Grade 6: Unit 6: Lesson 8
Equal and Equivalent

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Learning Goal:

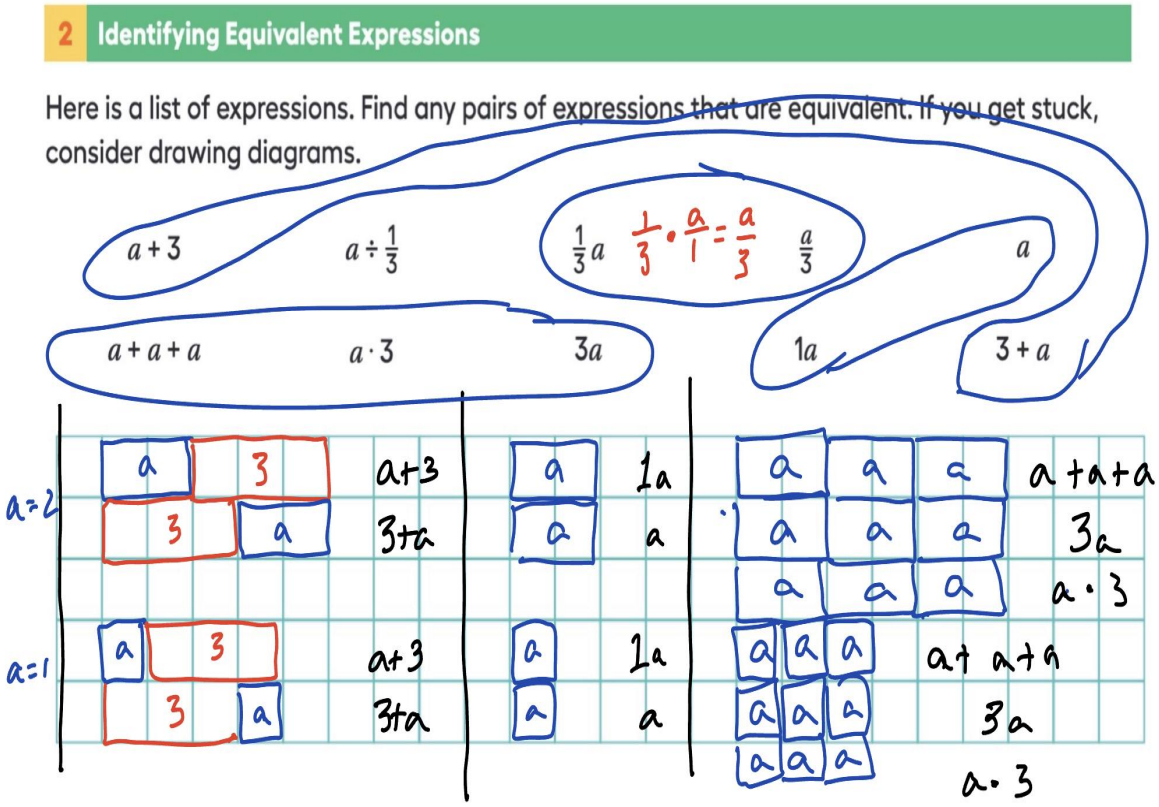
- Let's use diagrams to figure out which expressions are equivalent and which are just sometimes equal.

Activity Purpose

- Apply the properties of operations to determine if algebraic expressions are equivalent.

Approaches to Monitor

- Use tape diagrams, draw models, or show algebraic steps.



Grade 7: Unit 6: Lesson 10
Different Options for Solving One Equation

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Learning Goal:

- Let's think about which way is better when we solve equations with parentheses.

Activity Purpose

- Compare three methods for solving the same equation.

Approaches to Monitor

- Different approaches for different equations.
- Use of diagrams to support thinking.
- Application of distributive property.

1 Analyzing Solution Methods

Three students each attempted to solve the equation $2(x - 9) = 10$, but they got different solutions. Here is their work. Do you agree with any of their methods? Explain or show your reasoning.

Noah's method:

$2(x - 9) = 10$

$2(x - 9) + 9 = 10 + 9$ Add 9 to each side

$2x = 19$

$2x \div 2 = 19 \div 2$ Divide each side by 2

$x = \frac{19}{2}$

X He should of distributed.

Elena's method:

$2(x - 9) = 10$

$2x - 18 = 10$ Apply the distributive property

$2x - 18 - 18 = 10 - 18$ Subtract 18 from each side

$2x = -8$

$2x \div 2 = -8 \div 2$ Divide each side by 2

$x = -4$

X She should of added 18.

Andre's method:

$2(x - 9) = 10$

$2x - 18 = 10$ Apply the distributive property

$2x - 18 + 18 = 10 + 18$ Add 18 to each side

$2x = 28$

$2x \div 2 = 28 \div 2$ Divide each side by 2

$x = 14$

✓ He did it right.

Why did no one divide by 2!?

Grade 8: Unit 4: Lesson 5
Solving Any Linear Equation

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Learning Goal:

- Let's solve linear equations.

Activity Purpose

- Solve equations to investigate a number puzzle.

Approaches to Monitor

- Rewrite the expression in a simpler way after each instruction.
- Wait until the end to rewrite the expression.

2 A Puzzling Puzzle

Tyler says he invented a number puzzle. He asks Clare to pick a number, and then asks her to:

- Triple the number. $3x$
- Subtract 7. $3x - 7$
- Double the result. $2 \cdot 3x - 7$
- Subtract 22. $6x - 7 - 22$
- Divide by 6. $6x - 29 \div 6$?

Clare says she now has -3. Tyler says her original number must have been a 3. How did Tyler know that? Follow the same instructions starting with x instead of a number. Explain or show your reasoning for why the last expression means that the person started with a number 6 greater than they ended with.

idk