Unit 7 Lesson 7: Practice with Rational Bases

1 Which One Doesn't Belong: Exponents (Warm up)

Student Task Statement

Which expression doesn't belong?

$\frac{2^8}{2^5}$

$\left(\frac{3}{4}\right)^{-5} \cdot \left(\frac{3}{4}\right)^8$

$\left(4^{-5}\right)^8$

$\frac{10^8}{5^5}$

2 Exponent Rule Practice

Student Task Statement

1. Choose 6 of the equations to write using a single exponent:
   - $7^5 \cdot 7^6$
   - $3^{-3} \cdot 3^8$
   - $2^{-4} \cdot 2^{-3}$
   - $\left(\frac{5}{6}\right)^4 \left(\frac{5}{6}\right)^5$
   - $\frac{3^5}{3^{28}}$
   - $\frac{2^{-5}}{2^4}$
   - $\frac{6^5}{6^{-8}}$
   - $\frac{10^{-12}}{10^{-20}}$
   - $\left(7^2\right)^3$
   - $\left(4^3\right)^{-3}$
   - $\left(2^{-8}\right)^{-4}$
   - $\left(6^{-3}\right)^5$

2. Which problems did you want to skip in the previous question? Explain your thinking.

3. Choose 3 of the following to write using a single, *positive* exponent:

- 2^{-7}
- 4^{-9}
- 3^{-23}
- 2^{-32}
- 11^{-8}
- 8^{-3}

4. Choose 3 of the following to evaluate:

- $\frac{10^5}{10^5}$
- $\left(\frac{5}{4}\right)^2$
- $\left(\frac{2}{3}\right)^3$
- $\left(3^4\right)^0$
- $2^8 \cdot 2^{-8}$
- $\left(\frac{7}{2}\right)^2$

3 Inconsistent Bases

Student Task Statement

Mark each equation as true or false. What could you change about the false equations to make them true?

1. $\left(\frac{1}{3}\right)^2 \cdot \left(\frac{1}{3}\right)^4 = \left(\frac{1}{3}\right)^6$

2. $3^2 \cdot 5^3 = 15^5$

3. $5^4 + 5^5 = 5^9$

4. $\left(\frac{1}{2}\right)^4 \cdot 10^3 = 5^7$

5. $3^2 \cdot 5^2 = 15^2$