Name _____

Patterns in Grouping Answer Key

1. **Complete the pattern.**

(2 + 3) + 4 = 5 + 4 = 9

2 + (3 + 4) = 2 + 7 = 9

(5 + 6) + 2 = 11 + 2 = 13

5 + (6 + 2) = 5 + 8 = 13

What do you notice?
Both ways give the same answer every time. Moving the parentheses in addition does not change the total. That is the associative property of addition.

2. **Look at the multiplication pattern.**

(2 × 4) × 5 = 8 × 5 = 40

2 × (4 × 5) = 2 × 20 = 40

(3 × 5) × 2 = 15 × 2 = 30

3 × (5 × 2) = 3 × 10 = 30

What pattern do you see?
Both ways give the same product every time. Moving the parentheses in multiplication does not change the product. That is the associative property of multiplication.

3. **Compute both and compare.**

a) (8 + 5) + 2 = 13 + 2 = 15
8 + (5 + 2) = 8 + 7 = 15
Are they equal? Yes

b) (8 – 5) – 2 = 3 – 2 = 1
8 – (5 – 2) = 8 – 3 = 5
Are they equal? No

What can you tell about addition vs. subtraction?
Addition can be regrouped and still gives the same result. Subtraction cannot be regrouped. The order and grouping in subtraction changes the answer, so subtraction is not associative.