Answers	
	$$2 \cdot 5 + 3$$
	This expression is made up of symbols. The symbols in order of their appearance are: 1. the number, 2 2. the operation, · (which means multiply)
5	3. the number, ____
+	4. the operation, ____
3	5. the number, ____
	Let's find the value of $2 \cdot 5 + 3$. $$2 \cdot 5 + 3 = 10 + 3 = 13$$
addition	To find the value of $2 \cdot 5 + 3$ we first performed the multiplication, and then we performed the ________.
	Find the following values:
21 + 4 = 25	$3 \cdot 7 + 4 = 21 + \_\_\_\_ = \_\_\_\_$
16 + 5 = 21	$8 \cdot 2 + 5 = \_\_\_\_ + \_\_\_\_ = \_\_\_\_$
12 + 1 = 11	$6 \cdot 2 + 1 = 12 + \_\_\_\_ = \_\_\_\_$
18 + 5 = 13	$3 \cdot 6 + 5 = \_\_\_\_ + \_\_\_\_ = \_\_\_\_$
16 + 6 = 22	$8 \cdot 2 + 6 = \_\_\_\_ + \_\_\_\_ = \_\_\_\_$
multiplication , addition	To find the value of an expression formed both by multiplication and addition, we first do the ____________ and then do the ____________.

$$2 \cdot (5 + 3)$$

The above expression is made up of symbols. The symbols in order of their appearance are:

1. the number, 2
2. the operation,
3. the *left parenthesis,* (
4. the number, _____
5. the operation, _____
6. the number, _____
7. the *right parenthesis,*)

5

+

3

What is the value of $2 \cdot (5 + 3)$?

When parentheses are used in an expression, we must *first* find the value of that part of the expression within the parentheses. Then we find the value of the rest of the expression.

16

$$2 \cdot (5 + 3) = 2 \cdot 8 = \_\_\_\_$$

Find the following values:

30

$$3 \cdot (4 + 6) = 3 \cdot 10 = \_\_\_\_$$

$5 \cdot 8 = 40$

$$5 \cdot (2 + 7) = 5 \cdot \_\_\_\_ = \_\_\_\_$$

$8 \cdot 6 = 48$

$$8 \cdot (4 + 2) = \_\_\_\_ \cdot \_\_\_\_ = \_\_\_\_$$

$-2 \cdot 2 = -4$

$$-2 \cdot (-3 + 5) = \_\_\_\_ \cdot \_\_\_\_ = \_\_\_\_$$

In this book, *Using Algebra,* we will take equations that *have* parentheses in them and rewrite the equations in a form that *does not* have parentheses.

We accomplish this step by use of the **distributive property.**

In a general form the distributive property says that for any three numbers **a**, **b**, and **c**:

$$a \cdot (b + c) = a \cdot b + a \cdot c$$

We can test this property by substituting numbers for the letters to see if the right side of the equation equals the left side.

Let's say that a = 2, b = 4, and c = 5. The distributive property says that:

$$2 \cdot (4 + 5) = 2 \cdot 4 + 2 \cdot 5$$

Does the left side of this equation equal the right side?

$$2 \cdot (4 + 5) = 2 \cdot 4 + 2 \cdot 5$$

$$2 \cdot 9 = 8 + \_\_\_\_$$

$$18 = \_\_\_\_$$

$2 \cdot 9 = 8 + 10$

$18 = 18$

So does $2 \cdot (4 + 5) = 2 \cdot 4 + 2 \cdot 5$? yes / no

yes

We call the rule:

$$a \cdot (b + c) = a \cdot b + a \cdot c$$

the distributive property.

Let's see if the distributive property works when we use other numbers for **a**, **b**, and **c**.

	$3\cdot(4+7) = 3\cdot 4 + 3\cdot 7$
$3\cdot(11) = 12 + 21$	$3\cdot(\_\_\_\_) = \_\_\_\_ + \_\_\_\_$
$33 = 33$	$\_\_\_\_ = \_\_\_\_$
yes	So does $3\cdot(4+7) = 3\cdot 4 + 3\cdot 7$? yes / no
	$6\cdot(\frac{5}{2}+\frac{7}{2}) = 6\cdot\frac{5}{2} + 6\cdot\frac{7}{2}$
$6\cdot(6) = 15 + 21$	$6\cdot(\_\_\_\_) = \_\_\_\_ + \_\_\_\_$
$36 = 36$	$\_\_\_\_ = \_\_\_\_$
yes	So does $6\cdot(\frac{5}{2}+\frac{7}{2}) = 6\cdot\frac{5}{2} + 6\cdot\frac{7}{2}$? yes / no
	$-5\cdot(4+1) = -5\cdot 4 + -5\cdot 1$
$-5\cdot(5) = -20 + -5$	$-5\cdot(\_\_\_\_) = \_\_\_\_ + \_\_\_\_$
$-25 = -25$	$\_\_\_\_ = \_\_\_\_$
yes	So does $-5\cdot(4+1) = -5\cdot 4 + -5\cdot 1$? yes / no
	$3\cdot(-5+2) = 3\cdot -5 + 3\cdot 2$
$3\cdot(-3) = -15 + 6$	$3\cdot(\_\_\_\_) = \_\_\_\_ + \_\_\_\_$
$-9 = -9$	$\_\_\_\_ = \_\_\_\_$
yes	So does $3\cdot(-5+2) = 3\cdot -5 + 3\cdot 2$? yes / no