Saddleback College Math Lecture Note Resources
Candice Jhu Lawrence Perez

MULTIPLICATION

NOTE: There are different ways to indicate multiplication:

3×4

$3 \cdot 4$

$3(4)$

$(3)(4)$

What does $3 \cdot 4$ actually mean?

$3 \cdot 4 =$ _____ $= 12$

What does $24 \cdot 10$ actually mean?

$24 \cdot 10 = 24 + 24 + 24 + 24 + 24 + 24 + 24 + 24 + 24 + 24$

$=$ _____

Example 1:

$24 \cdot 11$

Since we know $24 \cdot 10 =$ _____

To get $24 \cdot 11$, add another 24

So, $24 \cdot 11 =$ _____ $+ 24 =$ _____

example 2:

$32 \cdot 13$

We know $32 \cdot 10 =$ _____

so, $32 \cdot 11 =$ _____ $+ 32$

$=$ _____

$32 \cdot 12 =$ _____ $+ 32$

$=$ _____

$32 \cdot 13 =$ _____ $+ 32$

$=$ _____

example 3:

a) $8 \cdot 12 =$

b) $14 \cdot 11 =$

c) $26 \cdot 12 =$

THE COMMUTATIVE PROPERTY

The commutative property of addition says that $3 + 2 = 2 + 3$

since $3+2=$ _____

and $2+3=$ _____

The COMMUTATIVE PROPERTY of MULTIPLICATION says that $3 \cdot 100 = 100 \cdot 3$

Since $3 \cdot 100 =$ _____

and $100 \cdot 3 =$ _____

EXAMPLE 4:

$11 \cdot 17$

$11 \cdot 17$ means there are seventeen 11's being added together.

$11 \cdot 17 = 11+11+11+11+11+11+11+11+11+11+11+11+11+11+11+11+11$

Instead of $11 \cdot 17$, we would rather compute $17 \cdot 11$ since we know:

$17 \cdot 10 =$ _____

so $17 \cdot 11 =$ _____ $+17$

$=$ _____

THE VERTICAL FORMAT

EXAMPLE 5

$2 \cdot 341$

written in the vertical format:

$$\begin{array}{r} 341 \\ \times \quad 2 \\ \hline \square\square\square \end{array}$$

3×2 → ← 1×2

4×2 ↑

Another way to look at this problem is by using expanded form:

$341 \times 2 \Rightarrow (300 + 40 + 1) \times 2$

$\_\_\_ + \_\_\_ + \_\_\_$

NOW TRY these:

732×3

697×3

MULTIPLICATION Practice Problems

1. 4×3 is short-hand for _____

2. $36 \times 11 =$

3. By the commutative property of addition, $9+7 =$ _____

4. By the commutative property of multiplication, $9 \cdot 7 =$ _____

5.
$$\begin{array}{r} 9,413 \\ \times \quad 2 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 8,713 \\ \times \quad 4 \\ \hline \end{array}$$