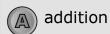Grab a clicker, and let's learn how to log in.

You will want your pencil and notebook ready.

Multiplication of whole numbers can be described as repeated

(A) addition

(B) subtraction

(C) multiplication

(D) division

Find the product of 5 x 30

Use the numbers on your clicker and text in your answer

True or False?
6 + 15 = 15 + 6

(A) True

(B) False

What You'll Learn

To understand and use the properties of operations

🔊 **New Vocabulary** commutative properties, associative properties, identity properties

Why Learn This?

The properties of operations can help you do mental math.

KEY CONCEPTS **Properties of Addition**

Commutative Property of Addition Changing the order of addends does not change the sum.
$9 + 5 = 5 + 9$

Associative Property of Addition Changing the grouping of addends does not change the sum.
$(9 + 5) + 4 = 9 + (5 + 4)$

Identity Property of Addition The sum of 0 and any number is that number.
$0 + 9 = 9$

You can simplify a mathematical phrase by replacing it with the simplest name for the value of the phrase. So to simplify 4 + 5, you write 9 for its value.

EXAMPLE **Using the Properties of Addition**

Field Trips The table shows two groups of students who went on a field trip. Use mental math to find the total number of students.

Room	Number of Students
101	32
102	28

What you think

First I will think of 28 as 20 + 8. Next, I will add 8 + 32 to get 40. 40 + 20 is 60. So 32 + 28 = 60.

Why it works
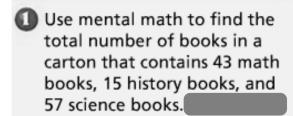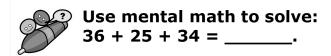
$$32 + 28 = 32 + (20 + 8) \leftarrow \text{Rewrite 28 as 20 + 8.}$$
$$= 32 + (8 + 20) \leftarrow \text{Use the Commutative Property of Addition.}$$
$$= (32 + 8) + 20 \leftarrow \text{Use the Associative Property of Addition.}$$
$$= 40 + 20 \leftarrow \text{Add inside the parentheses first.}$$
$$= 60 \leftarrow \text{Simplify.}$$

The total number of students is 60.

Vocabulary Tip

Parentheses ( ) indicate operations that you should do first.

Talk with your table partner about this problem. See if you can solve it without writing anything down on paper.

1. Use mental math to find the total number of books in a carton that contains 43 math books, 15 history books, and 57 science books.

Use mental math to solve:
36 + 25 + 34 = _____.

Use your clicker number keypad
and text in your answer.

Tomorrow we will learn about some properties
for multiplication.

Properties can make math problems easier
to solve.

Power down your clickers, and when they
are off, you can put them back in the bag.