Vermenigvuldigen van breuken uitwerkingen

Bij vermenigvuldigen van breuken vermenigvuldig je de tellers met elkaar en de noemers met elkaar, hiervoor hoeven de noemers niet gelijk te zijn. Als laatste vereenvoudig je de breuk.
Zie het voorbeeld hieronder.

Vb. $\frac{2}{3}\times\frac{1}{4} = \frac{2\times1}{3\times4} = \frac{2}{12} = \frac{1}{6}$

Opgave 4.1

Bereken.

a) $\frac{1}{3}\times\frac{1}{3} = \frac{1\times1}{3\times3} = \frac{1}{9}$

b) $\frac{1}{2}\times\frac{1}{4} = \frac{1\times1}{2\times4} = \frac{1}{8}$

c) $\frac{1}{2}\times\frac{2}{5} = \frac{1\times2}{2\times5} = \frac{2}{10} = \frac{1}{5}$

d) $\frac{2}{3}\times\frac{1}{2} = \frac{2\times1}{3\times2} = \frac{2}{6} = \frac{1}{3}$

e) $\frac{5}{12}\times\frac{3}{11} = \frac{5\times3}{12\times11} = \frac{15}{132}$

f) $\frac{3}{4}\times\frac{7}{9} = \frac{3\times7}{4\times9} = \frac{21}{36} = \frac{7}{12}$

g) $\frac{3}{8}\times\frac{2}{5} = \frac{3\times2}{8\times5} = \frac{6}{40} = \frac{3}{20}$

h) $\frac{5}{6}\times\frac{1}{2} = \frac{5\times1}{6\times2} = \frac{5}{12}$

Opgave 4.2

Bereken.

a) $\frac{1}{6}\times\frac{1}{7} = \frac{1\times1}{6\times7} = \frac{1}{42}$

b) $\frac{4}{5}\times\frac{3}{40} = \frac{4\times3}{5\times40} = \frac{12}{200} = \frac{3}{50}$

c) $\frac{7}{8}\times\frac{8}{9} = \frac{7\times8}{8\times9} = \frac{56}{72} = \frac{7}{9}$

d) $\frac{12}{11}\times\frac{1}{5} = \frac{12\times1}{11\times5} = \frac{12}{55}$

e) $\frac{4}{2}\times\frac{5}{7} = \frac{4\times5}{2\times7} = \frac{20}{14} = 1\frac{3}{7}$

f) $\frac{3}{4}\times\frac{8}{7} = \frac{3\times8}{4\times7} = \frac{24}{28} = \frac{6}{7}$

g) $\frac{5}{8}\times\frac{8}{5} = \frac{5\times8}{8\times5} = \frac{40}{40} = 1$

h) $\frac{5}{13}\times\frac{3}{2} = \frac{5\times3}{13\times2} = \frac{15}{26}$

Bij het vermenigvuldigen van breuken waar gehelen in voorkomen moet je ervoor zorgen dat je de gehele wegwerkt. Dit doe je door ze in de teller te halen.
Dit werkt als volgt:

Vb. $3\frac{2}{5}\times4\frac{1}{6} = \frac{(3\times5)+2}{5}\times\frac{(4\times6)+1}{6}$

$= \frac{17}{5}\times\frac{25}{6} = \frac{17\times25}{5\times6}$

$= \frac{425}{30} = 14\frac{1}{6}$

Opgave 4.3

Bereken.

a) $1\frac{1}{3}\times\frac{1}{3} = \frac{4}{3}\times\frac{1}{3} = \frac{4}{9} = \frac{2}{3}$

b) $2\frac{1}{2}\times 2\frac{2}{5} = \frac{5}{2}\times\frac{12}{5} = \frac{60}{10} = 6$

c) $3\frac{2}{5}\times\frac{1}{4} = \frac{17}{5}\times\frac{1}{4} = \frac{17}{20}$

d) $\frac{3}{10}\times 5\frac{1}{2} = \frac{3}{10}\times\frac{11}{2} = \frac{33}{20} = 1\frac{13}{20}$

e) $2\frac{1}{4}\times 3\frac{1}{5} = \frac{9}{4}\times\frac{16}{5} = \frac{144}{20} = 7\frac{4}{20} = 7\frac{1}{5}$

f) $\frac{1}{7}\times 1\frac{1}{3} = \frac{1}{7}\times\frac{4}{3} = \frac{4}{21}$

g) $2\frac{1}{2}\times\frac{1}{5} = \frac{5}{2}\times\frac{1}{5} = \frac{5}{10} = \frac{1}{2}$

h) $\frac{3}{4}\times 2\frac{2}{3} = \frac{3}{4}\times\frac{8}{3} = \frac{24}{12} = 2$

Opgave 4.4

Bereken.

a) $\frac{1}{3}\times 2\frac{3}{4} = \frac{1}{3}\times\frac{11}{4} = \frac{11}{12}$

b) $1\frac{7}{10}\times\frac{1}{2} = \frac{17}{10}\times\frac{1}{2} = \frac{17}{20}$

c) $2\frac{1}{4}\times 3\frac{1}{3} = \frac{9}{4}\times\frac{10}{3} = \frac{90}{12} = 7\frac{6}{12} = 7\frac{1}{2}$

d) $2\frac{2}{5}\times\frac{1}{4} = \frac{12}{5}\times\frac{1}{4} = \frac{12}{20} = \frac{3}{5}$

e) $\frac{5}{6}\times 2\frac{2}{5} = \frac{5}{6}\times\frac{12}{5} = \frac{60}{30} = 2$

f) $8\frac{1}{2}\times\frac{1}{6} = \frac{17}{2}\times\frac{1}{6} = \frac{17}{12} = 1\frac{5}{12}$

g) $\frac{2}{5}\times 4\frac{1}{3} = \frac{2}{5}\times\frac{13}{3} = \frac{26}{15}$

h) $\frac{1}{8}\times 4\frac{2}{3} = \frac{1}{8}\times\frac{14}{3} = \frac{14}{24} = \frac{7}{12}$

Opgave 4.5

Bereken.

a) $\frac{1}{2}\times 2\frac{4}{5} = \frac{1}{2}\times\frac{14}{5} = \frac{14}{10} = 1\frac{4}{10} = 1\frac{2}{5}$

b) $1\frac{1}{10}\times 2\frac{1}{4} = \frac{11}{10}\times\frac{9}{4} = \frac{99}{40} = 2\frac{19}{40}$

c) $\frac{4}{5}\times 3\frac{1}{3} = \frac{4}{5}\times\frac{10}{3} = \frac{40}{15} = 2\frac{10}{15} = 2\frac{2}{3}$

d) $3\frac{1}{4}\times\frac{3}{7} = \frac{13}{4}\times\frac{3}{7} = \frac{39}{28} = 1\frac{11}{28}$

e) $\frac{11}{12}\times\frac{2}{6} = \frac{22}{72} = \frac{11}{36}$

f) $\frac{2}{5}\times 2\frac{3}{7} = \frac{2}{5}\times\frac{17}{7} = \frac{34}{35}$

g) $1\frac{1}{3}\times\frac{3}{4} = \frac{4}{3}\times\frac{3}{4} = \frac{12}{12} = 1$

h) $7\times 2\frac{3}{4} = \frac{7}{1}\times\frac{11}{4} = \frac{77}{4} = 19\frac{1}{4}$

Opgave 4.6

Bereken.

a) $5 \times 2\frac{2}{5} = \frac{5}{1} \times \frac{12}{5} = \frac{60}{5} = 12$

b) $4\frac{1}{2} \times \frac{5}{7} = \frac{9}{2} \times \frac{5}{7} = \frac{45}{14} = 3\frac{3}{14}$

c) $1\frac{2}{3} \times 6 = \frac{5}{3} \times \frac{6}{1} = \frac{30}{3} = 10$

d) $2\frac{2}{5} \times 1\frac{1}{3} = \frac{12}{5} \times \frac{4}{3} = \frac{48}{15} = 3\frac{3}{15} = 3\frac{1}{5}$

e) $\frac{2}{3} \times 2\frac{2}{9} = \frac{2}{3} \times \frac{20}{9} = \frac{40}{27} = 1\frac{13}{27}$

f) $1\frac{7}{8} \times 2 = \frac{15}{8} \times \frac{2}{1} = \frac{30}{8} = 3\frac{6}{8} = 3\frac{3}{4}$

g) $1\frac{1}{2} \times 2\frac{1}{7} = \frac{3}{2} \times \frac{15}{7} = \frac{45}{14} = 3\frac{2}{14}$

h) $3 \times 2\frac{4}{5} = \frac{3}{1} \times \frac{14}{5} = \frac{42}{5} = 8\frac{2}{5}$

Opgave 4.7

Bereken.

a) $2\frac{2}{3} \times 1\frac{3}{4} = \frac{8}{3} \times \frac{7}{4} = \frac{56}{12} = 4\frac{8}{12} = 4\frac{2}{3}$

b) $2\frac{2}{3} \times 6 = \frac{8}{3} \times \frac{6}{1} = \frac{48}{3} = 16$

c) $4 \times 1\frac{2}{11} = \frac{4}{1} \times \frac{13}{11} = \frac{52}{11} = 4\frac{8}{11}$

d) $2\frac{3}{4} \times 1\frac{1}{3} = \frac{11}{4} \times \frac{4}{3} = \frac{44}{12} = 3\frac{8}{12} = 3\frac{2}{3}$

e) $2\frac{1}{4} \times 7 = \frac{9}{4} \times \frac{7}{1} = \frac{63}{4} = 15\frac{3}{4}$

f) $\frac{2}{5} \times 1\frac{1}{3} = \frac{2}{5} \times \frac{4}{3} = \frac{8}{15}$

g) $2\frac{2}{5} \times 1\frac{1}{2} = \frac{12}{5} \times \frac{3}{2} = \frac{36}{10} = 3\frac{6}{10} = 3\frac{3}{5}$

h) $3 \times 2\frac{2}{7} = \frac{3}{1} \times \frac{16}{7} = \frac{48}{7} = 6\frac{6}{7}$