Bruchterme

1. **Kürzen Sie.**
   (a) $\frac{12d}{9} =$
   (b) $\frac{10r}{15r} =$
   (c) $\frac{24a^2bc^2}{56abc} =$
   (d) $\frac{-72uv^3w^6}{-60uv^3w^5} =$
   (e) $\frac{4mq^2}{8mq^3} =$
   (f) $\frac{-27s^2}{-36st} =$
   (g) $\frac{6f^4g^3h^5}{2f^3gh^2} =$

2. **Multiplizieren Sie.**
   (a) $3 \cdot \frac{4}{5} =$
   (b) $6ab \cdot \frac{9a}{4b} =$
   (c) $\frac{a}{b} \cdot \frac{c}{d} =$
   (d) $\frac{8a}{3b} \cdot \frac{9bc}{4a} =$
   (e) $\frac{-xy^2}{35z^3} \cdot \frac{7z^2}{x^2y^2} =$
   (f) $\frac{-18u^2w}{65v^4} \cdot \frac{-26v}{27uw^3} =$
   (g) $\left(-\frac{-a}{-b}\right)\left(-\frac{-c}{-d}\right)\left(-\frac{-e}{-f}\right) =$
   (h) $\frac{17r^4s^3}{54t^5} \cdot \frac{24st^2}{85r^2} =$

3. **Dividieren Sie.**
   (a) $\frac{21}{8} : 7 =$
   (b) $\frac{7u^3}{9v^2} : \left(21u^2v\right) =$

(c) $\frac{5km}{6} : \frac{3k}{2m} =$

(d) $\frac{1}{24rs^3} : \frac{1}{16r^2s} =$

(e) $\frac{\frac{54k^2}{65t}}{\frac{81k}{75t^2}} =$

(f) $\frac{\frac{14u^3v}{57xyz}}{\frac{35uv^2}{76y^2z}} =$

(g) $\frac{9ab^2c^3}{\left(9 \cdot \frac{ab}{c}\right)^2} =$

(h) $\frac{\frac{3m}{4n}}{6mn} =$

4. Vereinfachen Sie.

(a) $\frac{a^2 - b^2}{3a + 3b} =$

(b) $\frac{6u - 8v}{9u^2 - 16v^2} =$

(c) $\frac{n^3 - n}{n^3 + n^2} =$

(d) $\frac{u^2 + 2uv + v^2}{4u + 4v} =$

(e) $\frac{2ac - 5bc}{4a^2 - 20ab + 25b^2} =$

(f) $\frac{w^3 + 2w^2 + w}{wz + z} =$

(g) ★ $\frac{40cm - 60dm + 32cn - 48dn}{24cm - 36dm + 16cn - 24dn} =$

(h) ★ $\frac{kn - 2k}{3n^2 - 3n - 6} =$

(i) $\frac{a - b}{b - a} =$

(j) $\frac{3z - 3y}{4y - 4z} =$

(k) ★ $\frac{80a^3 - 58a^2 + 11a - 3}{5a - 3} =$

(l) ★ $\frac{a^2 - b^2 - 2bc - c^2}{2a + 2b + 2c}$

5. Multiplizieren Sie.

(a) $\dfrac{m-n}{3m} \cdot \dfrac{5m}{2m-2n} =$

(b) $\dfrac{d-1}{18d} \cdot \dfrac{12d^2}{1-d} =$

(c) $\dfrac{x^2+y^2}{x^2-y^2} \cdot \dfrac{x-y}{xy} =$

(d) $\dfrac{7r^2s}{12\,(r-s)} \cdot \dfrac{(2s-2r)^2}{21rs^2} =$

(e) ★ $\dfrac{x^2-6xy+9y^2-z^2}{5m-5n} \cdot \dfrac{m^4-n^4}{x-3y+z} =$

(f) ★ $\dfrac{a^3-3a^2+3a-1}{225a^2b^2-150abc+25c^2} \cdot \dfrac{45abc-15c^2}{ab-b} =$

6. Addieren oder subtrahieren Sie.

(a) $\dfrac{2x}{3} + \dfrac{4x}{3} =$

(b) $\dfrac{1}{m+1} + \dfrac{m}{m+1} =$

(c) $\dfrac{4ktw}{2t-1} - \dfrac{2kw}{2t-1} =$

(d) $\dfrac{q}{p-q} - \dfrac{p}{p-q} =$

(e) $\dfrac{4u}{21} + \dfrac{9u}{14} =$

(f) $\dfrac{8}{9m} - \dfrac{11}{36m} =$

(g) $\dfrac{1}{r^2} - \dfrac{1}{r^3} =$

(h) $\dfrac{a+b}{b} - \dfrac{a-b}{a} =$

(i) $\dfrac{(u-v)^2}{u^2v^2} - \dfrac{2u+v}{u^2v} + \dfrac{u-3c}{uv^2}$

(j) $\dfrac{m}{m-1} - \dfrac{m-1}{m+2}$

(k) $\dfrac{3u}{u^2+2uv+v^2} - \dfrac{1}{u+v}$

(l) $\dfrac{a+2b+t}{4at+8bt} - \dfrac{1}{4t}$

(m) $\dfrac{x-y}{15x+10y} + \dfrac{x+y}{3x+2y}$

(n) $\dfrac{8p}{4p^2-4p+1} - \dfrac{3}{2p-1}$

(o) $\dfrac{a-b}{4a+4b}+\dfrac{a+4b}{6a+6b}$

(p) ★ $\dfrac{t+7}{3t-6}-\dfrac{t+4}{t^2-2t}$

(q) ★ $\dfrac{2v+3w}{2v+w}-\dfrac{2v-w}{2v}-\dfrac{2v+3w}{w}$

(r) ★ $\dfrac{2r-19}{3r-7}-\dfrac{5r}{6r-8}-\dfrac{1}{2}$

(s) ★ $\dfrac{5}{p-2}-\dfrac{3}{2p+1}+\dfrac{1}{p+1}$

(t) ★ $\dfrac{8s}{s^2-4}+\dfrac{2+s}{2-s}$

7. Beschreiben und korrigieren Sie die Fehler.

(a) $\dfrac{2a}{a}=a$

(b) $\dfrac{x^2y^2}{x^3y^3}=xy$

(c) $\dfrac{25s^2-25t^2}{s-t}=25s-25t$

(d) $\dfrac{a^2+b^3}{c^4}+\dfrac{a+b^4}{c^4}=\dfrac{a^3+b^7}{c^4}$

(e) $\dfrac{a^2}{b}+\dfrac{b^2}{a}=\dfrac{a^2+b^2}{a+b}$

(f) $\dfrac{u}{v^2+w^2}-\dfrac{u+2v}{v^2+w^2}=\dfrac{2v}{v^2+w^2}$

(g) $\dfrac{n^2+m^2}{n+m}+\dfrac{m^3}{n}=\dfrac{n^2+m^2+m^3+m}{n+m}$

(h) $\dfrac{\frac{7x^2}{8y}}{\frac{4y}{14x}}=x$