Hoofdstuk 2

(Voor de berekeningen van de ggd wordt verwezen naar hoofdstuk 1)

2.1 vereenvoudigen

A

$$\frac{15}{20} = ggd\ is\ 5 = \frac{3}{4}$$

B

$$\frac{18}{45} = ggd\ is\ 9 = \frac{2}{5}$$

C

$$\frac{21}{49} = ggd\ is\ 7 = \frac{3}{7}$$

D

$$\frac{27}{81} = ggd\ is\ 27 = \frac{1}{3}$$

E

$$\frac{24}{96} = ggd\ is\ 24 = \frac{1}{4}$$

2.2 vereenvoudigen

A

$$\frac{60}{144} = ggd\ is\ 12 = \frac{5}{12}$$

B

$$\frac{144}{216} = ggd\ is\ \ 72 = \frac{2}{3}$$

C

$$\frac{135}{243} = ggd\ is\ 27 = \frac{5}{9}$$

D

$$\frac{864}{1024} = ggd\ is\ 32 = \frac{27}{32}$$

E

$$\frac{168}{288} = ggd\ is\ 24\ = \frac{7}{12}$$

2.3 maak gelijknamig

A

$$\frac{1}{3}\ en\ \frac{1}{4} = kgv\ is\ 12 = \frac{1x4}{12}\ en\ \frac{1x3}{12} = \frac{4}{12}\ en\ \frac{3}{12}$$

B

$$\frac{2}{5}\ en\ \frac{3}{7} = kgv\ is\ 35 = \frac{2x7}{35}\ en\ \frac{3x5}{35}\ = \frac{14}{35}\ en\ \frac{15}{35}$$

C

$$\frac{4}{9}\ en\ \frac{2}{5} = kgv\ is\ 45 = \frac{4x5}{45}\ en\ \frac{2x9}{45} = \frac{20}{45}\ en\ \frac{18}{45}$$

D

$$\frac{7}{11}\ en\ \frac{3}{4} = kgv\ is\ 44 = \frac{7x4}{44}\ en\ \frac{3x11}{44} = \frac{28}{44}\ en\ \frac{33}{44}$$

E

$$\frac{2}{13}\ en\ \frac{5}{12} = kgv\ is\ 156 = \frac{2x12}{156}\ en\ \frac{5x13}{156} = \frac{24}{156}\ en\ \frac{65}{156}$$

2.4 maak gelijknamig

A

$$\frac{1}{6}\ en\ \frac{1}{9} = kgv\ is\ 18 = \frac{1x3}{18}\ en\ \frac{1x2}{18} = \frac{3}{18}\ en\ \frac{2}{18}$$

B

$$\frac{3}{10}\ en\ \frac{2}{15} = kgv\ is\ 30 = \frac{3x3}{30}\ en\ \frac{2x2}{30} = \frac{9}{30}\ en\ \frac{4}{30}$$

C

$$\frac{3}{8}\ en\ \frac{5}{6} = kgv\ is\ 24 = \frac{3x3}{24}\ en\ \frac{5x4}{24} = \frac{9}{24}\ en\ \frac{20}{24}$$

D

$$\frac{5}{9}\ en\ \frac{7}{12} = kgv\ is\ 36 = \frac{5x4}{36}\ en\ \frac{7x3}{36} = \frac{20}{36}\ en\ \frac{21}{36}$$

E

$$\frac{3}{20}\ en\ \frac{1}{8} = kgv\ is\ 40 = \frac{3x2}{40}\ en\ \frac{1x5}{40} = \frac{6}{40}\ en\ \frac{5}{40}$$

2.5 maak gelijknamig

A

$$\frac{1}{3},\frac{1}{4}\ en\ \frac{1}{5} = kgv\ is\ 60 = \frac{1x20}{60},\frac{1x15}{60}\ en\ \frac{1x12}{60} = \frac{20}{60},\frac{15}{60}\ en\ \frac{12}{60}$$

B

$$\frac{2}{3},\frac{3}{5}\ en\ \frac{2}{7} = kgv\ is\ 105 = \frac{2x35}{105},\frac{3x21}{105}\ en\ \frac{2x15}{105} = \frac{70}{105},\frac{63}{105}\ en\ \frac{30}{105}$$

C

$$\frac{1}{4},\frac{1}{6}\ en\ \frac{1}{9} = kgv\ is\ 36 = \frac{1x9}{36},\frac{1x6}{36}\ en\ \frac{1x4}{36} = \frac{9}{36},\frac{6}{36}\ en\ \frac{4}{36}$$

D

$$\frac{2}{10},\frac{1}{15}\ en\ \frac{5}{6} = kgv\ is\ 30 = \frac{2x3}{30},\frac{1x2}{30}\ en\ \frac{5x5}{30} = \frac{6}{30},\frac{2}{30}\ en\ \frac{25}{30}$$

E

$$\frac{5}{12},\frac{7}{18}\ en\ \frac{3}{8} = kgv\ is\ 72 = \frac{5x6}{72},\frac{7x4}{72}\ en\ \frac{3x9}{72} = \frac{30}{72},\frac{28}{72}\ en\ \frac{27}{72}$$

2.6 maak gelijknamig

A

$$\frac{2}{27},\frac{5}{36}\ en\ \frac{5}{24} = kgv\ is\ 216 = \frac{2x8}{216},\frac{5x6}{216}\ en\ \frac{5x9}{216} = \frac{16}{216},\frac{30}{216}\ en\ \frac{45}{216}$$

B

$$\frac{7}{15},\frac{3}{20}\ en\ \frac{5}{6} = kgv\ is\ 60 = \frac{7x4}{60},\frac{3x3}{60}\ en\ \frac{5x10}{60} = \frac{28}{60},\frac{9}{60}\ en\ \frac{50}{60}$$

C

$$\frac{4}{21},\frac{3}{14}\ en\ \frac{7}{30} = kgv\ is\ 210 = \frac{4x10}{210},\frac{3x15}{210}\ en\ \frac{7x7}{210} = \frac{40}{210},\frac{45}{210}\ en\ \frac{49}{210}$$

D

$$\frac{4}{63},\frac{5}{42}\ en\ \frac{1}{56} = kgv\ is\ 504 = \frac{4x8}{504},\frac{5x12}{504}\ en\ \frac{1x9}{504} = \frac{32}{504},\frac{60}{504}\ en\ \frac{9}{504}$$

E

$$\frac{5}{78},\frac{5}{39}\ en\ \frac{3}{65} = kgv\ is\ 390 = \frac{5x5}{390},\frac{5x10}{390}\ en\ \frac{3x6}{390} = \frac{25}{390},\frac{50}{390}\ en\ \frac{18}{390}$$

2.7 welke is de grootste?

A

$$\frac{5}{18}\ en\ \frac{6}{19} = kgv\ is\ 342 = \frac{5x19}{342}\ en\ \frac{6x18}{342} = \frac{95}{342}\ en\ \frac{108}{342} \qquad Dus\ \frac{6}{19}\ is\ grootste$$

B

$$\frac{7}{15}\ en\ \frac{5}{12} = kgv\ is\ 60 = \frac{7x4}{60}\ en\ \frac{5x5}{60} = \frac{28}{60}\ en\ \frac{25}{60} \qquad Dus\ \frac{7}{15}\ is\ grootste$$

C

$$\frac{9}{20}\ en\ \frac{11}{18} = kgv\ is\ 180 = \frac{9x9}{180}\ en\ \frac{11x10}{180} = \frac{81}{180}\ en\ \frac{110}{180} \qquad Dus\ \frac{11}{18}\ is\ grootste$$

D

$$\frac{11}{36}\ en\ \frac{9}{32} = kgv\ is\ 288 = \frac{11x8}{288}\ en\ \frac{9x9}{288} = \frac{88}{288}\ en\ \frac{81}{288} \qquad Dus\ \frac{11}{36}\ is\ grootste$$

E

$$\frac{20}{63}\ en\ \frac{25}{72} = kgv\ is\ 504 = \frac{20x8}{504}\ en\ \frac{25x7}{504} = \frac{160}{504}\ en\ \frac{175}{504} \qquad Dus\ \frac{25}{72}\ is\ grootste$$

2.8 welke is de grootste?

A

$$\frac{4}{7}\ en\ \frac{2}{3} = kgv\ is\ 21 = \frac{4x3}{21}\ en\ \frac{2x7}{21} = \frac{12}{21}\ en\ \frac{14}{21} \qquad Dus\ \frac{2}{3}\ is\ grootste$$

B

$\frac{14}{85}\ en\ \frac{7}{51} = kgv\ is\ 255 = \frac{14x3}{255}\ en\ \frac{7x5}{255} = \frac{42}{255}\ en\ \frac{35}{255}$ $Dus\ \frac{14}{85}\ is\ grootste$

C

$\frac{26}{63}\ en\ \frac{39}{84} = kgv\ is\ 252 = \frac{26x4}{252}\ en\ \frac{39x3}{252} = \frac{104}{252}\ en\ \frac{117}{252}$ $Dus\ \frac{39}{84}\ is\ grootste$

D

$\frac{31}{90}\ en\ \frac{23}{72} = kgv\ is\ 360 = \frac{31x4}{360}\ en\ \frac{23x5}{360} = \frac{124}{360}\ en\ \frac{115}{360}$ $Dus\ \frac{31}{90}\ is\ grootste$

E

$\frac{37}{80}\ en\ \frac{29}{60} = kgv\ is\ 240 = \frac{37x3}{240}\ en\ \frac{29x4}{240} = \frac{111}{240}\ en\ \frac{116}{240}$ $Dus\ \frac{29}{60}\ is\ grootste$

2.9 bereken (bij de volgende sommen wordt het gelijknamig maken niet meer voorgedaan want dit behoort student te kennen door sommen 2.1-2.8)

A

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

B

$\frac{1}{5} - \frac{1}{6} = \frac{6}{30} - \frac{5}{30} = \frac{1}{30}$

C

$\frac{1}{7} + \frac{1}{9} = \frac{9}{63} + \frac{7}{63} = \frac{16}{63}$

D

$\frac{1}{9} - \frac{1}{11} = \frac{11}{99} - \frac{9}{99} = \frac{2}{99}$

E

$\frac{1}{2} + \frac{1}{15} = \frac{15}{30} + \frac{2}{30} = \frac{17}{30}$

2.10 bereken

A

$\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12} = 1\frac{5}{12}$

B

$\frac{3}{5} - \frac{4}{7} = \frac{21}{35} - \frac{20}{35} = \frac{1}{35}$

C

$\frac{2}{7} + \frac{3}{4} = \frac{8}{28} + \frac{21}{28} = \frac{29}{28} = 1\frac{1}{28}$

D

$\frac{4}{9} - \frac{3}{8} = \frac{32}{72} - \frac{27}{72} = \frac{5}{72}$

E

$$\frac{5}{11}+\frac{4}{15}=\frac{75}{165}+\frac{44}{165}=\frac{119}{165}$$

2.11 bereken

A

$$\frac{1}{6}+\frac{1}{4}=\frac{2}{12}+\frac{3}{12}=\frac{5}{12}$$

B

$$\frac{1}{9}-\frac{2}{15}=\frac{5}{45}-\frac{6}{45}=-\frac{1}{45}$$

C

$$\frac{3}{8}+\frac{1}{12}=\frac{9}{24}+\frac{2}{24}=\frac{11}{24}$$

D

$$\frac{1}{3}+\frac{5}{6}=\frac{2}{6}+\frac{5}{6}=\frac{7}{6}=1\frac{1}{6}$$

E

$$\frac{4}{15}-\frac{3}{10}=\frac{8}{30}-\frac{9}{30}=-\frac{1}{30}$$

2.12 bereken (denk om het vereenvoudigen van de breuk! Zo niet dan geeft dit puntenaftrek)

A

$$\frac{2}{45}+\frac{1}{21}=\frac{14}{315}+\frac{15}{315}=\frac{29}{315}$$

B

$$\frac{5}{27}-\frac{1}{36}=\frac{20}{108}-\frac{3}{108}=\frac{17}{108}$$

C

$$\frac{5}{72}+\frac{7}{60}=\frac{25}{360}+\frac{42}{360}=\frac{67}{360}$$

D

$$\frac{3}{34}+\frac{1}{85}=\frac{15}{170}+\frac{2}{170}=\frac{17}{170}=\frac{1}{10}$$

E

$$\frac{7}{30}+\frac{8}{105}=\frac{49}{210}+\frac{16}{210}=\frac{65}{210}=\frac{13}{42}$$

2.13 bereken (tip: de noemers zijn vaak priemgetallen dus hieruit is de KGV makkelijk te bepalen.)

A

$$\frac{1}{3}+\frac{1}{4}+\frac{1}{5}=\frac{20}{60}+\frac{15}{60}+\frac{12}{60}=\frac{47}{60}$$

B

$$\frac{1}{2}-\frac{1}{3}+\frac{1}{7}=\frac{21}{42}-\frac{14}{42}+\frac{6}{42}=\frac{13}{42}$$

C

$$\frac{1}{4}-\frac{1}{5}+\frac{1}{9}=\frac{45}{180}-\frac{36}{180}+\frac{20}{180}=\frac{29}{180}$$

D

$$\frac{1}{2}-\frac{1}{7}-\frac{1}{3}=\frac{21}{42}-\frac{6}{42}-\frac{14}{42}=\frac{1}{42}$$

E

$$\frac{1}{8}+\frac{1}{3}-\frac{1}{5}=\frac{15}{120}+\frac{40}{120}-\frac{24}{120}=\frac{31}{120}$$

2.14 bereken

A

$$\frac{1}{2}+\frac{1}{4}+\frac{1}{8}=\frac{4}{8}+\frac{2}{8}+\frac{1}{8}=\frac{7}{8}$$

B

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

C

$$\frac{1}{12}+\frac{1}{8}-\frac{1}{2}=\frac{2}{24}+\frac{3}{24}-\frac{12}{24}=-\frac{7}{24}$$

D

$$\frac{1}{9}-\frac{1}{12}+\frac{1}{18}=\frac{4}{36}-\frac{3}{36}+\frac{2}{36}=\frac{3}{36}=\frac{1}{12}$$

E

$$\frac{1}{10}-\frac{1}{15}+\frac{1}{6}=\frac{3}{30}-\frac{2}{30}+\frac{5}{30}=\frac{6}{30}=\frac{1}{5}$$

2.15 bereken

A

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

B

$$\frac{1}{3}+\frac{1}{6}-\frac{1}{4}=\frac{4}{12}+\frac{2}{12}-\frac{3}{12}=\frac{3}{12}=\frac{1}{4}$$

C

$$\frac{1}{12}-\frac{1}{8}-\frac{1}{2}=\frac{2}{24}-\frac{3}{24}-\frac{12}{24}=-\frac{13}{24}$$

D

$$\frac{1}{9}-\frac{1}{12}-\frac{1}{18}=\frac{4}{36}-\frac{3}{36}-\frac{2}{36}=-\frac{1}{36}$$

E

$$\frac{1}{10}+\frac{1}{15}+\frac{1}{6}=\frac{3}{30}+\frac{2}{30}+\frac{5}{30}=\frac{10}{30}=\frac{1}{3}$$

2.16 bereken

A

$$\frac{1}{3}-\frac{1}{9}+\frac{1}{27}=\frac{9}{27}-\frac{3}{27}+\frac{1}{27}=\frac{7}{27}$$

B

$$\frac{1}{2}+\frac{1}{10}-\frac{2}{15}=\frac{15}{30}+\frac{3}{30}-\frac{4}{30}=\frac{14}{30}=\frac{7}{15}$$

C

$$\frac{1}{18}-\frac{7}{30}-\frac{3}{20}=\frac{10}{180}-\frac{42}{180}-\frac{27}{180}=-\frac{59}{180}$$

D

$$\frac{3}{14}-\frac{1}{21}+\frac{5}{6}=\frac{9}{42}-\frac{2}{42}+\frac{35}{42}=\frac{42}{42}=1$$

E

$$\frac{2}{5}-\frac{3}{10}+\frac{4}{15}=\frac{12}{30}-\frac{9}{30}+\frac{8}{30}=\frac{11}{30}$$

2.17 bereken

A

$$\frac{2}{5}-\frac{1}{7}-\frac{1}{10}=\frac{28}{70}-\frac{10}{70}-\frac{7}{70}=\frac{11}{70}$$

B

$$\frac{3}{2}+\frac{2}{3}-\frac{5}{6}=\frac{9}{6}+\frac{4}{6}-\frac{5}{6}=\frac{8}{6}=1\frac{2}{6}=1\frac{1}{3}$$

C

$$\frac{8}{21}-\frac{2}{7}+\frac{3}{4}=\frac{32}{84}-\frac{24}{84}+\frac{63}{84}=\frac{71}{84}$$

D

$$\frac{2}{11}-\frac{5}{13}+\frac{1}{2}=\frac{52}{286}-\frac{110}{286}+\frac{143}{286}=\frac{85}{268}$$

E

$$\frac{4}{17}-\frac{3}{10}+\frac{2}{5}=\frac{40}{170}-\frac{51}{170}+\frac{68}{170}=\frac{57}{170}$$

2.18 bereken

A

$$\frac{2}{3}\ x\ \frac{5}{7}=\frac{2x5}{3x7}=\frac{10}{21}$$

B

$$\frac{4}{9}\ x\ \frac{2}{5} = \frac{2x2}{3x3}\ x\ \frac{2}{5} = \frac{2x2x2}{3x3x5} = \frac{8}{45}$$

C

$$\frac{2}{13}\ x\ \frac{5}{7} = \frac{2x5}{13x7} = \frac{10}{91}$$

D

$$\frac{9}{13}\ x\ \frac{7}{2} = \frac{3x3}{13}\ x\ \frac{7}{2} = \frac{3x3x7}{13x2} = \frac{63}{26} = 2\frac{11}{26}$$

E

$$\frac{1}{30}\ x\ \frac{13}{10} = \frac{1}{2x3x5}\ x\ \frac{13}{2x5} = \frac{1x13}{2x3x5x2x5} = \frac{13}{300}$$

2.19 bereken

A

$$\frac{2}{3}\ x\ \frac{9}{2} = \frac{2}{3}\ x\ \frac{3x3}{2} = \frac{2x3x3}{3x2} = \frac{\cancel{2}x\cancel{3}x3}{\cancel{3}x\cancel{2}} = \frac{3}{1} = 3$$

B

$$\frac{8}{9}\ x\ \frac{3}{4} = \frac{2x2x2}{3x3}\ x\ \frac{3}{2x2} = \frac{2x2x2x3}{3x3x2x2} = \frac{2x\cancel{2}x\cancel{2}x\cancel{3}}{\cancel{3}x3x\cancel{2}x\cancel{2}} = \frac{2}{3}$$

C

$$\frac{14}{15}\ x\ \frac{10}{7} = \frac{2x7}{3x5}\ x\ \frac{2x5}{7} = \frac{2x7x2x5}{3x5x7} = \frac{2x\cancel{7}x2x\cancel{5}}{3x\cancel{5}x\cancel{7}} = \frac{2x2}{3} = \frac{4}{3} = 1\frac{1}{3}$$

D

$$\frac{25}{12}\ x\ \frac{18}{35} = \frac{5x5}{2x2x3}\ x\ \frac{2x3x3}{5x7} = \frac{5x5x2x3x3}{2x2x3x5x7} = \frac{5x\cancel{5}x\cancel{2}x3x\cancel{3}}{\cancel{2}x2x\cancel{3}x\cancel{5}x7} = \frac{5x3}{2x7} = \frac{15}{14} = 1\ \frac{1}{14}$$

E

$$\frac{36}{21}\ x\ \frac{28}{27} = \frac{2x2x3x3}{3x7}\ x\ \frac{2x2x7}{3x3x3} = \frac{2x2x3x3x2x2x7}{3x7x3x3x3} = \frac{2x2x\cancel{3}x\cancel{3}x2x2x\cancel{7}}{\cancel{3}x\cancel{7}x\cancel{3}x3x3} = \frac{2x2x2x2}{3x3} = \frac{16}{9} = 1\frac{7}{9}$$

2.20 bereken

A

$$\frac{63}{40}\ x\ \frac{16}{27} = \frac{3x3x7}{2x2x2x5}\ x\ \frac{2x2x2x2}{3x3x3} = \frac{3x3x7x2x2x2x2}{2x2x2x5x3x3x3} = \frac{\cancel{3}x\cancel{3}x7x\cancel{2}x\cancel{2}x\cancel{2}x\cancel{2}x2}{\cancel{2}x\cancel{2}x\cancel{2}x5x\cancel{3}x\cancel{3}x3} = \frac{7x2}{5x3} = \frac{14}{15}$$

B

$$\frac{49}{25}\ x\ \frac{30}{21} = \frac{7x7}{5x5}\ x\ \frac{2x3x5}{3x7} = \frac{7x7x2x3x5}{5x5x3x7} = \frac{7x\cancel{7}x2x\cancel{3}x\cancel{5}}{\cancel{5}x5x\cancel{3}x\cancel{7}} = \frac{7x2}{5} = \frac{14}{5} = 2\frac{4}{5}$$

C

$$\frac{99}{26}\ x\ \frac{39}{44} = \frac{3x3x11}{2x13}\ x\ \frac{3x13}{2x2x11} = \frac{3x3x11x13x13}{2x13x2x2x11} = \frac{3x3x\cancel{11}x3x\cancel{13}}{2x\cancel{13}x2x2x\cancel{11}} = \frac{3x3x3}{2x2x2} = \frac{27}{8} = 3\frac{3}{8}$$

D

$$\frac{51}{36}\ x\ \frac{45}{34} = \frac{3x17}{2x2x3x3}\ x\ \frac{3x3x5}{2x17} = \frac{3x17x3x3x5}{2x2x3x3x2x17} = \frac{\cancel{3}x\cancel{17}x\cancel{3}x3x5}{2x2x\cancel{3}x\cancel{3}x2x\cancel{17}} = \frac{3x5}{2x2x2} = \frac{15}{8} = 1\frac{7}{8}$$

E

$$\frac{46}{57} \; x \; \frac{38}{69} = \frac{2x23}{3x19} \; x \; \frac{2x19}{3x23} = \frac{2x23x2x19}{3x19x3x23} = \frac{2x\cancel{23}x2x\cancel{19}}{3x\cancel{19}x3x\cancel{23}} = \frac{2x2}{3x3} = \frac{4}{9}$$

2.21 bereken

A

$$\frac{2}{3} \; x \; \frac{6}{5} \; x \; \frac{15}{4} = \frac{2}{3} \; x \; \frac{2x3}{5} \; x \; \frac{3x5}{2x2} = \frac{2x2x3x3x5}{3x5x2x2} = \frac{\cancel{2x}2\cancel{x3}x3\cancel{x5}}{\cancel{3x5}x\cancel{2x2}} = \frac{3}{1} = 3$$

B

$$\frac{6}{35} \; x \; \frac{15}{4} \; x \; \frac{14}{9} = \frac{2x3}{5x7} \; x \; \frac{3x5}{2x2} \; x \; \frac{2x7}{3x3} = \frac{2x3x3x5x2x7}{5x7x2x2x3x3} = \frac{\cancel{2x}3\cancel{x3}\cancel{x5}x2\cancel{x7}}{\cancel{5x7}x\cancel{2x2}\cancel{x3x3}} = \frac{1}{1} = 1$$

C

$$\frac{26}{33} \; x \; \frac{22}{9} \; x \; \frac{15}{39} = \frac{2x13}{3x11} \; x \; \frac{2x11}{3x3} \; x \; \frac{3x5}{3x13} = \frac{2x13x2x11x3x5}{3x11x3x3x3x13} = \frac{2x\cancel{13}x2x\cancel{11}x\cancel{3}x5}{\cancel{3x11}x3x3x3x\cancel{13}} = \frac{2x2x5}{3x3x3} = \frac{20}{27}$$

D

$$\frac{18}{49} \; x \; \frac{35}{12} \; x \; \frac{4}{21} = \frac{2x3x3}{7x7} \; x \; \frac{5x7}{2x2x3} \; x \; \frac{2x2}{3x7} = \frac{2x3x3x5x7x2x2}{7x7x2x2x3x3x7} = \frac{\cancel{2x}\cancel{3x3}x5x\cancel{7x2}x2}{\cancel{7}x7x\cancel{2x2}x\cancel{3x3}x7} = \frac{5x2}{7x7} = \frac{10}{49}$$

E

$$\frac{24}{15} \; x \; \frac{4}{27} \; x \; \frac{45}{16} = \frac{2x2x2x3}{3x5} \; x \; \frac{2x2}{3x3x3} \; x \; \frac{3x3x5}{2x2x2x2} = \frac{2x2x2x3x2x2x3x3x5}{3x5x3x3x3x2x2x2x2}$$

$$= \frac{\cancel{2x}2\cancel{x2x2x3x2}x2x\cancel{3x3x5}}{\cancel{3x5}x\cancel{3x3}x3x\cancel{2x2x2x2}} = \frac{2}{3}$$

2.22 bereken (toepassing van "vermenigvuldigen met het omgekeerde")

A

$$\frac{2}{3} : \frac{5}{7} = \frac{2}{3} \; x \; \frac{7}{5} = \frac{14}{15}$$

B

$$\frac{1}{3} : \frac{1}{2} = \frac{1}{3} \; x \; \frac{2}{1} = \frac{2}{3}$$

C

$$6 : \frac{1}{5} = \frac{6}{1} \; x \; \frac{5}{1} = \frac{30}{1} = 30$$

D

$$\frac{6}{5} : \frac{10}{9} = \frac{6}{5} \; x \; \frac{9}{10} = \frac{54}{50} = \frac{27}{25} = 1 \; \frac{2}{25}$$

E

$$\frac{4}{5} : \frac{5}{7} = \frac{4}{5} \; x \; \frac{7}{5} = \frac{28}{25} = 1 \; \frac{3}{25}$$

2.23 bereken

A

$$\frac{2}{3} : \frac{4}{9} = \frac{2}{3}\ x\ \frac{9}{4} = \frac{2}{3}\ x\ \frac{3x3}{2x2} = \frac{2x3x3}{3x2x2} = \frac{\cancel{2}x\cancel{3}x3}{\cancel{3}x\cancel{2}x2} = \frac{3}{2} = 1\frac{1}{2}$$

B

$$\frac{7}{10} : \frac{21}{15} = \frac{7}{10}\ x\ \frac{15}{21} = \frac{7}{2x5}\ x\ \frac{3x5}{3x7} = \frac{7x3x5}{2x5x3x7} = \frac{\cancel{7}x\cancel{3}x\cancel{5}}{2x\cancel{5}x\cancel{3}x\cancel{7}} = \frac{1}{2}$$

C

$$10 : \frac{5}{3} = \frac{10}{1}\ x\ \frac{3}{5} = \frac{2x5}{1}\ x\ \frac{3}{5} = \frac{2x5x3}{1x5} = \frac{2x\cancel{5}x3}{1x\cancel{5}} = \frac{2x3}{1} = \frac{6}{1} = 6$$

D

$$\frac{12}{25} : \frac{18}{35} = \frac{12}{25}\ x\ \frac{35}{18} = \frac{2x2x3}{5x5}\ x\ \frac{5x7}{2x3x3} = \frac{2x2x3x5x7}{5x5x2x3x3} = \frac{2x\cancel{2}x\cancel{3}x\cancel{5}x7}{\cancel{5}x5x\cancel{2}x\cancel{3}x3} = \frac{2x7}{5x3} = \frac{14}{15}$$

E

$$\frac{24}{49} : \frac{36}{49} = \frac{24}{49}\ x\ \frac{49}{36} = \frac{2x2x2x3}{7x7}\ x\ \frac{7x7}{2x2x3x3} = \frac{2x2x2x3x7x7}{7x7x2x2x3x3} = \frac{2x\cancel{2}x\cancel{2}x\cancel{3}x\cancel{7}x\cancel{7}}{\cancel{7}x\cancel{7}x\cancel{2}x\cancel{2}x3x\cancel{3}} = \frac{2}{3}$$

2.24 bereken

A

$$\frac{\frac{2}{3}}{\frac{3}{4}} = \frac{2}{3} : \frac{3}{4} = \frac{2}{3}\ x\ \frac{4}{3} = \frac{2x4}{3x3} = \frac{8}{9}$$

B

$$\frac{\frac{6}{5}}{\frac{9}{10}} = \frac{6}{5} : \frac{9}{10} = \frac{6}{5}\ x\ \frac{10}{9} = \frac{2x3}{5}\ x\ \frac{2x5}{3x3} = \frac{2x3x2x5}{5x3x3} = \frac{2x\cancel{3}x2x\cancel{5}}{\cancel{5}x\cancel{3}x3} = \frac{2x2}{3} = \frac{4}{3} = 1\frac{1}{3}$$

C

$$\frac{\frac{12}{7}}{\frac{9}{14}} = \frac{12}{7} : \frac{9}{14} = \frac{12}{7}\ x\ \frac{14}{9} = \frac{2x2x3}{7}\ x\ \frac{2x7}{3x3} = \frac{2x2x3x2x7}{7x3x3} = \frac{2x2x\cancel{3}x2x\cancel{7}}{\cancel{7}x\cancel{3}x3} = \frac{2x2x2}{3} = \frac{8}{3} = 2\frac{2}{3}$$

2.25 bereken

A

$$\frac{\frac{1}{2}+\frac{1}{3}}{\frac{1}{4}+\frac{1}{6}} = \frac{\frac{3}{6}+\frac{2}{6}}{\frac{3}{12}+\frac{2}{12}} = \frac{\frac{5}{6}}{\frac{5}{12}} = \frac{5}{6} : \frac{5}{12} = \frac{5}{6}\ x\ \frac{12}{5} = \frac{5}{2x3}\ x\ \frac{2x2x3}{5} = \frac{5x2x2x3}{2x3x5} = \frac{\cancel{5}x\cancel{2}x2x\cancel{3}}{\cancel{2}x\cancel{3}x\cancel{5}} = \frac{2}{1} = 2$$

B

$$\frac{\frac{5}{9}+\frac{3}{10}}{\frac{3}{4}-\frac{8}{9}} = \frac{\frac{50}{90}+\frac{27}{90}}{\frac{27}{36}-\frac{32}{36}} = \frac{\frac{77}{90}}{-\frac{5}{36}} = \frac{77}{90} : -\frac{5}{36} = \frac{77}{90}\ x - \frac{36}{5} = \frac{7x11}{2x3x3x5}\ x - \frac{2x2x3x3}{5}$$

$$= -\frac{7x11x2x2x3x3}{2x3x3x5x5} = -\frac{7x11x\cancel{2}x2x\cancel{3}x\cancel{3}}{\cancel{2}x\cancel{3}x\cancel{3}x5x5} = -\frac{7x11x2}{5x5} = -\frac{154}{25} = -6\frac{4}{25}$$

C

$$\frac{\frac{4}{3}-\frac{3}{4}}{\frac{2}{3}+\frac{3}{2}}=\frac{\frac{16}{12}-\frac{9}{12}}{\frac{4}{6}+\frac{9}{6}}=\frac{\frac{7}{12}}{\frac{13}{6}}=\frac{7}{12}:\frac{13}{6}=\frac{7}{12}\,x\,\frac{6}{13}=\frac{7}{2x2x3}\,x\,\frac{2x3}{13}=\frac{7x2x3}{2x2x3x13}=\frac{7x\cancel{2}x\cancel{3}}{\cancel{2}x2x\cancel{3}x13}$$

$$=\frac{7}{2x13}=\frac{7}{26}$$

2.26 bereken

A

$$\frac{\frac{2}{7}+\frac{5}{6}}{\frac{1}{5}+\frac{3}{4}}=\frac{\frac{12}{42}+\frac{35}{42}}{\frac{4}{20}+\frac{15}{20}}=\frac{\frac{47}{42}}{\frac{19}{20}}=\frac{47}{42}:\frac{19}{20}=\frac{47}{42}\,x\,\frac{20}{19}=\frac{7x7}{2x3x7}\,x\,\frac{2x2x5}{19}=\frac{7x7x2x2x5}{2x3x7x19}=\frac{\cancel{7}x7x\cancel{2}x2x5}{\cancel{2}x3x\cancel{7}x19}$$

$$=\frac{7x2x5}{3x19}=\frac{70}{57}=1\frac{13}{57}$$

B

$$\frac{\frac{1}{6}-\frac{5}{3}}{\frac{2}{7}-\frac{2}{5}}=\frac{\frac{1}{6}-\frac{10}{6}}{\frac{10}{35}-\frac{14}{35}}=\frac{\frac{-9}{6}}{-\frac{4}{35}}=-\frac{9}{6}:-\frac{4}{35}=\frac{9}{6}\,x\,\frac{35}{4}=\frac{3x3}{2x3}\,x\,\frac{5x7}{2x2}=\frac{3x3x5x7}{2x3x2x2}=\frac{\cancel{3}x3x5x7}{2x\cancel{3}x2x2}$$

$$=\frac{3x5x7}{2x2x2}=\frac{105}{8}=13\frac{1}{8}$$

C

$$\frac{\frac{3}{5}-\frac{11}{12}}{\frac{6}{7}+\frac{3}{11}}=\frac{\frac{36}{60}-\frac{55}{60}}{\frac{66}{77}+\frac{21}{77}}=\frac{-\frac{19}{60}}{\frac{87}{77}}=-\frac{19}{60}:\frac{87}{77}=-\frac{19}{60}\,x\,\frac{77}{87}=-\frac{19}{2x2x3x5}\,x\,\frac{7x11}{3x29}$$

$$=-\frac{19x7x11}{2x2x3x5x3x29}=-\frac{1463}{5220}$$