

Unit 4 Lesson 14: Expressions with Exponents

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

Student Task Statement

Which one doesn't belong?

$$2 \cdot 2 \cdot 2 \cdot 2$$

$$2^4$$

$$16$$

$$4 \cdot 2$$

2 Is the Equation True?

Student Task Statement

Decide whether each equation is true or false, and explain how you know.

1. $2^4 = 2 \cdot 4$

2. $3 + 3 + 3 + 3 + 3 = 3^5$

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

4. $2^3 = 3^2$

5. $16^1 = 8^2$

6. $\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2} = 4 \cdot \frac{1}{2}$

7. $\left(\frac{1}{2}\right)^4 = \frac{1}{8}$

8. $8^2 = 4^3$

3 What's Your Reason?

Student Task Statement

In each list, find expressions that are equivalent to each other and explain to your partner why they are equivalent. Your partner listens to your explanation. If you disagree, explain your reasoning until you agree. Switch roles for each list. (There may be more than two equivalent expressions in each list.)

1.
 - a. $5 \cdot 5$
 - b. 2^5
 - c. 5^2
 - d. $2 \cdot 5$
2.
 - a. 4^3
 - b. 3^4
 - c. $4 \cdot 4 \cdot 4$
 - d. $4 + 4 + 4$
3.
 - a. $6 + 6 + 6$
 - b. 6^3
 - c. 3^6
 - d. $3 \cdot 6$
4.
 - a. 11^5
 - b. $11 \cdot 11 \cdot 11 \cdot 11 \cdot 11$
 - c. $11 \cdot 5$
 - d. 5^{11}

5. a. $\frac{1}{5} \cdot \frac{1}{5} \cdot \frac{1}{5}$

b. $\left(\frac{1}{5}\right)^3$

c. $\frac{1}{15}$

d. $\frac{1}{125}$

6. a. $\left(\frac{5}{3}\right)^2$

b. $\left(\frac{3}{5}\right)^2$

c. $\frac{10}{6}$

d. $\frac{25}{9}$