

## Parentheses

Parentheses are an important communication symbol in math and algebra. They have many uses, so look at the numbers and symbols around them in order to understand what they mean in use.

### Look at the numbers and symbols around the parentheses to get their meaning:

$7(3 + 5)$	They mean: Do what is inside them <i>first</i> (order of operations) $7(3 + 5) \rightarrow 7(8)$
$7(8)$	They mean: <i>Multiply</i> $7(8) \rightarrow 56$
$7(3 + x)$	They mean: <i>Distribute</i> (multiply the 7 times <u>each</u> term in the parentheses) $7(3 + x) \rightarrow 7(3) + 7(x)$
$7 - (3 + x)$	They mean: <i>Distribute the "negative"</i> (multiply <u>each</u> term by a -1) $7 - (3 + x) \rightarrow 7 - 3 - x$
$(x + 3)^2$	They mean: <i>Keep as an expression</i> and raise it to the power shown $(x + 3)^2 \rightarrow (x + 3)(x + 3)$
$7 - (-3)$	They are <i>separating the signs</i> . (subtraction of a negative number) $7 - (-3) \rightarrow 7 + 3$
$(7 + x) + (3 + x)$	They may have a meaning in showing expressions, but they don't affect the math steps you'll do. If they don't have one of the earlier meanings, <u>you can eliminate them</u> .

### You'll need to insert parentheses when removing certain other symbols:

$4x$	Means 4 <i>times</i> $x$ . If $x = 9$ , then you need parentheses to write <b><u>4(9)</u></b> .
$4 -6 $	Means 4 <i>times the absolute value</i> of -6. This becomes <b><u>4(6)</u></b> .
$4\sqrt{25}$	Means 4 <i>times the square root of</i> 25. This becomes <b><u>4(5)</u></b> .

### Can I remove the parentheses?

1. Is there any *simplifying* (math work) to be done inside the parentheses *first*?
2. Is there an exponent outside the parentheses, meaning we *keep the expression*?
3. Is there a number, variable, or grouped expression in front of the parentheses, indicating *multiplication or distribute*?
4. Is there a subtraction or negative sign in front of the parentheses, indicating the *signs of the terms will be changed*?

**If the answer to all four questions is NO, then remove the parentheses.**