

Reciprocal Reasoning Answer Key

- 1) Positive exponent form: $\frac{1}{2^4}$ / Sample explanation: A negative exponent means use the reciprocal of the positive power.
- 2) Positive exponent form: $\frac{1}{x^3}$ / Sample explanation: The factor moves to the denominator, making the exponent positive.
- 3) Positive exponent form: $\frac{1}{5^2}$ / Sample explanation: A negative exponent does not make the value negative. It creates a reciprocal.
- 4) Positive exponent form: a^5 / Sample explanation: Dividing by a negative power is the same as multiplying by the positive power.
- 5) Positive exponent form: $\frac{1}{b^2}$ / Sample explanation: The factor moves to the denominator, so the exponent becomes positive.
- 6) Positive exponent form: 10^3 / Sample explanation: The reciprocal of a reciprocal returns the factor to the numerator.
- 7) Positive exponent form: c^4d^2 / Sample explanation: Moving d^{-2} from the denominator to the numerator changes the exponent to positive.
- 8) Positive exponent form: $\frac{1}{mn^3}$ / Sample explanation: The factor with the negative exponent moves to the denominator and becomes a positive exponent.

Teacher's Guide

- Quick implementation tips
 - o Model one example by rewriting the expression first, then explaining the rule in words.
 - o Encourage complete sentences that include the word "reciprocal."
- Differentiation strategies
 - o Provide a sentence starter such as, "A negative exponent means..."
 - o Challenge advanced students to explain each rewrite using both words and the rule $a^{-n} = \frac{1}{a^n}$.
- Engagement ideas
 - o Have students compare explanations with a partner and identify the clearest mathematical reasoning.
 - o Invite volunteers to share different correct explanations for the same problem.