

1. Semplifica, se possibile, i seguenti radicali, supponendo non negativi tutti i fattori che eventualmente compaiono (anche nei risultati):

$\sqrt[10]{32}$	$\sqrt[10]{2^5} = \sqrt{2}$	$\sqrt[4]{9}$	$\sqrt[4]{3^2} = \sqrt{3}$
$\sqrt[6]{25}$	$\sqrt[6]{5^2} = \sqrt[3]{5}$	$\sqrt[6]{125}$	$\sqrt[6]{5^3} = \sqrt{5}$
$\sqrt[10]{16}$	$\sqrt[10]{2^4} = \sqrt[5]{4}$	$\sqrt[6]{5^2 + 3^2}$	Non semplificabile
$\sqrt[6]{27 a^3 b^6}$	$\sqrt[6]{(3 a b^2)^3} = \sqrt{3 a b^2}$	$\sqrt[10]{32 a^5 b^5}$	$\sqrt[10]{(2 a b)^5} = \sqrt{2 a b}$
$\sqrt[4]{a^4 b^6}$	$\sqrt{(a^2 b^3)^2} = a^2 b^3$	$\sqrt[3]{a^6 b^9}$	$\sqrt[3]{(a^2 b^3)^3} = a^2 b^3$

2. Esegui le seguenti operazioni tra radicali e semplifica i risultati:

$\sqrt{48} \cdot \sqrt{3}$	$\sqrt{2^4 \cdot 3} \cdot \sqrt{3} = \sqrt{2^4 \cdot 3^2} = \sqrt{(2^2 \cdot 3)^2} = 2^2 \cdot 3 = 12$
$\sqrt[3]{3} \cdot \sqrt[3]{9}$	$\sqrt[3]{3} \cdot \sqrt[3]{3^2} = \sqrt[3]{3 \cdot 3^2} = \sqrt[3]{3^3} = 3$
$\sqrt{32} \cdot \sqrt{2}$	$\sqrt{2^5} \cdot \sqrt{2} = \sqrt{2^6} = 2^3 = 8$
$\sqrt[5]{12} \cdot \sqrt[5]{36} \cdot \sqrt[5]{18}$	$\sqrt[5]{2^2 \cdot 3} \cdot \sqrt[5]{2^2 \cdot 3^2} \cdot \sqrt[5]{3^2 \cdot 2} = \sqrt[5]{2^5 \cdot 3^5} = \sqrt[5]{6^5} = 6$
$\sqrt[5]{\frac{6}{5}} \cdot \sqrt[5]{\frac{35}{42}} \cdot \sqrt[5]{2}$	$\sqrt[5]{\frac{2 \cdot 3}{5}} \cdot \sqrt[5]{\frac{5 \cdot 7}{2 \cdot 3 \cdot 7}} \cdot \sqrt[5]{2} = \sqrt[5]{2}$
$\sqrt{\frac{3}{4}} \cdot \sqrt{\frac{8}{27}} \cdot \sqrt{\frac{3}{12}}$	$\sqrt{\frac{3}{2^2}} \cdot \sqrt{\frac{2^3}{3^3}} \cdot \sqrt{\frac{3}{3 \cdot 2^2}} = \sqrt{\frac{1}{18}}$
$\sqrt[6]{\frac{x^4 y}{3}} \cdot \sqrt[6]{\frac{9}{x}} \cdot \sqrt[6]{\frac{y}{x}}$	$\sqrt[6]{\frac{x^4 y}{3} \cdot \frac{3^2}{x} \cdot \frac{y}{x}} = \sqrt[6]{3 x^2 y^2}$
$\sqrt[6]{a} \cdot \sqrt{a^3} \cdot \sqrt[3]{a^2}$	$\sqrt[6]{a \cdot a^9 \cdot a^4} = \sqrt[6]{a^{14}} = \sqrt[3]{a^7}$
$\sqrt[3]{\frac{9b}{10a}} \cdot \sqrt[6]{\frac{4a^2}{81b}} \cdot \sqrt{\frac{3a}{2b^2}}$	$\sqrt[6]{\frac{3^4 b^2}{2^2 \cdot 5^2 a^2} \cdot \frac{2^2 a^2}{3^4 b} \cdot \frac{3^3 a^3}{2^3 b^6}} = \sqrt[6]{\frac{3^3 a^3}{2^3 \cdot 5^2 b^5}} = \sqrt[6]{\frac{27 a^3}{200 b^5}}$
$\sqrt[3]{2} : \sqrt[12]{\frac{8}{9}}$	$\sqrt[3]{2} \cdot \sqrt[12]{\frac{3^2}{2^3}} = \sqrt[12]{2^4 \cdot \frac{3^2}{2^3}} = \sqrt[12]{18}$
$\sqrt{\frac{2^3 \cdot 3}{5}} : \sqrt[4]{\frac{8}{25}}$	$\sqrt{\frac{2^3 \cdot 3}{5}} \cdot \sqrt[4]{\frac{5^2}{2^3}} = \sqrt[4]{\frac{2^6 \cdot 3^2 \cdot 5^2}{5^2 \cdot 2^3}} = \sqrt[4]{72}$
$\sqrt{1 + \frac{3}{5}} : \sqrt{\frac{4}{5}}$	$\sqrt{\frac{8}{5}} \cdot \sqrt{\frac{5}{4}} = \sqrt{\frac{2^3 \cdot 5}{5 \cdot 2^2}} = \sqrt{2}$
$\sqrt{x} : \sqrt[4]{\frac{x^5}{y^4}}$	$\sqrt{x} \cdot \sqrt[4]{\frac{y^4}{x^5}} = \sqrt[4]{x^2 \cdot \frac{y^4}{x^5}} = \sqrt[4]{\frac{y^4}{x^3}}$
$\sqrt[3]{a} : \sqrt[12]{\frac{a^3}{b^2}}$	$\sqrt[12]{a^4 \cdot \frac{b^2}{a^3}} = \sqrt[12]{a b^2}$
$\sqrt{4} : \sqrt[4]{8}$	$\sqrt{2^2} : \sqrt[4]{2^3} = \sqrt[4]{2^4} : 2^3 = \sqrt[4]{2}$

3. Semplifica le seguenti espressioni contenenti moltiplicazioni e divisioni fra radicali:

$$\sqrt{125} : \sqrt{\frac{5}{6}} \cdot \sqrt{6} \qquad \sqrt{5^3 \cdot \frac{6}{5} \cdot 6} = \sqrt{5^2 \cdot 6^2} = \sqrt{30^2} = 30$$

$$(\sqrt{8} \cdot \sqrt{48}) : (\sqrt{24} \cdot \sqrt{6}) \qquad \sqrt{2^3 \cdot 2^4 \cdot 3} : \sqrt{2^3 \cdot 3 \cdot 2 \cdot 3} = \sqrt{2^7 \cdot 3} : \sqrt{2^4 \cdot 3^2} =$$

$$= \sqrt{\frac{2^7 \cdot 3}{2^4 \cdot 3^2}} = \sqrt{\frac{2^3}{3}} = \sqrt{\frac{8}{3}}$$

$$\sqrt{\frac{x}{y}} : \sqrt{\frac{x^2}{z}} \cdot \sqrt{\frac{y}{x}} \qquad \sqrt{\frac{x}{y} \cdot \frac{z}{x^2} \cdot \frac{y}{x}} = \sqrt{\frac{z}{x^2}}$$

$$\sqrt{\frac{3ab^2}{c}} : \sqrt{\frac{9b^2}{c}} \cdot \sqrt{\frac{a}{3}} \qquad \sqrt{\frac{3ab^2}{c} \cdot \frac{c}{3^2 b^2} \cdot \frac{a}{3}} = \sqrt{\frac{a^2}{3^2}} = \frac{a}{3}$$

$$\sqrt{\frac{x^2 - 4x}{x^2 - 8x + 16}} \cdot \sqrt{\frac{x-4}{x}} : \sqrt{\frac{x^2 - 16}{x^2}}$$

$$\sqrt{\frac{x(x-4)}{(x-4)^2} \cdot \frac{x-4}{x} \cdot \frac{x^2}{(x-4)(x+4)}} = \sqrt{\frac{x^2}{x^2 - 16}}$$