

Gr 8 Wiskunde / Mathematics

Breuke / Fractions (4)1. Wortels $\sqrt{\quad}$ / Roots $\sqrt{\quad}$ (surds)

"Recap" Eksponentwet $\sqrt{\quad}$
 Laws of Exponents $\sqrt{\quad}$

$$\sqrt[n]{a^m} = a^{\frac{m}{n}} \quad \text{NB!}$$

Wat mag jy nog doen?
What else can you do?

\times \div \checkmark

$+$ \div $-$ \times

$$\sqrt{16 \times 25} = \sqrt{16} \times \sqrt{25}$$

Combine / Seperate \checkmark

Kombineer / Apart \checkmark

$$\sqrt{36 + 64} = \sqrt{100}$$

Finish inside first!

a) $\sqrt{\frac{25}{16}}$
 $= \frac{\sqrt{25}}{\sqrt{16}}$
 $= \frac{5}{4}$
 $= 1\frac{1}{4}$

- Hanteer die breuk soos 'n dubbel-verdieping huis (bo apart, onder apart)
- Handle a fraction like a double-storey house (top and bottom separate)

VEREENVOUDIG
SIMPLIFY

Herken volkome vierkante!
Recognise square nr's!

$$\sqrt{1} = 1$$

$$\sqrt{16} = 4$$

$$\sqrt{49} = 7$$

$$\sqrt{100} = 10$$

$$\sqrt{4} = 2$$

$$\sqrt{25} = 5$$

$$\sqrt{64} = 8$$

$$\sqrt{121} = 11$$

$$\sqrt{9} = 3$$

$$\sqrt{36} = 6$$

$$\sqrt{81} = 9$$

$$\sqrt{144} = 12$$

(2)

$$\begin{aligned} \text{b)} \quad & \sqrt{\frac{1}{16}} \\ &= \frac{\sqrt{1}}{\sqrt{16}} \\ &= \frac{1}{4} \end{aligned}$$

• TIP : as jy groot skryf - gebruik 2 lyntjies
if you write big - use 2 lines

$$\begin{aligned} \text{c)} \quad & \sqrt{2\frac{7}{9}} \\ &= \sqrt{\frac{25}{9}} \\ &= \frac{\sqrt{25}}{\sqrt{9}} \\ &= \frac{5}{3} \\ &= 1\frac{2}{3} \end{aligned}$$

Skakel gemengde breuke om. ALTYD!
Convert mixed fractions. ALWAYS!

$$2\frac{7}{9} \rightarrow 2 \times 9 = 18 \quad \begin{array}{r} 18 \\ + 7 \\ \hline 25 \end{array}$$

$$\text{d)} \quad \sqrt[3]{\frac{8}{27}}$$

Wat van $\sqrt[3]{\quad}$?
What about $\sqrt[3]{\quad}$?

Herken volkome derdemagte
Recognise Cube numbers (Cubic)

$$\begin{aligned} \sqrt[3]{1} &= 1 & \sqrt[3]{8} &= 2 & \sqrt[3]{27} &= 3 & \sqrt[3]{64} &= 4 \\ \sqrt[3]{125} &= 5 & \sqrt[3]{1000} &= 10 \end{aligned}$$

$$\begin{aligned} &= \frac{\sqrt[3]{8}}{\sqrt[3]{27}} \\ &= \frac{2}{3} \end{aligned}$$

$$\begin{aligned} \text{e)} \quad & \sqrt[3]{\frac{1}{8}} \\ &= \frac{\sqrt[3]{1}}{\sqrt[3]{8}} \\ &= \frac{1}{2} \end{aligned}$$

Kombinasies / Combinations

- Onthou al die breuke reëls / toepassings.
Remember all the rules / applications.

1. $\sqrt{\frac{16}{25} + \frac{9}{25}}$ + \$ - Maak eers binne klaar ("clean your room")
Finish inside first

$$= \sqrt{\frac{25}{25}}$$

$$= \sqrt{1}$$

$$= 1$$

2. $\sqrt{\frac{16}{25}} + \sqrt{\frac{9}{25}}$ Doen apart / Do separate

$$= \frac{\sqrt{16}}{\sqrt{25}} + \frac{\sqrt{9}}{\sqrt{25}}$$

$$= \frac{4}{5} + \frac{3}{5}$$

$$= \frac{7}{5}$$

$$= 1\frac{2}{5}$$

3. $\sqrt{\frac{6}{25} + \frac{2}{5}}$ "Clean your room first"

$$= \sqrt{\frac{6}{25} + \frac{2 \times 5}{5 \times 5}}$$

$$= \sqrt{\frac{6}{25} + \frac{10}{25}}$$

$$= \sqrt{\frac{16}{25}}$$

$$= \frac{\sqrt{16}}{\sqrt{25}}$$

$$= \frac{4}{5}$$

4. $\sqrt{\sqrt[3]{\frac{8}{27}} - \frac{5}{9}}$

- Maak "kamer" $\sqrt[3]{}$ skoon, dan "huis" $\sqrt{\quad}$
- Clean "room" $\sqrt[3]{}$, then "house" $\sqrt{\quad}$

$$= \sqrt{\frac{\sqrt[3]{8}}{\sqrt[3]{27}} - \frac{5}{9}}$$

$$= \sqrt{\frac{2 \times 3}{3 \times 3} - \frac{5}{9}}$$

1.8

④

$$= \sqrt{\frac{6}{9} - \frac{5}{9}}$$

$$= \sqrt{\frac{1}{9}}$$

$$= \frac{\sqrt{1}}{\sqrt{9}}$$

$$= \frac{1}{3}$$

Begin binne en werk buite toe
Start inside, work your way out.