$\frac{4}{7} - \frac{1}{5} =$

4. Na železnici z Rakovníka do Roztok byly vybudovány tři tunely dlouhé $\frac{27}{100}$ km, $\frac{3}{10}$ km a $\frac{9}{50}$ km. Kolik kilometrů jede vlak na této trati tunely?

5. Vypočítejte.

$$\frac{3}{4} + \frac{1}{2} + \frac{2}{3} =$$

$$\frac{4}{9} + \frac{1}{3} + \frac{16}{27} =$$

$$\frac{3}{5} + \frac{1}{2} + \frac{2}{15} =$$

$$\frac{5}{6} + \frac{3}{8} + \frac{1}{4} =$$

$$\frac{3}{8} + \frac{1}{6} + \frac{7}{10} =$$

$$\frac{1}{2} + \frac{7}{11} + \frac{1}{3} =$$

6. Vypočítejte.

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

$$1 - \frac{1}{6} =$$

$$2 - \frac{3}{4} =$$

$$5 - \frac{3}{7} =$$

$$9 - \frac{4}{5} =$$

$$7 - \frac{7}{12} =$$

$$1 - \frac{3}{10} =$$

$$4 - \frac{7}{9} =$$

$$\frac{11}{4} - 2 =$$

$$\frac{15}{4} - 3 =$$

$$\frac{32}{8} - 4 =$$

$$\frac{84}{7} - 7 =$$

1. Vypočítejte.

a) $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$

b) $\frac{1}{8} + \frac{4}{8} = \frac{5}{8}$

c) $\frac{5}{8} + \frac{3}{8} = \frac{8}{8} = \frac{1}{1} = 1$

$\frac{3}{16} + \frac{7}{16} = \frac{10}{16} = \frac{5}{8}$

$\frac{6}{11} - \frac{2}{11} = \frac{4}{11}$

$\frac{9}{20} - \frac{5}{20} = \frac{4}{20} = \frac{1}{5}$

$\frac{7}{9} - \frac{5}{9} = \frac{2}{9}$

$\frac{13}{15} - \frac{8}{15} = \frac{5}{15} = \frac{1}{3}$

$\frac{74}{100} - \frac{28}{100} = \frac{46}{100} = \frac{23}{50}$

2. Vypočítejte z paměti.

a) $\frac{1}{5} + \frac{3}{5} - \frac{2}{5} = \frac{2}{5}$

b) $\frac{7}{12} - \frac{2}{12} - \frac{1}{12} = \frac{4}{12} = \frac{1}{3}$

c) $\frac{15}{43} + \frac{8}{43} + \frac{9}{43} = \frac{32}{43}$

3. Upravte na společného jmenovatele a vypočítejte. Výsledek upravte do základního tvaru.

$\frac{1}{2} + \frac{1}{8} = \frac{4+1}{8} = \frac{5}{8}$

$\frac{1}{9} + \frac{1}{3} = \frac{1+3}{9} = \frac{4}{9}$

$\frac{1}{3} + \frac{1}{15} = \frac{5+1}{15} = \frac{6}{15} = \frac{2}{5}$

$\frac{1}{7} + \frac{1}{70} = \frac{10+1}{70} = \frac{11}{70}$

$\frac{1}{60} + \frac{1}{15} = \frac{1+4}{60} = \frac{5}{60} = \frac{1}{12}$

$\frac{1}{4} + \frac{1}{5} = \frac{5+4}{20} = \frac{9}{20}$

$\frac{3}{7} + \frac{3}{2} = \frac{6+21}{14} = \frac{27}{14} = 1\frac{13}{14}$

$\frac{1}{4} + \frac{4}{3} = \frac{3+16}{12} = \frac{19}{12} = 1\frac{7}{12}$

$\frac{3}{5} + \frac{2}{3} = \frac{9+10}{15} = \frac{19}{15} = 1\frac{4}{15}$

$\frac{3}{16} + \frac{4}{5} = \frac{15+64}{80} = \frac{79}{80}$

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

$\frac{1}{2} - \frac{1}{5} = \frac{5-2}{10} = \frac{3}{10}$

$\frac{1}{4} - \frac{1}{5} = \frac{5-4}{20} = \frac{1}{20}$

$\frac{1}{3} - \frac{1}{9} = \frac{3-1}{9} = \frac{2}{9}$

$\frac{5}{7} - \frac{1}{2} = \frac{10-7}{14} = \frac{3}{14}$

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

$\frac{3}{2} - \frac{7}{8} = \frac{12-7}{8} = \frac{5}{8}$

$\frac{4}{7} - \frac{1}{5} = \frac{20-7}{35} = \frac{13}{35}$

4. Na železnici z Rakovníka do Roztok byly vybudovány tři tunely dlouhé $\frac{27}{100}$ km, $\frac{3}{10}$ km a $\frac{9}{50}$ km. Kolik kilometrů jede vlak na této trati tunely?

měřeno, mělat $\frac{27}{100} + \frac{3}{10} + \frac{9}{50}$ *Vlak jede*
ale lépe $\frac{27}{100} = 0,27$ $\frac{3}{10} = 0,3$ $\frac{9}{50} = \frac{18}{100} = 0,18$ *tunely*
 $\frac{27}{100} = 0,27$ $\frac{3}{10} = 0,3$ $\frac{9}{50} = \frac{18}{100} = 0,18$ *450 m.*
 $\frac{27}{100} = 0,27$ $\frac{3}{10} = 0,3$ $\frac{9}{50} = \frac{18}{100} = 0,18$ *0,27*
 $\frac{27}{100} = 0,27$ $\frac{3}{10} = 0,3$ $\frac{9}{50} = \frac{18}{100} = 0,18$ *0,3*
 $\frac{27}{100} = 0,27$ $\frac{3}{10} = 0,3$ $\frac{9}{50} = \frac{18}{100} = 0,18$ *0,18*
 $\frac{27}{100} = 0,27$ $\frac{3}{10} = 0,3$ $\frac{9}{50} = \frac{18}{100} = 0,18$ *0,75 km*

5. Vypočítejte.

$$\frac{3}{4} + \frac{1}{2} + \frac{2}{3} = \frac{9+6+8}{12} = \frac{23}{12} = 1\frac{11}{12}$$

$$\frac{4}{9} + \frac{1}{3} + \frac{16}{27} = \frac{12+9+16}{27} = \frac{37}{27} = 1\frac{10}{27}$$

$$\frac{3}{5} + \frac{1}{2} + \frac{2}{15} = \frac{18+15+4}{30} = \frac{37}{30} = 1\frac{7}{30}$$

$$\frac{5}{6} + \frac{3}{8} + \frac{1}{4} = \frac{20+9+6}{24} = \frac{35}{24} = 1\frac{11}{24}$$

$$\frac{3}{8} + \frac{1}{6} + \frac{7}{10} = \frac{45+20+84}{120} = \frac{149}{120} = 1\frac{29}{120}$$

$$\frac{1}{2} + \frac{7}{11} + \frac{1}{3} = \frac{33+42+22}{66} = \frac{97}{66} = 1\frac{31}{66}$$

$8 = 2 \cdot 2 \cdot 2$
 $6 = 2 \cdot 3$
 $10 = 2 \cdot 5$
 $N = 2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 = 120$

6. Vypočítejte.

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

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

$$\frac{2}{1} - \frac{3}{4} = \frac{8-3}{4} = \frac{5}{4} = 1\frac{1}{4}$$

$$\frac{5}{1} - \frac{3}{7} = \frac{35-3}{7} = \frac{32}{7} = 4\frac{4}{7}$$

$$\frac{9}{1} - \frac{4}{5} = \frac{45-4}{5} = \frac{41}{5} = 8\frac{1}{5}$$

$$\frac{7}{1} - \frac{7}{12} = \frac{84-7}{12} = \frac{77}{12} = 6\frac{5}{12}$$

$$\frac{1}{1} - \frac{3}{10} = \frac{10-3}{10} = \frac{7}{10}$$

$$\frac{4}{1} - \frac{7}{9} = \frac{36-7}{9} = \frac{29}{9} = 3\frac{2}{9}$$

$$\frac{11}{4} - \frac{2}{1} = \frac{11-8}{4} = \frac{3}{4}$$

$$\frac{15}{4} - \frac{3}{1} = \frac{15-12}{4} = \frac{3}{4}$$

$$\frac{32}{8} - \frac{4}{1} = \frac{32-32}{8} = \frac{0}{8} = 0$$

$$\frac{84}{7} - \frac{7}{1} = \frac{84-49}{7} = \frac{35}{7} = 5$$