

1. Végezzük el a kijelölt műveleteket.

$$\begin{array}{ll}
 \text{a)} \left(a^2 \cdot \frac{1}{b^2}\right)^4 (a^{-3}b^6)^7 (a^4b^3)^{-2} & \text{b)} (a^7b^{-2})^3 \left(\frac{1}{a^5} \cdot b^{-3}\right)^4 (a^{12}b^5)^4 \\
 \text{c)} (x^2y^4)^{-3} \left(\frac{1}{x^6} \cdot y^{-2}\right)^7 (x^4y^6)^5 & \text{d)} (x^3y^{-4})^7 (x^3y^6)^{-5} \left(x^3 \cdot \frac{1}{y^5}\right)^5 \\
 \text{e)} \left(\frac{1}{m^2} \cdot \frac{1}{n^{-3}}\right)^7 (m^6n^{-5})^3 \left(m^{-5} \frac{1}{n^{-2}}\right)^4 & \text{f)} \left(m^{-3} \cdot \frac{1}{n^6}\right)^8 \left(\frac{1}{m^8} \cdot n^9\right)^{-2} \left(m^5 \cdot \frac{1}{n^{-9}}\right)^4 \\
 \text{g)} \left((k^2l)^2 \left(k^{-2} \cdot \frac{1}{l^5}\right)^7\right)^3 & \text{h)} \left(\left(k^{-2} \cdot \frac{1}{l^{-3}}\right)^5 \left(\frac{1}{k^{-3}} \cdot l^4\right)^{-2}\right)^4 \\
 \text{i)} \left(u^2 \cdot \frac{1}{v^{-3}} \cdot w^3\right)^4 \left(v^6 \cdot \frac{1}{v^2} \cdot w^{-3}\right) &
 \end{array}$$

2. Végezzük el a kijelölt műveleteket.

$$\begin{array}{ll}
 \text{a)} \left(\frac{a^7}{b^5}\right)^3 (a^3b^2)^{-4} \left(\frac{b}{a^7}\right)^5 & \text{b)} \left(\frac{a^{-5}}{b^3}\right)^8 (a^{-4}b^5)^2 \left(\frac{1}{a^4b^5}\right)^{-2} \\
 \text{c)} (x^3y^7)^5 \left(\frac{y^3}{x^{-2}}\right)^6 \left(\frac{1}{y}\right)^6 & \text{d)} (x^4y^{-5})^3 \left(\frac{x^{-2}}{y^{-4}}\right)^{-3} \left(\frac{y^5}{x^{-2}}\right)^{-4} \\
 \text{e)} \left(\frac{m^3}{n^{-5}}\right)^7 (m^4n^{-7})^4 \left(\frac{n^8}{m^4}\right)^3 & \text{f)} \left(\frac{m^5}{n^{-5}}\right)^6 (m^{-2}n^6)^3 \left(\frac{1}{m^{-2}}\right)^1 2 \\
 \text{g)} \left(\frac{i^3j^4}{k^{-5}}\right)^3 \left(\frac{k^2}{ij^7}\right)^{-7} \left(\frac{n^8}{m^4}\right)^3 & \text{h)} \left(\frac{i^4}{j^5k^6}\right)^3 \left(\frac{j}{i^3k^{-4}}\right)^5 \\
 \text{i)} \left(u^2v^{-3}w^5\right)^4 \left(\frac{u^3v^{-5}}{w^2}\right)^2 \left(\frac{1}{u^7v^{12}w^{-3}}\right)^{10} & \text{j)} \left(\left(\frac{u^4v^3}{w^2}\right)^5 \left(\frac{u^{-5}w^3}{v^4}\right)^6\right)^2
 \end{array}$$

3. Végezzük el a kijelölt műveleteket és egyszerűsítsük a törtet.

$$\begin{array}{lll}
 \text{a)} \frac{\left(\frac{2}{x^5}\right)^3 (4x^7)^{-5}}{(8x^4)^5 \left(\frac{x}{16}\right)^6} & \text{b)} \frac{(3x^{-2})^6 \left(\frac{x^2}{9}\right)^5}{\left(\frac{x^5}{3}\right)^7 \left(\frac{x^2}{27}\right)^3} & \text{c)} \frac{(-5x^3)^4 \left(\frac{x^{-2}}{25}\right)^7}{\left(\frac{-125}{x^6}\right) \left(\frac{25}{x^3}\right)^{-4}} \\
 \text{d)} \frac{\left(\frac{y^3}{4}\right)^4 (-2y^7)^3}{\left(\frac{-32}{y^5}\right)^2 \left(\frac{y^6}{16}\right)^5} & \text{e)} \frac{(9y)^6 \left(\frac{y^6}{27}\right)^2}{\left(\frac{1}{9y^3}\right)^{-3} (y^9)^6} & \text{f)} \frac{(49y^6)^8 (-7y^6)^5}{\left(\frac{1}{49y^3}\right)^{-3} \left(\frac{1}{7^3}\right)^4}
 \end{array}$$

$$\begin{array}{lll} \text{g)} \frac{(81z^5)^3 \left(\frac{1}{27z^2}\right)^{-2}}{\left(\frac{9}{z^3}\right)^7 \left(\frac{z^9}{9}\right)^6} & \text{h)} \frac{(1000z^4)^6 \left(\frac{z^5}{10000}\right)^6}{\left(\frac{100}{z^7}\right)^5 \left(\frac{1}{100}\right)^8} & \text{i)} \frac{(36z^4)^{-2} \left(\frac{6}{z^5}\right)^{-7}}{\left(\frac{1}{6z^6}\right)^5 (36^2)^3} \end{array}$$

4. Írjuk fel az alábbi kifejezéseket prímszámok hatványszorzataként.

$$\begin{array}{lll} \text{a)} 6^5 \cdot 18^{-3} \cdot 24^6 \cdot 12^4 \cdot 8^{-5} & \text{b)} 15^4 \cdot 75^{-3} \cdot 45^8 \cdot 27^3 \cdot 25^4 & \text{c)} 100^4 \cdot 50^7 \cdot 16^{-5} \cdot 80^6 \\ \text{d)} 40^{-6} \cdot 5^7 \cdot 128^4 \cdot 320^{-4} & \text{e)} 49^6 \cdot 21^{-4} \cdot 147^{-4} \cdot 63^5 & \text{f)} 121^2 \cdot 33^3 \cdot 99^{-4} \cdot 363^5 \\ \text{g)} \frac{28^{-3} \cdot 16^3}{56^7 \cdot 14^{-2}} & \text{h)} \frac{75^6 \cdot 9^{-8}}{45^{-7} \cdot 135^4} & \text{i)} \frac{36^8 \cdot 4^{-7}}{16^{-8} \cdot 27^6} \\ \text{j)} \frac{49^6 \cdot 21^7}{27^5 \cdot 63^{-5}} & & \end{array}$$