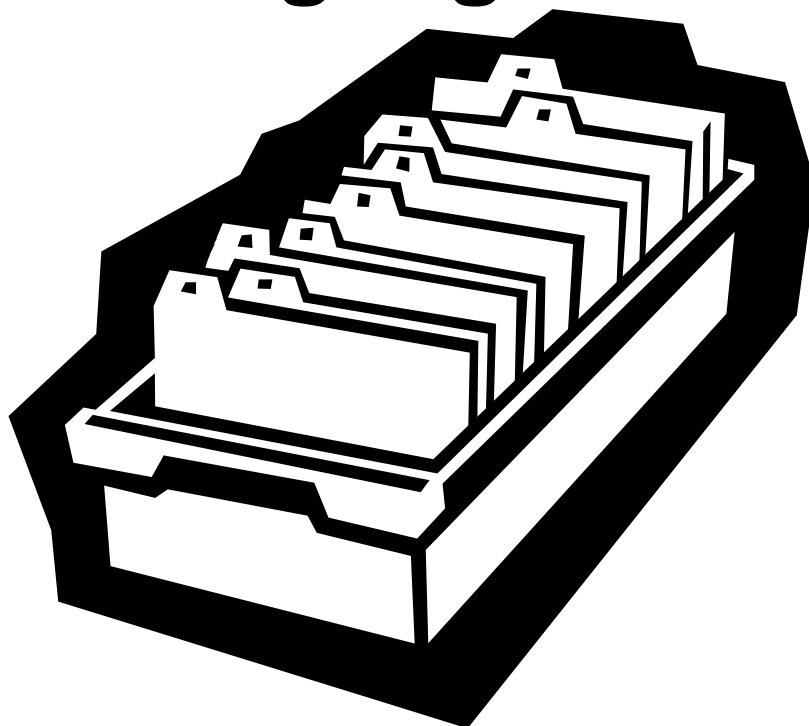


Lösungen zu den Karteikarten für Intensivierungsstunden in Jahrgangsstufe 6



Gruppe F
(*Grundrechenarten bei Brüchen*)

– Angaben ohne Gewähr –

Gruppe F	Thema: <i>Grundrechenarten bei Brüchen</i>	Schwierigkeit: <i>weiß</i>
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F 01 a) $\frac{5}{8} + \frac{7}{9} = \frac{45}{72} + \frac{56}{72} = \frac{101}{72}$; $\frac{1}{12} - \frac{9}{30} = \frac{5}{60} - \frac{18}{60} = -\frac{13}{60}$;

$$3\frac{5}{9} - 4\frac{2}{13} = -\left(4\frac{18}{117} - 3\frac{65}{117}\right) = -\left(3\frac{135}{117} - 3\frac{65}{117}\right) = -\frac{70}{117}$$

b) $\frac{51}{81} \cdot \frac{9}{34} = \frac{1}{6}$; $\frac{15}{13} : \frac{30}{39} = \frac{15}{13} \cdot \frac{39}{30} = \frac{3}{2}$; $3\frac{5}{11} : 4\frac{7}{22} = \frac{38}{11} : \frac{95}{22} = \frac{38}{11} \cdot \frac{22}{95} = \frac{4}{5}$

c) $11,3 + 17,03 = 28,33$; $145,123 - 1000 = -(1000 - 145,123) = -854,877$

d) $14,2 \cdot 19,8 = 281,16$; $121:1,1 = 1210:11 = 110$; $(-1,9)^2 = +3,61$;

Gruppe F	Thema: <i>Grundrechenarten bei Brüchen</i>	Schwierigkeit: <i>weiß</i>
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F 02 a) $\frac{4}{7} + \frac{8}{9} = \frac{36}{63} + \frac{56}{63} = \frac{92}{63} = 1\frac{29}{63}$; $\frac{1}{18} - \frac{11}{45} = \frac{5}{90} - \frac{22}{90} = -\frac{17}{90}$;

$$3\frac{2}{15} - 5\frac{1}{20} = -\left(5\frac{1}{20} - 3\frac{2}{15}\right) = -\left(5\frac{3}{60} - 3\frac{8}{60}\right) = -\left(4\frac{63}{60} - 3\frac{8}{60}\right) = -1\frac{55}{60} = -1\frac{11}{12}$$

b) $\frac{57}{64} \cdot \frac{8}{38} = \frac{3}{8} \cdot \frac{1}{2} = \frac{3}{16}$; $\frac{18}{23} : \frac{36}{69} = \frac{18}{23} \cdot \frac{69}{36} = \frac{1}{1} \cdot \frac{3}{2} = \frac{3}{2} = 1\frac{1}{2}$; $3\frac{4}{15} : 9\frac{4}{5} = \frac{49}{15} : \frac{49}{5} = \frac{49}{15} \cdot \frac{5}{49} = \frac{1}{3}$

c) $69,5 + 56,03 = 125,53$ $258,956 - 1000 = -(1000 - 258,956) = -741,044$

d) $66,2 \cdot 29,1 = 1926,42$; $169:1,3 = 1690:13 = 130$; $(-2,1)^2 = 4,41$;

- F 03** a) $\frac{4}{8} + \frac{6}{7} = \frac{28}{56} + \frac{48}{56} = \frac{76}{56} = 1\frac{5}{14}$; $\frac{1}{13} - \frac{21}{65} = \frac{5}{65} - \frac{21}{65} = -\frac{16}{65}$
 $3\frac{2}{21} - 5\frac{1}{49} = -\left(5\frac{1}{49} - 3\frac{2}{21}\right) = -\left(5\frac{3}{147} - 3\frac{14}{147}\right) = -\left(4\frac{150}{147} - 3\frac{14}{147}\right) = -1\frac{136}{147}$
- b) $\frac{87}{88} \cdot \frac{11}{58} = \frac{3}{8} \cdot \frac{1}{2} = \frac{3}{16}$; $\frac{11}{43} : \frac{121}{129} = \frac{11}{43} \cdot \frac{129}{121} = \frac{1}{1} \cdot \frac{3}{11} = \frac{3}{11}$; $3\frac{5}{13} : 7\frac{1}{3} = \frac{44}{13} : \frac{22}{3} = \frac{44}{13} \cdot \frac{3}{22} = \frac{2}{13} \cdot \frac{3}{1} = \frac{6}{13}$
- c) $129,5 + 45,03 = 174,53$; $365,556 - 1000 = -(1000 - 365,556) = -634,444$
- d) $12,2 \cdot 36,5 = 445,3$; $196:1,4 = 1960:14 = 140$ $(-2,2)^2 = 4,84$;

- F 04** a) $\frac{5}{7} + \frac{2}{3} = \frac{15}{21} + \frac{14}{21} = \frac{29}{21} = 1\frac{8}{21}$; $\frac{5}{21} - \frac{19}{49} = \frac{35}{147} - \frac{57}{147} = -\left(\frac{57}{147} - \frac{35}{147}\right) = \frac{22}{147}$
 $3\frac{5}{26} - 4\frac{5}{39} = -\left(4\frac{5}{39} - 3\frac{5}{26}\right) = -\left(4\frac{10}{78} - 3\frac{15}{78}\right) = -\left(3\frac{88}{78} - 3\frac{15}{78}\right) = -\frac{73}{78}$
- b) $\frac{17}{441} \cdot \frac{21}{85} = \frac{1}{21} \cdot \frac{1}{5} = \frac{1}{105}$; $\frac{31}{82} : \frac{93}{123} = \frac{31}{82} \cdot \frac{123}{93} = \frac{1}{2} \cdot \frac{3}{3} = \frac{1}{2}$;
 $4\frac{5}{29} : 1\frac{45}{87} = \frac{121}{29} : \frac{132}{87} = \frac{121}{29} \cdot \frac{87}{132} = \frac{11}{1} \cdot \frac{3}{12} = \frac{11}{1} \cdot \frac{1}{4} = \frac{11}{4} = 2\frac{3}{4}$
- c) $256,7 + 69,09 = 325,79$; $565,365 - 1000 = -(1000 - 565,365) = -434,635$
- d) $13,5 \cdot 31,5 = 425,25$; $289:1,7 = 2890:17 = 170$ $(-2,4)^2 = 5,76$;

Gruppe F	Thema: Grundrechenarten bei Brüchen	Schwierigkeit: gelb
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F 01 a) $12\frac{5}{7} + \frac{7}{9} = 13\frac{31}{63}$; $2\frac{11}{12} - 4\frac{17}{30} = -1\frac{39}{60} = -1\frac{13}{20}$; $-6\frac{5}{17} - 11\frac{9}{11} = -18\frac{21}{187}$

$$\frac{17}{333} \cdot 1\frac{3}{34} = \frac{17}{333} \cdot \frac{37}{34} = \frac{1}{9} \cdot \frac{1}{2} = \frac{1}{18}; \quad 13\frac{11}{13} : \frac{36}{65} = \frac{180}{13} \cdot \frac{65}{36} = \frac{5}{1} \cdot \frac{5}{1} = 25;$$

$$21\frac{19}{21} : 3\frac{2}{7} = \frac{460}{21} : \frac{23}{7} = \frac{460}{21} \cdot \frac{7}{23} = \frac{20}{3} \cdot \frac{1}{1} = \frac{20}{3} = 6\frac{2}{3}$$

c) $11,301 - 17,03 = -(17,030 - 11,301) = -5,729$;

$$1145,123 - 1000 \cdot 3,11 = 1145,123 - 3110 = -(3110 - 1145,123) = -1964,877$$

d) $0,18 \cdot 1,8 = 0,324$; $18:5,4 = 180:54 = 3,\bar{3}$; $1 - (-1,9)^2 = 1 - 3,61 = -2,61$;

Gruppe F	Thema: Grundrechenarten bei Brüchen	Schwierigkeit: gelb
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F 02 a) $12\frac{5}{8} + 3\frac{7}{11} = 16\frac{23}{88}$; $5\frac{7}{12} - 9\frac{19}{30} = -4\frac{3}{60} = -4\frac{1}{20}$; $-17\frac{5}{16} - 12\frac{7}{12} = -29\frac{43}{48}$

$$b) \frac{11}{666} \cdot 1\frac{4}{33} = \frac{11}{666} \cdot \frac{37}{33} = \frac{1}{18} \cdot \frac{1}{3} = \frac{1}{54} = \quad 18\frac{11}{18} : 2\frac{7}{30} = \frac{335}{18} : \frac{67}{30} = \frac{335}{18} \cdot \frac{30}{67} = \frac{5}{3} \cdot \frac{5}{1} = \frac{25}{3} = 8\frac{1}{3}$$

$$23\frac{11}{23} : 1\frac{17}{46} = \frac{540}{23} : \frac{63}{46} = \frac{540}{23} \cdot \frac{46}{63} = \frac{60}{1} \cdot \frac{2}{7} = \frac{120}{7} = 17\frac{1}{7}$$

c) $11,123 - 16,03 = -(16,030 - 11,123) = -4,907$

$$9,423 \cdot 10 - 100 \cdot 1,12 = 94,23 - 112 = -(112,00 - 94,23) = -17,77$$

d) $0,25 \cdot 2,5 = 0,625$ $19:3,6 = 190:36 = 5,2\bar{7}$; $1 - (-2,1)^2 = 1 - 4,41 = -3,41$

$$\mathbf{F\ 03\ a)} \quad 15\frac{9}{13} + 8\frac{7}{10} = 24\frac{51}{130} \quad 15\frac{8}{9} - 19\frac{13}{99} = -3\frac{24}{99} = -3\frac{8}{33}; \quad -14\frac{8}{15} - 13\frac{7}{13} = -28\frac{14}{195}$$

$$\frac{13}{444} \cdot 1\frac{11}{26} = \frac{13}{444} \cdot \frac{37}{26} = \frac{1}{12} \cdot \frac{1}{2} = \frac{1}{24} \quad 17\frac{11}{17} \cdot 1\frac{59}{60} = \frac{300}{17} \cdot \frac{119}{60} = \frac{5}{17} \cdot \frac{119}{1} = \frac{5}{1} \cdot \frac{7}{1} = 35$$

$$22\frac{8}{22} : 1\frac{1}{11} = \frac{492}{22} : \frac{12}{11} = \frac{492}{22} \cdot \frac{11}{12} = \frac{41}{2} \cdot \frac{1}{1} = \frac{41}{2} = 20\frac{1}{2}$$

$$\mathbf{c)} \quad 15,13 - 19,103 = -(19,103 - 15,13) = -3,973;$$

$$11,32 \cdot 10 - 100 \cdot 5,13 = 113,2 - 513 = -(513 - 113,2) = -399,8$$

$$\mathbf{d)} \quad 0,24 \cdot 2,4 = 0,484;$$

$$13:3,9 = 130:39 = 3,\bar{3};$$

$$1 - (-2,3)^2 = 1 - 5,29 = -4,29$$

Gruppe F	Thema: Grundrechenarten bei Brüchen	Schwierigkeit: grün
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F 01 a) $\frac{11}{3} = 3\frac{2}{3} = 3,\bar{6} = 366,\bar{6}\%$; $\frac{17}{5} = 3\frac{2}{5} = 3,4 = 340\%$; $\frac{11}{9} = 1\frac{2}{9} = 1,\bar{2} = 122,\bar{2}\%$;
 $3\frac{1}{2} = 3,5 = 350\%$; $\frac{5}{11} = \frac{45}{99} = 0,\bar{45} = 45,\bar{45}\%$

b) $12,\bar{3} + 0,\bar{16} \cdot (15 - 2\frac{1}{4} \cdot 3) = 12\frac{1}{3} + \frac{1}{6} \cdot (15 - \frac{9}{4} \cdot 3) =$
 $= 12\frac{1}{3} + \frac{1}{6} \cdot (\frac{60}{4} - \frac{27}{4}) = 12\frac{1}{3} + \frac{1}{6} \cdot \frac{33}{4} = 12\frac{1}{3} + \frac{1}{2} \cdot \frac{11}{4} = 12\frac{1}{3} + \frac{11}{8} = 13\frac{17}{24}$

c) $12,\bar{6} - 16,\bar{6}\% : (13 - 5,25 \cdot 1\frac{1}{3}) = 12\frac{2}{3} - \frac{1}{6} : (13 - \frac{21}{4} \cdot \frac{4}{3}) = 12\frac{2}{3} - \frac{1}{6} : (13 - 7) = 12\frac{2}{3} - \frac{1}{6} : 6 = 12\frac{2}{3} - \frac{1}{6} : 6 = 12\frac{24}{36} - \frac{1}{36} = 12\frac{23}{36}$

d) $12,\bar{1} - 50,75 : (13,5 - 11,25 : 1\frac{4}{5}) = 12\frac{1}{9} - 50\frac{3}{4} : (13\frac{1}{2} - 11\frac{1}{4} : 1\frac{4}{5}) =$
 $= 12\frac{1}{9} - 50\frac{3}{4} : (13\frac{1}{2} - \frac{45}{4} : \frac{9}{5}) = 12\frac{1}{9} - 50\frac{3}{4} : (13\frac{1}{2} - \frac{45 \cdot 5}{4 \cdot 9}) =$
 $= 12\frac{1}{9} - 50\frac{3}{4} : (13\frac{2}{4} - \frac{25}{4}) = 12\frac{1}{9} - 50\frac{3}{4} : (13\frac{2}{4} - 6\frac{1}{4}) = 12\frac{1}{9} - 50\frac{3}{4} : 7\frac{1}{4} =$
 $= 12\frac{1}{9} - \frac{203}{4} \cdot \frac{4}{29} = 12\frac{1}{9} - 7 = 5\frac{1}{9}$

Gruppe Q	Thema: Grundrechenarten bei Brüchen	Schwierigkeit: grün
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F 02 a) Wandle in Dezimalbrüche um und schreibe dann in %
 $\frac{12}{5} = 2\frac{2}{5} = 2,4 = 240\%$; $\frac{13}{20} = \frac{65}{100} = 0,65 = 65\%$; $\frac{11}{33} = \frac{1}{3} = 0,\bar{3} = 33,\bar{3}\%$;
 $\frac{55}{22} = 2,5 = 250\%$; $\frac{5}{33} = \frac{15}{99} = 0,\bar{15} = 15,\bar{15}\%$

b) $2,\bar{6} - 0,\bar{3} \cdot (15 - 5\frac{1}{2} \cdot 3) = 2\frac{2}{3} - \frac{1}{3} \cdot (\frac{30}{2} - \frac{33}{2}) = 2\frac{2}{3} - \frac{1}{3} \cdot (-\frac{3}{2}) = 2\frac{2}{3} + \frac{1}{2} = 3\frac{1}{6}$

c) $12\frac{5}{9} - \frac{5}{6} : (11 - 6\frac{1}{4} \cdot 1\frac{1}{3}) = 12\frac{5}{9} - \frac{5}{6} : (11 - \frac{25}{4} \cdot \frac{4}{3}) = 12\frac{5}{9} - \frac{5}{6} : (\frac{33}{3} - \frac{25}{3}) = 12\frac{5}{9} - \frac{5}{6} : \frac{8}{3} =$
 $= 12\frac{5}{9} - \frac{5}{6} \cdot \frac{3}{8} = 12\frac{5}{9} - \frac{5}{16} = 12\frac{80}{144} - \frac{45}{144} = 12\frac{35}{144}$

d) $5,\bar{7} - 55,\bar{5}\% : (11,5 - 12,25 : 1\frac{2}{5}) = 5\frac{7}{9} - \frac{5}{9} : (11\frac{1}{2} - 12\frac{1}{4} : \frac{7}{5}) = 5\frac{7}{9} - \frac{5}{9} : (11\frac{2}{4} - \frac{49}{4} \cdot \frac{5}{7}) =$
 $= 5\frac{7}{9} - \frac{5}{9} : (\frac{46}{4} - \frac{35}{4}) = 5\frac{7}{9} - \frac{5}{9} : \frac{11}{4} = 5\frac{7}{9} - \frac{5}{9} \cdot \frac{4}{11} = 5\frac{77}{99} - \frac{20}{99} = 5\frac{57}{99}$

