

Kürzen und erweitern von Bruchtermen

Erklärvideo



t1p.de/terme21

Onlineübungen



erklaerung-und-mehr.org

Aufgabenstellung: Finde den (möglichst großen) Term, durch den man kürzen kann!

1.	$\frac{3x}{6}$	(I) 3	(M) 5	(F) x
2.	$\frac{5x}{10}$	(X) x	(G) 3x	(N) 5
3.	$\frac{3x}{x}$	(F) x	(O) 3x	(T) 5x
4.	$\frac{6x}{3x^2}$	(B) 5x	(O) 3x	(Z) x
5.	$\frac{5x}{10x^2}$	(S) x	(R) 5x	(G) 3x
6.	$\frac{5x}{x^2}$	(M) x	(B) 3x	(P) 5x ²
7.	$\frac{3x^3}{6x}$	(W) 5x ²	(A) 3x	(U) x
8.	$\frac{5x^3}{10x^2}$	(T) 5x ²	(Z) x	(B) 3x ²
9.	$\frac{5x}{x^3}$	(T) 3x ²	(B) 3xy	(I) x
10.	$\frac{3x^3}{6x^2}$	(F) 3xy	(O) 3x ²	(P) 5xy ²
11.	$\frac{3x^3y}{6xy}$	(B) 5xy ²	(N) 3xy	(R) 3xy ²
12.	$\frac{5x^3y^2}{10xy^2}$	(S) 5xy ²	(M) 3xy ²	(W) 3
13.	$\frac{3x^2y^2}{9xy^2}$	(V) 3	(B) 6	(M) 3xy ²
14.	$\frac{3}{6x^3y}$	(R) 6	(A) 3	(Y) 8
15.	$\frac{x+3}{(x+3)(x-3)}$	(T) x+3	(R) 3	(Z) x-3
16.	$\frac{x-3}{(x+3)(x-3)}$	(H) x+3	(V) 3	(E) x-3
17.	$\frac{3}{3(x+3)}$	(R) 3	(P) x-3	(C) x+3
18.	$\frac{(x+3)(x-3)}{x+3}$	(S) 3	(I) x+3	(M) x-3
19.	$\frac{(x+3)(x-3)}{x-3}$	(A) x-3	(R) x+3	(W) 3
20.	$\frac{3(x+3)}{3}$	(A) x-3	(K) 5xy ²	(L) 3

Lösungswort:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Aufgabenstellung: Finde den richtigen Zähler des erweiterten Bruchs!

1.	$\frac{5}{3x} = \frac{?}{6x}$	(S) 6	(P) 10	(G) 20
2.	$\frac{3}{4x} = \frac{?}{12x}$	(A) 9	(B) 3	(P) 6
3.	$\frac{5}{2x} = \frac{?}{8x}$	(W) 10	(P) 20	(U) 15
4.	$\frac{4}{6x} = \frac{?}{12x}$	(I) 8	(Z) 16	(B) 4
5.	$\frac{4}{3x} = \frac{?}{9x}$	(T) 4	(B) 3	(E) 12
6.	$\frac{3}{5x} = \frac{?}{15x}$	(F) 6	(R) 9	(P) 12
7.	$\frac{3}{2x} = \frac{?}{4x^2}$	(B) 6	(P) $6x$	(R) $6x^2$
8.	$\frac{4}{9x} = \frac{?}{18x^2}$	(R) $8x$	(M) 8	(W) $8x^2$
9.	$\frac{3}{3x} = \frac{?}{9x^2}$	(V) 9	(B) x	(O) $9x$
10.	$\frac{3}{x} = \frac{?}{4x^2}$	(R) 12	(D) $12x$	(Y) x
11.	$\frac{7}{5x} = \frac{?}{5x^2y}$	(U) $35xy$	(R) $7x$	(Z) $7y$
12.	$\frac{4}{3y} = \frac{?}{9x^2y}$	(H) $12x$	(V) $12xy$	(K) $12x^2$
13.	$\frac{6}{4} = \frac{?}{8xy}$	(T) $12xy$	(P) $12y$	(C) $12xy^2$
14.	$\frac{3}{4} = \frac{?}{20xy^2}$	(S) $15xy$	(I) $15xy^2$	(M) $15x^2y$
15.	$\frac{2y}{6x} = \frac{?}{12xy}$	(O) $4y^2$	(R) $4y$	(W) $4y^3$
16.	$\frac{4x}{2y} = \frac{?}{6xy^2}$	(A) $12xy^2$	(K) 12	(N) $12x^2y$

Lösungswort:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Aufgabenstellung: Welcher Zähler passt zu welchem Bruch?

Lösungswort:

	$\frac{?}{3xy}$	$\frac{?}{2xy}$	$\frac{?}{3y}$	$\frac{?}{3}$	$\frac{?}{2y}$	$\frac{?}{3x}$	$\frac{?}{4y}$	$\frac{?}{3x^2}$	$\frac{?}{2x^2y}$	$\frac{?}{4xy}$	$\frac{?}{6xy}$	$\frac{?}{3x^3}$
(L)	$\frac{1}{3x} = \frac{?}{9xy}$	(C)	$\frac{1}{3x} = \frac{?}{9x}$	(L)	$\frac{1}{3x} = \frac{?}{12xy}$	(S)	$\frac{1}{6} = \frac{?}{12x^2y}$					
(H)	$\frac{1}{2} = \frac{?}{12xy}$	(E)	$\frac{1}{3} = \frac{?}{9x^3}$	(A)	$\frac{1}{3x} = \frac{?}{9x^3}$	(M)	$\frac{1}{3x} = \frac{?}{9xy}$					
(I)	$\frac{1}{6} = \frac{?}{12xy}$	(H)	$\frac{1}{6x} = \frac{?}{12xy}$	(F)	$\frac{1}{3} = \frac{?}{9x}$	(C)	$\frac{1}{3} = \frac{?}{12xy}$					

Aufgabenstellung: Kürze die Brüche so weit wie möglich!

Level 1:

- a) $\frac{2a^2}{4a} = \underline{\hspace{2cm}}$ b) $\frac{6xy}{5xy} = \underline{\hspace{2cm}}$ c) $\frac{12r}{6r^3} = \underline{\hspace{2cm}}$ d) $\frac{4ab^2c}{8b^2} = \underline{\hspace{2cm}}$
- e) $\frac{9x^2yz^2}{18z^4} = \underline{\hspace{2cm}}$ f) $\frac{36uvw}{72u^2v^2w^2} = \underline{\hspace{2cm}}$ g) $\frac{a^2y \cdot 4b}{b^2y \cdot 7ax} = \underline{\hspace{2cm}}$ h) $\frac{4a^2 \cdot 15b^2x}{5b \cdot 32xa} = \underline{\hspace{2cm}}$
- i) $\frac{14ax^2y}{35a^2 \cdot 2x^2y^2} = \underline{\hspace{2cm}}$ j) $\frac{52a^2bc \cdot 13d^2}{26a^2c \cdot 2b^2d^2} = \underline{\hspace{2cm}}$ k) $\frac{2u^2v}{4uv} = \underline{\hspace{2cm}}$ l) $\frac{4x^2y}{8y} = \underline{\hspace{2cm}}$
- m) $\frac{28x^2y}{21xy} = \underline{\hspace{2cm}}$ n) $\frac{25ab^2}{15b} = \underline{\hspace{2cm}}$ o) $\frac{30u^2v^2}{15u^3v} = \underline{\hspace{2cm}}$ p) $\frac{150ab^2}{250ab} = \underline{\hspace{2cm}}$

Lösungen: $\frac{4a}{7bx}$ $\frac{13}{b}$ $\frac{ac}{2}$ $\frac{a}{2}$ $\frac{1}{2uvw}$ $\frac{1}{5ay}$ $\frac{2}{r^2}$ $\frac{3ab}{8}$ $\frac{x^2y}{2z^2}$ $\frac{6}{5}$ $\frac{3b}{5}$ $\frac{4x}{3}$ $\frac{u}{2}$ $\frac{5ab}{3}$ $\frac{x^2}{2}$ $\frac{2v}{u}$

Level 2:

- a) $\frac{4x+2}{6x+3} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ b) $\frac{2x^2+x}{3x^2-x} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ c) $\frac{2a+4a^2}{4a^2+6a} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
- d) $\frac{5r+10r^2}{2r^2+r} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ e) $\frac{2x-4x^2}{3x-6x^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ f) $\frac{a^2-ab}{a^3-a^2b} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
- g) $\frac{x^2+xy}{xy+y^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ h) $\frac{6x-18y}{9x-27y} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ i) $\frac{30ab}{15a^2+10b^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Lösungen: $\frac{1}{a}$ $\frac{x}{y}$ $\frac{2}{3}$ $\frac{2}{3}$ $\frac{6ab}{3a^2+2b^2}$ $\frac{2}{3}$ $\frac{2x+1}{3x-1}$ 5 $\frac{1+2a}{2a+3}$

Level 3:

- a) $\frac{4r-8s}{24rs} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ b) $\frac{x^2+xy}{x^3+x^2y} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ c) $\frac{rs+s^3}{r^2s+rs^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
- d) $\frac{21a+35b}{14a+28b} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ e) $\frac{2xy+3y^2}{2xy-3y^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ f) $\frac{12a^2c-10a^2}{18b^2c-15b^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
- g) $\frac{3a+6b}{4a+8b} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ h) $\frac{4x+12}{8x} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ i) $\frac{2r^2+rs}{rs} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Lösungen: $\frac{2x+3y}{2x-3y}$ $\frac{r-2s}{6rs}$ $\frac{3a+5b}{2(a+2b)}$ $\frac{1}{x}$ $\frac{2a^2}{3b^2}$ $\frac{r+s^2}{r(r+s)}$ $\frac{3}{4}$ $\frac{x+3}{2x}$ $\frac{2r+s}{s}$

Level 4:

- a) $\frac{a^2-b^2}{a+b} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ b) $\frac{x+y}{x^2-y^2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ c) $\frac{r^2-4}{r+2} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
- d) $\frac{s^2-t^2}{s+t} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ e) $\frac{(x-y)^3 \cdot 2a}{(x-y)^2 \cdot 4b} = \underline{\hspace{2cm}}$ f) $\frac{(a+b)^2}{(a+b)^3} = \underline{\hspace{2cm}}$
- g) $\frac{(x-1)}{(x-1)^2} = \underline{\hspace{2cm}}$ h) $\frac{(x^2-4) \cdot 8x}{(x+2)^2 \cdot 10} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$ i) $\frac{3a+9}{5a^2-45} = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

Lösungen: $\frac{3}{5 \cdot (a-3)}$ $s - t$ $\frac{1}{x-1}$ $\frac{1}{x-y}$ $\frac{1}{a+b}$ $a - b$ $\frac{(x-y) \cdot a}{2b}$ $r - 2$

LÖSUNGEN

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3. $\frac{3x}{x}$	(F) x	(O) 3x	(T) 5x
4. $\frac{6x}{3x^2}$	(B) 5x	(O) 3x	(Z) x
5. $\frac{5x}{10x^2}$	(S) x	(R) 5x	(G) 3x
6. $\frac{5x}{x^2}$	(M) x	(B) 3x	(P) 5x ²
7. $\frac{3x^3}{6x}$	(W) 5x ²	(A) 3x	(U) x
8. $\frac{5x^3}{10x^2}$	(T) 5x²	(Z) x	(B) 3x ²
9. $\frac{5x}{x^3}$	(T) 3x ²	(B) 3xy	(I) x
10. $\frac{3x^3}{6x^2}$	(F) 3xy	(O) 3x²	(P) 5xy ²
11. $\frac{3x^3y}{6xy}$	(B) 5xy ²	(N) 3xy	(R) 3xy ²
12. $\frac{5x^3y^2}{10xy^2}$	(S) 5xy²	(M) 3xy ²	(W) 3
13. $\frac{3x^2y^2}{9xy^2}$	(V) 3	(B) 6	(M) 3xy²
14. $\frac{3}{6x^3y}$	(R) 6	(A) 3	(Y) 8
15. $\frac{x+3}{(x+3)(x-3)}$	(T) x+3	(R) 3	(Z) x-3
16. $\frac{x-3}{(x+3)(x-3)}$	(H) x+3	(V) 3	(E) x-3
17. $\frac{3}{3(x+3)}$	(R) 3	(P) x-3	(C) x+3
18. $\frac{(x+3)(x-3)}{x+3}$	(S) 3	(I) x+3	(M) x-3
19. $\frac{(x+3)(x-3)}{x-3}$	(A) x-3	(R) x+3	(W) 3
20. $\frac{3(x+3)}{3}$	(A) x-3	(K) 5xy ²	(L) 3

Lösungswort:

I N F O R M A T I O N S M A T E R I A L
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

Aufgabenstellung: Finde den richtigen Zähler des erweiterten Bruchs!

1.	$\frac{5}{3x} = \frac{?}{6x}$	(S) 6	(P) 10	(G) 20
2.	$\frac{3}{4x} = \frac{?}{12x}$	(A) 9	(B) 3	(P) 6
3.	$\frac{5}{2x} = \frac{?}{8x}$	(W) 10	(P) 20	(U) 15
4.	$\frac{4}{6x} = \frac{?}{12x}$	(I) 8	(Z) 16	(B) 4
5.	$\frac{4}{3x} = \frac{?}{9x}$	(T) 4	(B) 3	(E) 12
6.	$\frac{3}{5x} = \frac{?}{15x}$	(F) 6	(R) 9	(P) 12
7.	$\frac{3}{2x} = \frac{?}{4x^2}$	(B) 6	(P) 6x	(R) $6x^2$
8.	$\frac{4}{9x} = \frac{?}{18x^2}$	(R) 8x	(M) 8	(W) $8x^2$
9.	$\frac{3}{3x} = \frac{?}{9x^2}$	(V) 9	(B) x	(O) 9x
10.	$\frac{3}{x} = \frac{?}{4x^2}$	(R) 12	(D) 12x	(Y) x
11.	$\frac{7}{5x} = \frac{?}{5x^2y}$	(U) 35xy	(R) 7x	(Z) 7y
12.	$\frac{4}{3y} = \frac{?}{9x^2y}$	(H) 12x	(V) 12xy	(K) 12x^2
13.	$\frac{6}{4} = \frac{?}{8xy}$	(T) 12xy	(P) 12y	(C) $12xy^2$
14.	$\frac{3}{4} = \frac{?}{20xy^2}$	(S) 15xy	(I) 15xy^2	(M) $15x^2y$
15.	$\frac{2y}{6x} = \frac{?}{12xy}$	(O) 4y^2	(R) 4y	(W) $4y^3$
16.	$\frac{4x}{2y} = \frac{?}{6xy^2}$	(A) $12xy^2$	(K) 12	(N) 12x^2y

Lösungswort: P A P I E R P R O D U K T I O N
 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

Aufgabenstellung: Welcher Zähler passt zu welchem Bruch?

Lösungswort: M I L C H F L A S C H E
 3xy 2xy 3y 3 2y 3x 4y 3x² 2x²y 4xy 6xy 3x³

(L) $\frac{1}{3x} = \frac{?}{9xy}$	(C) $\frac{1}{3x} = \frac{?}{9x}$	(L) $\frac{1}{3x} = \frac{?}{12xy}$	(S) $\frac{1}{6} = \frac{?}{12x^2y}$
(H) $\frac{1}{2} = \frac{?}{12xy}$	(E) $\frac{1}{3} = \frac{?}{9x^3}$	(A) $\frac{1}{3x} = \frac{?}{9x^3}$	(M) $\frac{1}{3x} = \frac{?}{9xy}$
(I) $\frac{1}{6} = \frac{?}{12xy}$	(H) $\frac{1}{6x} = \frac{?}{12xy}$	(F) $\frac{1}{3} = \frac{?}{9x}$	(C) $\frac{1}{3} = \frac{?}{12xy}$

Aufgabenstellung: Kürze die Brüche so weit wie möglich!

Level 1:

a) $\frac{2a^2}{4a} = \frac{a}{2}$

b) $\frac{6xy}{5xy} = \frac{6}{5}$

c) $\frac{12r}{6r^3} = \frac{2}{r^2}$

d) $\frac{4ab^2c}{8b^2} = \frac{ac}{2}$

e) $\frac{9x^2yz^2}{18z^4} = \frac{x^2y}{2z^2}$

f) $\frac{36uvw}{72u^2v^2w^2} = \frac{1}{2uvw}$

g) $\frac{a^2y \cdot 4b}{b^2y \cdot 7ax} = \frac{4a}{7bx}$

h) $\frac{4a^2 \cdot 15b^2x}{5b \cdot 32xa} = \frac{3ab}{8}$

i) $\frac{14ax^2y}{35a^2 \cdot 2x^2y^2} = \frac{1}{5ay}$

j) $\frac{52a^2bc \cdot 13d^2}{26a^2c \cdot 2b^2d^2} = \frac{13}{b}$

k) $\frac{2u^2v}{4uv} = \frac{u}{2}$

l) $\frac{4x^2y}{8y} = \frac{x^2}{2}$

m) $\frac{28x^2y}{21xy} = \frac{4x}{3}$

n) $\frac{25ab^2}{15b} = \frac{5ab}{3}$

o) $\frac{30u^2v^2}{15u^3v} = \frac{2v}{u}$

p) $\frac{150ab^2}{250ab} = \frac{3b}{5}$

Level 2:

a) $\frac{4x+2}{6x+3} = \frac{2(2x+1)}{3(2x+1)} = \frac{2}{3}$

b) $\frac{2x^2+x}{3x^2-x} = \frac{x(2x+1)}{x(3x-1)} = \frac{2x+1}{3x-1}$

c) $\frac{2a+4a^2}{4a^2+6a} = \frac{2a(1+2a)}{2a(2a+3)} = \frac{1+2a}{2a+3}$

d) $\frac{5r+10r^2}{2r^2+r} = \frac{5r(1+2r)}{r(2r+1)} = 5$

e) $\frac{2x-4x^2}{3x-6x^2} = \frac{2x(1-2x)}{3x(1-2x)} = \frac{2}{3}$

f) $\frac{a^2-ab}{a^3-a^2b} = \frac{a(a-b)}{a^2(a-b)} = \frac{1}{a}$

g) $\frac{x^2+xy}{xy+y^2} = \frac{x(x+y)}{y(x+y)} = \frac{x}{y}$

h) $\frac{6x-18y}{9x-27y} = \frac{6(x-3y)}{9(x-3y)} = \frac{2}{3}$

i) $\frac{30ab}{15a^2+10b^2} = \frac{30ab}{5(3a^2+2b^2)} = \frac{6ab}{3a^2+2b^2}$

Level 3:

a) $\frac{4r-8s}{24rs} = \frac{4(r-2s)}{24rs} = \frac{r-2s}{6rs}$

b) $\frac{x^2+xy}{x^3+x^2y} = \frac{x(x+y)}{x^2(x+y)} = \frac{1}{x}$

c) $\frac{rs+s^3}{r^2s+rs^2} = \frac{s(r+s^2)}{rs(r+s)} = \frac{r+s^2}{r(r+s)}$

d) $\frac{21a+35b}{14a+28b} = \frac{7(3a+5b)}{14(a+2b)} = \frac{3a+5b}{2(a+2b)}$

e) $\frac{2xy+3y^2}{2xy-3y^2} = \frac{y(2x+3y)}{y(2x-3y)} = \frac{2x+3y}{2x-3y}$

f) $\frac{12a^2c-10a^2}{18b^2c-15b^2} = \frac{2a^2(6c-5)}{3b^2(6c-5)} = \frac{2a^2}{3b^2}$

g) $\frac{3a+6b}{4a+8b} = \frac{3(a+2b)}{4(a+2b)} = \frac{3}{4}$

h) $\frac{4x+12}{8x} = \frac{4(x+3)}{8x} = \frac{x+3}{2x}$

i) $\frac{2r^2+rs}{rs} = \frac{r(2r+s)}{rs} = \frac{2r+s}{s}$

Level 4:

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

b) $\frac{x+y}{x^2-y^2} = \frac{x+y}{(x+y)(x-y)} = \frac{1}{x-y}$

c) $\frac{r^2-4}{r+2} = \frac{(r+2)(r-2)}{r+2} = r-2$

d) $\frac{s^2-t^2}{s+t} = \frac{(s+t)(s-t)}{s+t} = s-t$

e) $\frac{(x-y)^3 \cdot 2a}{(x-y)^2 \cdot 4b} = \frac{(x-y) \cdot a}{2b}$

f) $\frac{(a+b)^2}{(a+b)^3} = \frac{1}{a+b}$

g) $\frac{(x-1)}{(x-1)^2} = \frac{1}{x-1}$

h) $\frac{(x^2-4) \cdot 8x}{(x+2)^2 \cdot 10} = \frac{(x+2)(x-2) \cdot 8x}{(x+2)^2 \cdot 10} = \frac{(x-2) \cdot 4x}{(x+2) \cdot 5}$

i) $\frac{3a+9}{5a^2-45} = \frac{3(a+3)}{5(x+3)(x-3)} = \frac{3}{5 \cdot (a-3)}$