\[
\left( \frac{mn}{m^2 n} \right)^{2} = \left( \frac{mn}{m^2 n} \right)^{3} \times \left( \frac{mn}{m^2 n} \right)^{3}
\]

\[
= \frac{mn}{m^2 n} \times \frac{mn}{m^2 n}
\]

\[
= \frac{mn}{m^2 n} \times \frac{mn}{m^2 n}
\]

\[
= \frac{mn}{m^2 n} = m^{2-4} \cdot n^{6-2}
\]

\[
= m^{-2} \cdot n^4
\]

\[
= \frac{n^4}{m^2}
\]
Exponents Skills Quiz (Ch. 4.1-4.3)

1. Use prime factorization (factor tree) to evaluate: (4 marks)

\[ \sqrt[2]{64} = 8 \quad \sqrt[3]{512} = 8 \]

2. Is 196 a perfect square, perfect cube, both or neither? Explain your answer. (2 marks)
\[
\left(\frac{1}{y^3 y^2} \cdot \frac{1}{y^4}\right) = \frac{\sqrt[3]{y^3} \cdot \frac{1}{3}}{y^2} = \frac{\sqrt[3]{y^3}}{y^2} = \frac{\sqrt[3]{y^3} - \frac{1}{3}}{y^2} = \frac{\sqrt[3]{y^3}}{y^2} = \frac{1}{\sqrt[3]{y^3} \cdot \frac{1}{3}} = \frac{1}{\sqrt[3]{y^{\frac{3}{2}}} + \frac{2}{3}}
\]
3. Write as a simplified power with a positive base. 

a) \((x^2 y^{-3})^{-3}\) 
\[= \frac{1}{x^6 y^9}\]

b) 
\[X^{3/2} = -5\] 
\[Y^{-3/2} = -\frac{1}{5}\] 
\[XY = 5\] 
\[\frac{1}{XY} = \frac{1}{5}\]
\[
\left( \frac{mn}{m^n} \right)^2
\]

\[m^2n^2 + 3 = mns\]

\[m^2 + 2n^2n^2 = mns\]

\[\frac{mns}{m + n^2} = mns\]
3. Write as a simplified power with

\[ a) \left( x^2 y^{-3} \right)^3 = x^{-6} \cdot y^9 = \frac{y^9}{x^6} = \frac{1}{x^6 y^{\frac{9}{6}}} \]
You subtracted "add" where you should.
\[
\left( \frac{mn^3}{m^2 n} \right)^2
\]

\[
\frac{2}{M^2 R^2} = \frac{M n^6}{M N^6} - \frac{M n^6}{M N^6}
\]