

Properties of Operations

Lesson 6-4

Name: _____ **Date:** _____ **Class:** _____

Key Vocabulary Level 2 Standard

Picture first, then the word, then a plain-language meaning. Say each word out loud.



$3 + 7 = 7 + 3 = 10$ both ways; $4 \times 5 = 5 \times 4 = 20$
both ways — order does not matter

Commutative Property

Write the definition:



$(2 + 3) + 4 = 5 + 4 = 9$ and $2 + (3 + 4) = 2 + 7 = 9$ —
same answer, different grouping

Associative Property

Write the definition:



$9 + 0 = 9$ (zero is the identity for addition); $6 \times 1 = 6$
(one is the identity for multiplication)

Identity Property

Write the definition:



Commutative works for + and \times , but NOT for - or \div
(since $5 - 3 = 2$ but $3 - 5 = -2$)

Property

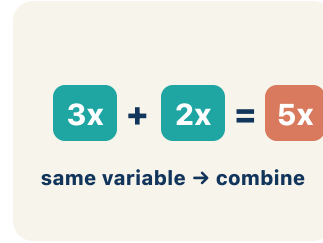
Write the definition:



In $3x$, the 3 is the coefficient — it tells you to multiply x by 3

Coefficient

Write the definition:



$4x + 2x = 6x$ (like terms, both have x); $4x + 2y$ stays as $4x + 2y$ (unlike terms)

Like terms

Write the definition:

Guided Notes Level 2 Standard



WHAT WE'RE LEARNING TODAY

I can use the commutative, associative, and identity properties to rewrite expressions.

Fill in each blank as we go. Use the Word Bank to help you.



WORD BANK — FILL EACH BLANK WITH THE BEST WORD

Commutative Property

Associative Property

Identity Property

Property

Coefficient

Like terms

Tap any word to see what it means and a picture.

1 The rule that order does not change a sum or product, like $a + b = b + a$, is the

2 The rule that grouping does not change a sum or product, like $(a + b) + c = a + (b + c)$, is the

3 The rule that adding 0 or multiplying by 1 keeps a number the same is the

4 A rule that is always true in math is a

5 A number multiplied by a variable is a

6 Terms with the same variable part are

Watch & Try — Worked Examples

See the notes in action: watch one worked all the way through, then try the next with the same steps.

 **I do – watch**


Follow each step as your teacher solves it.

Problem: Which property is shown? $5 + 13 = 13 + 5$

- A. Commutative Property
- B. Associative Property
- C. Identity Property
- D. Distributive Property

Step 1 The order of the addends changed, so this is the Commutative Property of Addition.

 **Answer:** A. Commutative Property

 **We do – together**

Solve this one with your class using the same steps.


Problem: Which property is shown? $(6 \times 3) \times 2 = 6 \times (3 \times 2)$

- A. Associative Property
- B. Commutative Property
- C. Identity Property
- D. Distributive Property

Step 1 _____

Step 2 _____

Answer: _____

 **You do — your turn**

Now try one on your own. Show every step.

Problem: Which property is shown? $47 + 0 = 47$

- A. Identity Property
- B. Commutative Property
- C. Associative Property
- D. Distributive Property

Show your work:

Try It

Solve on your own. Check the answer key when you are done.

1. Track 3 plays $(7 + 3) + 5 = 7 + (3 + 5)$. Only the parentheses moved. Which property is this?

- A. Associative Property
- B. Commutative Property
- C. Distributive Property
- D. Identity Property

Show your work:

2. Track 4 plays $1 \times y = y$. Which property is this?

- A. Identity Property
- B. Distributive Property
- C. Commutative Property
- D. Associative Property

Show your work:

Stretch Your Thinking

Level 2 enrichment

Challenge task — explain your reasoning in full sentences.

Explain why the commutative property works for addition and multiplication but NOT for subtraction and division. Give a specific number example for each operation to prove your point.

Sentence starter: Addition: $\underline{\quad} + \underline{\quad} = \underline{\quad} + \underline{\quad} = \underline{\quad}$ (works). Subtraction: $\underline{\quad} - \underline{\quad} \neq \underline{\quad} - \underline{\quad}$ because $\underline{\quad}$. Multiplication: $\underline{\quad} \times \underline{\quad} = \underline{\quad} \times \underline{\quad} = \underline{\quad}$ (works). Division: $\underline{\quad} \div \underline{\quad} \neq \underline{\quad} \div \underline{\quad}$ because $\underline{\quad}$.

Show your work:

Reflect — Exit Ticket

Which property is shown? $(8 + 5) + 2 = 8 + (5 + 2)$

- A. Associative Property
- B. Commutative Property
- C. Identity Property
- D. Distributive Property

Your answer:
