

NAME

DATE

PERIOD

8.3: Identifying Equivalent Expressions

Here is a list of expressions. Find any pairs of expressions that are equivalent. If you get stuck, try reasoning with diagrams.

$$a + 3 \qquad a \div \frac{1}{3} \qquad \frac{1}{3}a \qquad \frac{a}{3} \qquad a$$

$$a + a + a \qquad a \cdot 3 \qquad 3a \qquad 1a \qquad 3 + a$$

Are you ready for more?

Below are four questions about equivalent expressions. For each one:

- Decide whether you think the expressions are equivalent.
- Test your guess by choosing numbers for x (and y , if needed).

1. Are $\frac{x \cdot x \cdot x \cdot x}{x}$ and $x \cdot x \cdot x$ equivalent expressions?

2. Are $\frac{x + x + x + x}{x}$ and $x + x + x$ equivalent expressions?

3. Are $2(x + y)$ and $2x + 2y$ equivalent expressions?

4. Are $2xy$ and $2x \cdot 2y$ equivalent expressions?

Lesson 8 Summary

We can use diagrams showing lengths of rectangles to see when expressions are equal. For example, the expressions $x + 9$ and $4x$ are equal when x is 3, but are not equal for other values of x .

NAME

DATE

PERIOD

Lesson 8 Glossary Terms

- equivalent expressions

NAME

DATE

PERIOD

b. Are $4x$ and $15 + x$ equivalent expressions? Explain your reasoning.

3. a. Check that $2b + b$ and $3b$ have the same value when b is 1, 2, and 3.

b. Do $2b + b$ and $3b$ have the same value for all values of b ? Explain your reasoning.

c. Are $2b + b$ and $3b$ equivalent expressions?

4. 80% of x is equal to 100.

a. Write an equation that shows the relationship of 80%, x , and 100.

b. Use your equation to find x .

(from Unit 6, Lesson 7)

5. For each story problem, write an equation to represent the problem and then solve the equation. Be sure to explain the meaning of any variables you use.

a. Jada's dog was $5\frac{1}{2}$ inches tall when it was a puppy. Now her dog is $14\frac{1}{2}$ inches taller than that. How tall is Jada's dog now?

NAME

DATE

PERIOD

b. Lin picked $9\frac{3}{4}$ pounds of apples, which was 3 times the weight of the apples Andre picked. How many pounds of apples did Andre pick?

(from Unit 6, Lesson 5)