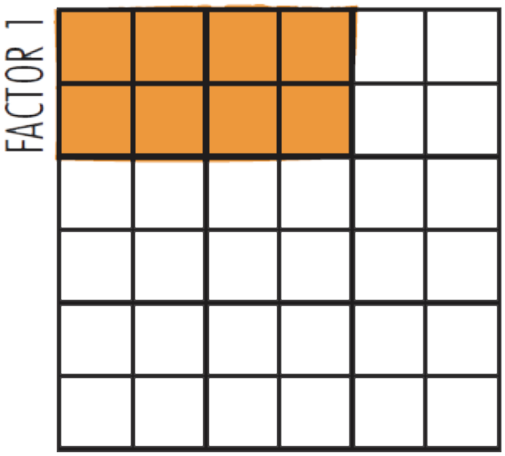
Hooray for Arrays!

3rd Grade

2 x 4 = 8

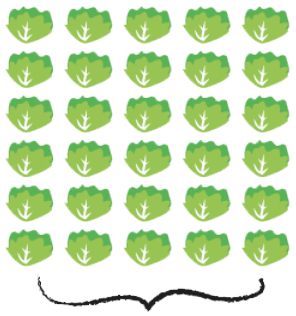


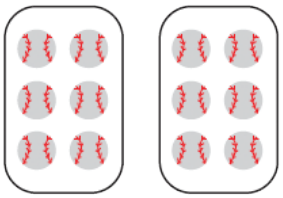
4 x 5 = 20

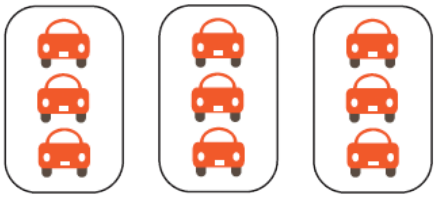
Number of groups

Number of objects in each group

Total number of objects







1 x 3	4 x 0	9 x 4	8 x 3	5 x 2	11 x 4	0 x 1	12 x 3
12 x 2	0 x 3	7 x 4	3 x 1	6 x 4	2 x 1	10 x 2	8 x 4
4 x 2	7 x 0	11 x 3	2 x 4	6 x 1	10 x 4	5 x 3	1 x 4
3 x 2	5 x 4	10 x 3	4 x 3	9 x 3	2 x 3	8 x 2	11 x 1
12 x 4	9 x 0	3 x 4	8 x 1	1 x 2	7 x 3	0 x 2	6 x 3

Table of Contents

Hooray for Arrays

* *Includes Answer Sheet*

GROUPS

Groups of objects are really quite neat,

from legs on a spider to your hands and your feet;

What can you find in a pair of two?

Your socks and your arms and even your shoe;

And what might you see in a group of 3?

Sides on a triangle or birds in a tree.

From a four-legged dog to the wheels on a car,

equal groups of 4 can be found near or far;

Just step outside and take a good look around,

You'll certainly see that equal groups abound.

MINI MULTIPLICATION Book

MINI MULTIPLICATION VOCAB BOOK

KEY INFORMATION

MULTIPLICATION:

Factors are multiplied together to find the product or total, for example;

$3 \times 5 = 15$

KEYWORD #1

REPEATED ADDITION:

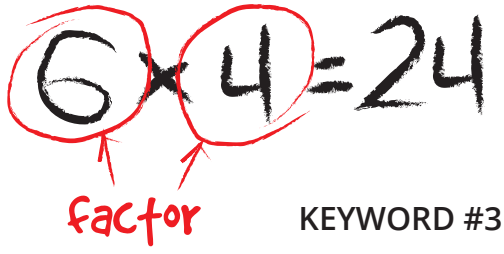
Adding the same number multiple times in order to find the total, for example;

$4 + 4 + 4 = 12$

KEYWORD #2

FACTOR:

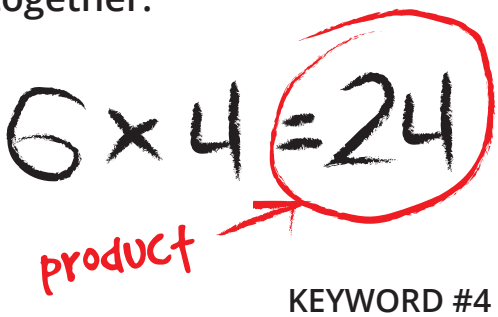
One of two or more numbers that are multiplied together to find a product.



KEYWORD #3

PRODUCT:

The result when two numbers are multiplied together.



KEYWORD #4

DIRECTIONS

Step 1: Cut out each mini-page.

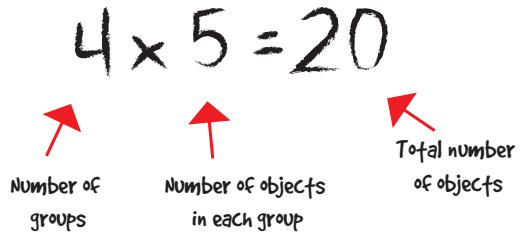
Step 2: Staple the pages together in order.

Step 3: Use this book as a helpful resource as you complete the activities in this workbook.

What do you Say, Let's Make an Array!

Directions

Review what each factor represents in this multiplication sentence:



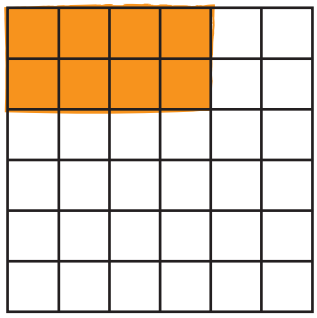
Color in each array. The first array has been colored in for you.

Example

1 **2 x 4 = 8**

FACTOR 2

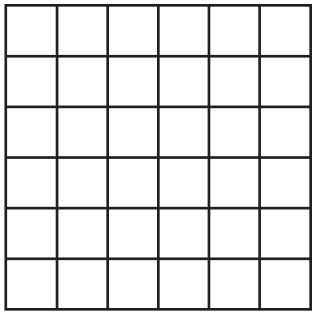
FACTOR 1



2 **3 x 5 = 15**

FACTOR 2

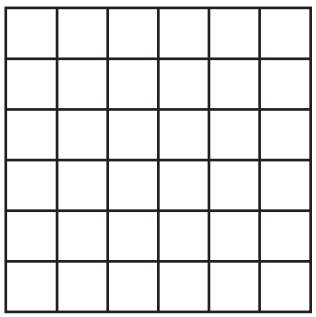
FACTOR 1



3 **1 x 2 = 2**

FACTOR 2

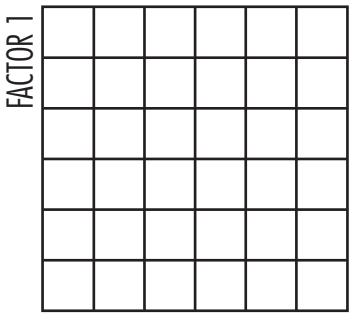
FACTOR 1



4 **4 x 4 = 16**

FACTOR 2

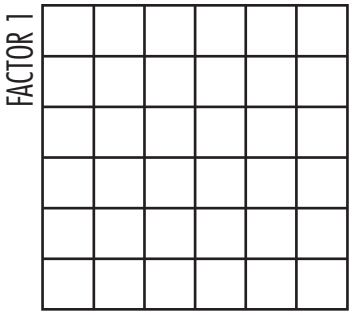
FACTOR 1



5 **4 x 5 = 20**

FACTOR 2

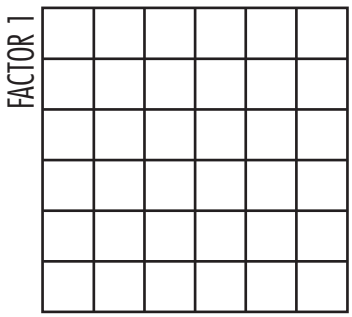
FACTOR 1



6 **6 x 5 = 30**

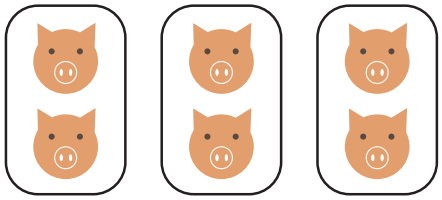
FACTOR 2

FACTOR 1



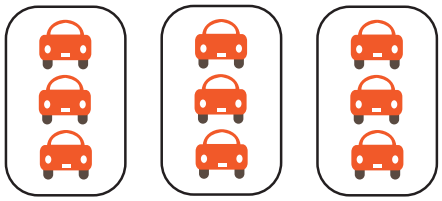
Repeated Addition

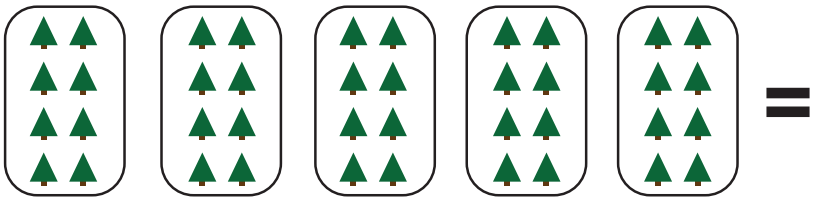
You can use repeated addition to find the total number of objects in equal groups.
For example, look at this problem.

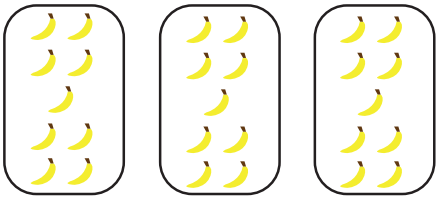
 = 6

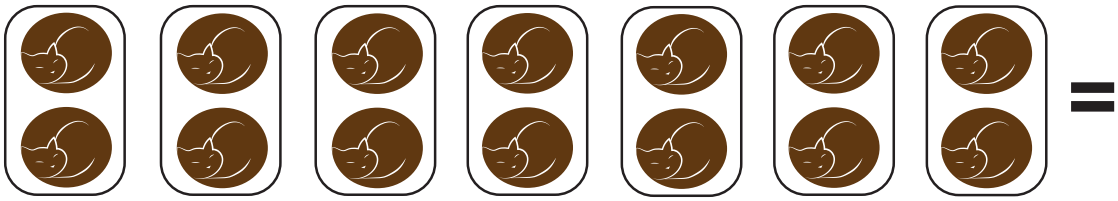
Since there are 3 equal groups of 2, the repeated addition sentence is: **2 + 2 + 2 = 6.**

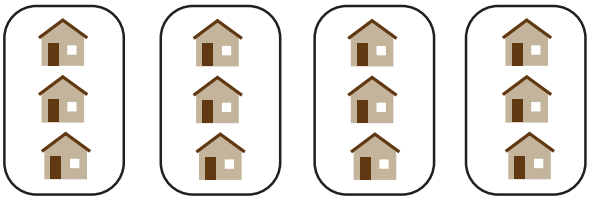
Use repeated addition to find the total number of objects in each question below.

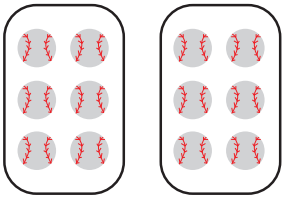
 =

 =

 =

 =

 =

 =

Multiplication Fact Practice

Directions

Memorizing your multiplication facts is an important skill to practice. Use this multiplication table to review your facts.

Multiplication Fact Practice 0 to 4

1 x 3	4 x 0	9 x 4	8 x 3	5 x 2	11 x 4	0 x 1	12 x 3
12 x 2	0 x 3	7 x 4	3 x 1	6 x 4	2 x 1	10 x 2	8 x 4
4 x 2	7 x 0	11 x 3	2 x 4	6 x 1	10 x 4	5 x 3	1 x 4
3 x 2	5 x 4	10 x 3	4 x 3	9 x 3	2 x 3	8 x 2	11 x 1
12 x 4	9 x 0	3 x 4	8 x 1	1 x 2	7 x 3	0 x 2	6 x 3

Multiplication Fact Practice 5 to 8

5 x 2	6 x 7	7 x 4	5 x 3	7 x 2	8 x 4	5 x 5	8 x 8
7 x 9	5 x 8	6 x 2	6 x 10	7 x 11	5 x 4	6 x 8	6 x 12
7 x 12	7 x 1	6 x 4	5 x 11	6 x 5	7 x 10	8 x 3	8 x 6
8 x 10	6 x 9	7 x 2	5 x 6	7 x 3	6 x 3	8 x 2	5 x 7
5 x 8	6 x 0	7 x 4	8 x 1	8 x 2	6 x 11	7 x 0	5 x 12

Multiplication Fact Practice 9 to 12

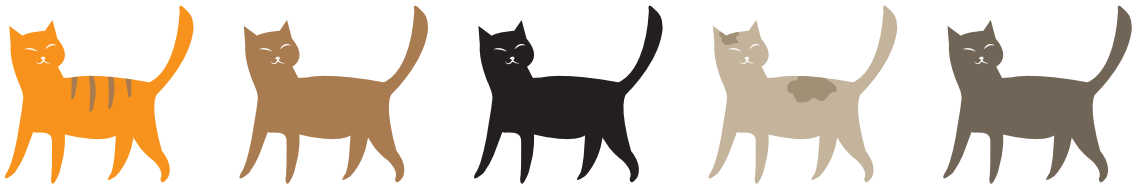
9 x 2	12 x 7	10 x 4	11 x 3	10 x 8	11 x 4	9 x 5	9 x 0
12 x 9	12 x 8	12 x 2	11 x 10	10 x 11	11 x 5	10 x 3	9 x 12
9 x 12	9 x 1	10 x 4	11 x 11	12 x 5	9 x 11	11 x 3	11 x 6
10 x 5	10 x 9	10 x 2	9 x 6	8 x 3	9 x 3	12 x 6	11 x 7
9 x 8	12 x 0	12 x 12	11 x 6	10 x 10	9 x 9	12 x 3	12 x 11

Equal Group Problems

Directions

In the problems below, use repeated addition and multiplication to find the total number of objects.

Example



Find the total number of legs on these five furry cats.

Repeated addition sentence: 4 + 4 + 4 + 4 + 4 = 20 legs

There are 5 equal groups of 4.

Now, write the multiplication sentence: 5 x 4 = 20 legs

Now you try!

1 **Find the total number of petals on the flowers.**

Repeated addition sentence: _____

There are 3 equal groups of 5.

Now, write the multiplication sentence: _____

2 **Find the total number of pieces of candy in the candy jars.**

Addition sentence: _____

There are 6 equal groups of 3.

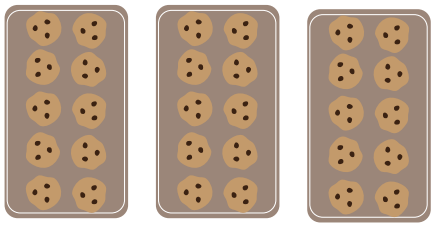
Now, write the multiplication sentence: _____

Repeated Addition and Multiplication

Multiplication can be thought of as addition of the same number multiple times in order to find a total. This is also called repeated addition. Both multiplication and repeated addition are used to find the total number of objects in equal groups.

For example, if you have 3 trays with 10 cookies on each tray, you can find the total number of cookies with this repeated addition sentence:

10 + 10 + 10 = 30 cookies



Since there are 3 equal groups of 10, you could also solve this problem with a multiplication sentence:

$3 \times 10 = 30$

- 3: Number of groups
- 10: Number of objects in each group
- 30: Total number of objects

Practice writing both addition and multiplication sentences while solving this word problem:

Betty the baker signed up to bring 40 brownies to her school's bake sale. Figure out if Betty baked enough brownies by finding the total number of brownies in each batch. Batch #1 has been figured out for you.

BATCH #1

Repeated addition sentence: 5 + 5 + 5 = 15

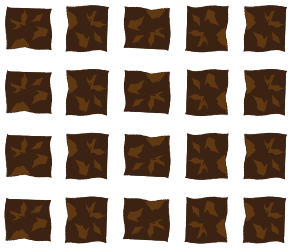
Multiplication sentence: 3 × 5 = 15

BATCH #2

Repeated addition sentence: _____

Multiplication sentence: _____

BATCH #3



Repeated addition sentence: _____

Multiplication sentence: _____

Did Betty have enough brownies for the bake sale? _____
Show your work on the back of this paper.

Multiplication Word Problems

Directions

Use one of the following strategies when solving the following word problems:

Create an Array

Skip Counting

Repeated Addition

Multiplication Sentence

Write the strategy you used on the line provided and show your work.

1. Tiffany wants to make 6 batches of cookies. She will need 2 cups of sugar for each batch of cookies. How many cups of sugar will Tiffany need?

strategy: _____

answer: _____

2. Tommy's mom asked him to help her clean the house. His mom has asked him to clean his bedroom, the laundry room, and the kitchen. He estimates that it is going to take him 10 minutes to clean each room. About how many minutes will it take Tommy to help his mom clean the house?

strategy: _____

answer: _____

3. Addie visited the elephant exhibit at the zoo. If there were 7 elephants in the exhibit, how many elephant legs did Addie see?

strategy: _____

answer: _____

Multiplication Word Problems (Part 2)

Directions

Use one of the following strategies when solving the following word problems:

Create an Array

Skip Counting

Repeated Addition

Multiplication Sentence

Write the strategy you used on the line provided and show your work.

1. Brittany ate 8 oranges in one week. Each orange had 6 slices. How many orange slices did Brittany eat altogether?

strategy: _____

answer: _____

2. Devon collected 5 bags of marbles. Each bag had 12 marbles in it. How many marbles did Devon collect altogether?

strategy: _____

answer: _____

3. Hillary read 7 chapters in her book on Tuesday. Each chapter had 6 pages in it. How many pages did Hillary read on Tuesday?

strategy: _____

answer: _____

Multiplication Word Problems (Part 3)

Directions

Use one of the following strategies when solving the following word problems:

Create an Array

Skip Counting

Repeated Addition

Multiplication Sentence

Write the strategy you used on the line provided and show your work.

1. Lindsay baked 4 apple pies for her school bake sale. Each pie was cut into 6 slices. How many slices total did Lindsay have?

strategy: _____

answer: _____

2. Now, it's your turn to write a word problem! You have 4 equal groups of 8 objects. Choose your object and write your word problem on the lines provided. Then, solve your problem. Remember to show your work.

_____

_____

_____

strategy: _____

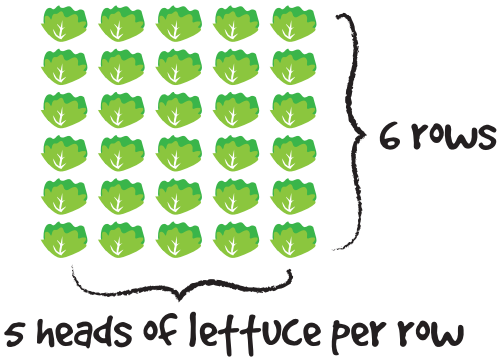
answer: _____

Array Multiplication

Directions

Farmer Gordon wants to know how many heads of lettuce he has in his garden. Instead of counting, he is going to show you a faster way of finding the total.

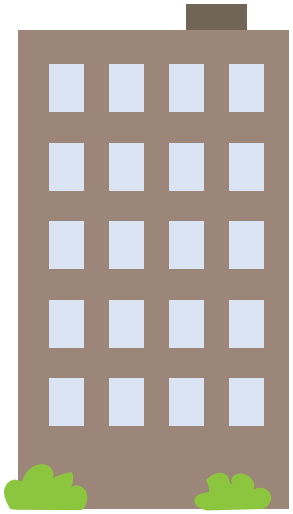
Example



Instead of counting or adding the heads of lettuce, Farmer Gordon wrote the following multiplication sentence:

6 x 5 = 30 heads of lettuce

Now you try! Find out the total number of windows on this building.



How many rows of windows do you see? _____

How many windows per row? _____

Write a multiplication sentence for this array and solve: _____

DIPLOMA

Hereby bestowed upon

_____

for excellence in
completion of

_____

Answer Sheets

Hooray for Arrays

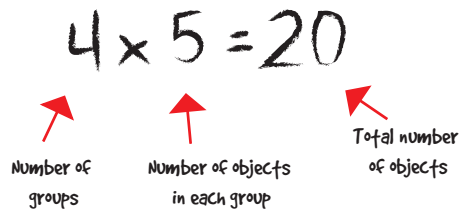
Hooray for Arrays: What Do You Say, Let's Make an Array!
Hooray for Arrays: Repeat Addition
Hooray for Arrays: Multiplication Fact Practice
Hooray for Arrays: Equal Group Problems
Hooray for Arrays: Repeated Addition and Multiplication
Hooray for Arrays: Multiplication Word Problems (Part One)
Hooray for Arrays: Multiplication Word Problems (Part Two)
Hooray for Arrays: Multiplication Word Problems (Part Three)
Hooray for Arrays: Multiplication

Answer Sheet

What do you Say, Let's Make an Array!

Directions

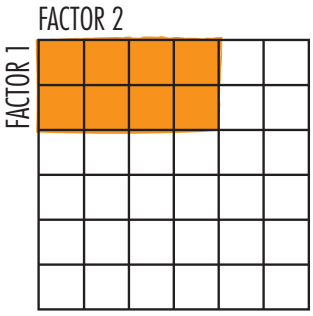
Review what each factor represents in this multiplication sentence:



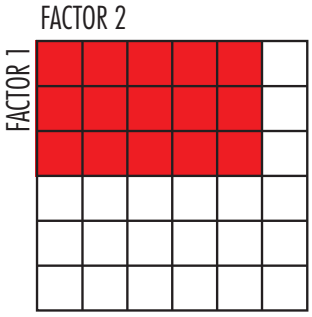
Color in each array. The first array has been colored in for you.

Example

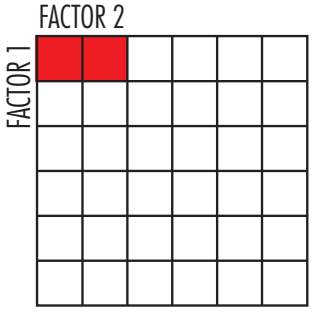
1 **2 x 4 = 8**



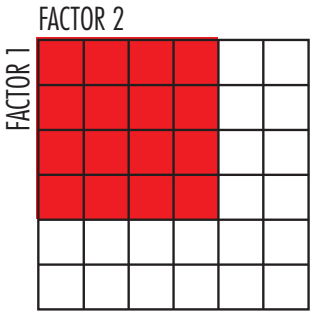
2 **3 x 5 = 15**



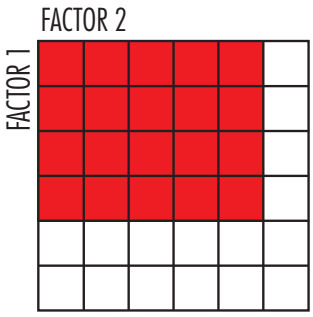
3 **1 x 2 = 2**



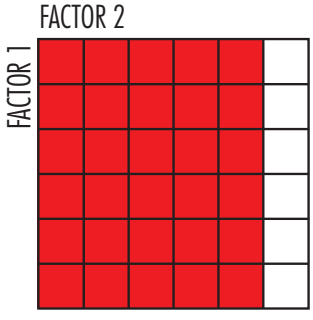
4 **4 x 4 = 16**



5 **4 x 5 = 20**



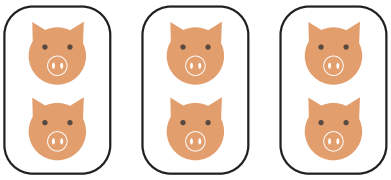
6 **6 x 5 = 30**



Answer Sheet

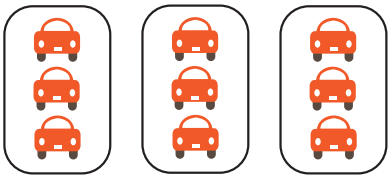
Repeated Addition

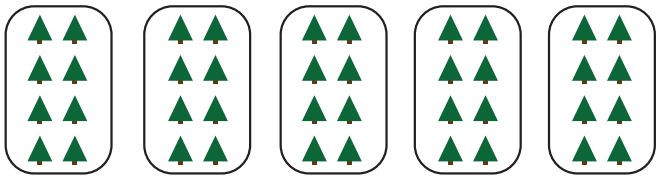
You can use repeated addition to find the total number of objects in equal groups.
For example, look at this problem.

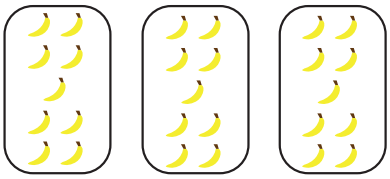
 = 6

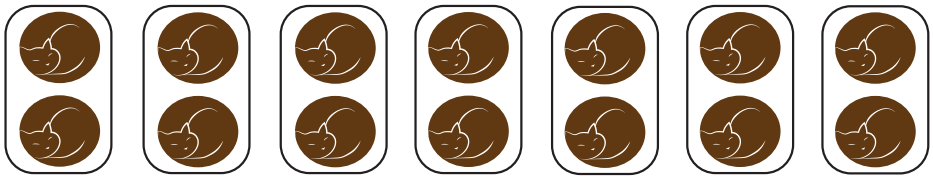
Since there are 3 equal groups of 2, the repeated addition sentence is: **2 + 2 + 2 = 6.**

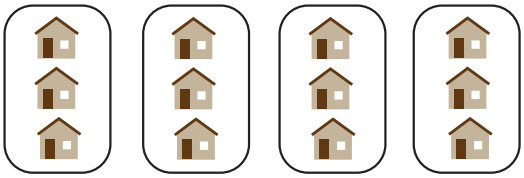
Use repeated addition to find the total number of objects in each question below.

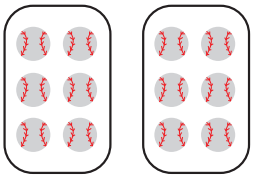
 = 3 + 3 + 3 = 9

 = 8 + 8 + 8 + 8 + 8 = 45

 = 9 + 9 + 9 = 27

 = 2+2+2+2 +2+2+2=14

 = 3 + 3 + 3 +3 = 12

 = 6 + 6 = 12

Answer Sheet

Multiplication Fact Practice

Directions

Memorizing your multiplication facts is an important skill to practice. Use this multiplication table to review your facts.

Multiplication Fact Practice 0 to 4

1 x 3 = 3	4 x 0 = 0	9 x 4 = 36	8 x 3 = 24	5 x 2 = 10	11 x 4 = 44	0 x 1 = 0	12 x 3 = 36
12 x 2 = 24	0 x 3 = 0	7 x 4 = 28	3 x 1 = 3	6 x 4 = 24	2 x 1 = 2	10 x 2 = 20	8 x 4 = 32
4 x 2 = 8	7 x 0 = 0	11 x 3 = 33	2 x 4 = 8	6 x 1 = 6	10 x 4 = 40	5 x 3 = 15	1 x 4 = 4
3 x 2 = 6	5 x 4 = 20	10 x 3 = 30	4 x 3 = 12	9 x 3 = 36	2 x 3 = 6	8 x 2 = 16	11 x 1 = 11
12 x 4 = 48	9 x 0 = 0	3 x 4 = 12	8 x 1 = 8	1 x 2 = 2	7 x 3 = 21	0 x 2 = 0	6 x 3 = 18

Multiplication Fact Practice 5 to 8

5 x 2 = 10	6 x 7 = 42	7 x 4 = 28	5 x 3 = 15	7 x 2 = 14	8 x 4 = 32	5 x 5 = 25	8 x 8 = 64
7 x 9 = 63	5 x 8 = 40	6 x 2 = 12	6 x 10 = 60	7 x 11 = 77	5 x 4 = 20	6 x 8 = 48	6 x 12 = 72
7 x 12 = 84	7 x 1 = 7	6 x 4 = 24	5 x 11 = 55	6 x 5 = 30	7 x 10 = 70	8 x 3 = 24	8 x 6 = 48
8 x 10 = 80	6 x 9 = 54	7 x 2 = 14	5 x 6 = 30	7 x 3 = 21	6 x 3 = 18	8 x 2 = 16	5 x 7 = 35
5 x 8 = 40	6 x 0 = 0	7 x 4 = 28	8 x 1 = 8	8 x 2 = 16	6 x 11 = 66	7 x 0 = 0	5 x 12 = 60

Multiplication Fact Practice 9 to 12

9 x 2 = 18	12 x 7 = 84	10 x 4 = 40	11 x 3 = 33	10 x 8 = 80	11 x 4 = 44	9 x 5 = 45	9 x 0 = 0
12 x 9 = 108	12 x 8 = 96	12 x 2 = 24	11 x 10 = 110	10 x 11 = 110	11 x 5 = 55	10 x 3 = 30	9 x 12 = 108
9 x 12 = 108	9 x 1 = 9	10 x 4 = 40	11 x 11 = 121	12 x 5 = 60	9 x 11 = 99	11 x 3 = 33	11 x 6 = 66
10 x 5 = 50	10 x 9 = 90	10 x 2 = 20	9 x 6 = 54	8 x 3 = 24	9 x 3 = 27	12 x 6 = 72	11 x 7 = 77
9 x 8 = 72	12 x 0 = 0	12 x 12 = 144	11 x 6 = 66	10 x 10 = 100	9 x 9 = 81	12 x 3 = 36	12 x 11 = 132

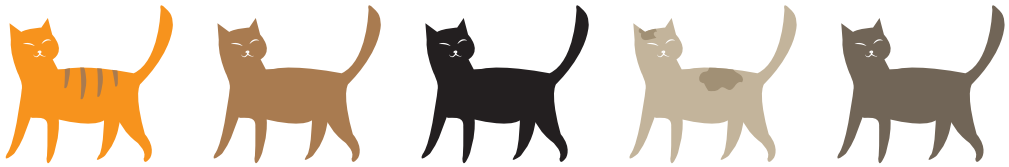
Answer Sheet

Equal Group Problems

Directions

In the problems below, use repeated addition and multiplication to find the total number of objects.

Example



Find the total number of legs on these five furry cats.

Repeated addition sentence: 4 + 4 + 4 + 4 + 4 = 20 legs

There are 5 equal groups of 4.
Now, write the multiplication sentence: 5 x 4 = 20 legs

Now you try!

1 **Find the total number of petals on the flowers.**

Repeated addition sentence: 5 + 5 + 5 = 15 petals

There are 3 equal groups of 5.
Now, write the multiplication sentence: 5 x 3 = 15 petals

2 **Find the total number of pieces of candy in the candy jars.**

Addition sentence: 3 + 3 + 3 + 3 + 3 + 3 = 18 pieces of candy

There are 6 equal groups of 3.
Now, write the multiplication sentence: 3 x 6 = 18 pieces of candy

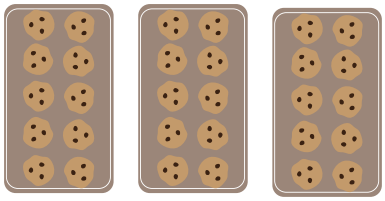
Answer Sheet

Repeated Addition and Multiplication

Multiplication can be thought of as addition of the same number multiple times in order to find a total. This is also called repeated addition. Both multiplication and repeated addition are used to find the total number of objects in equal groups.

For example, if you have 3 trays with 10 cookies on each tray, you can find the total number of cookies with this repeated addition sentence:

10 + 10 + 10 = 30 cookies



Since there are 3 equal groups of 10, you could also solve this problem with a multiplication sentence:

$3 \times 10 = 30$

Number of groups

Number of objects in each group

Total number of objects

Practice writing both addition and multiplication sentences while solving this word problem:

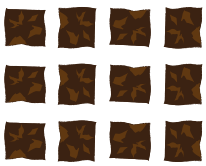
Betty the baker signed up to bring 40 brownies to her school's bake sale. Figure out if Betty baked enough brownies by finding the total number of brownies in each batch. Batch #1 has been figured out for you.

BATCH #1

Repeated addition sentence: 5 + 5 + 5 = 15

Multiplication sentence: 3 × 5 = 15

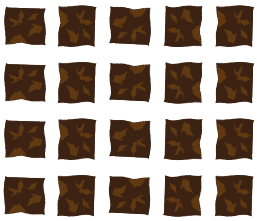
BATCH #2



Repeated addition sentence: 4 + 4 + 4 = 12

Multiplication sentence: 4 x 3 = 12

BATCH #3



Repeated addition sentence: 5 + 5 + 5 + 5 = 20

Multiplication sentence: 5 x 4 = 20

Did Betty have enough brownies for the bake sale? Yes

Show your work on the back of this paper. 15 + 12 + 20 = 47 brownies

Answer Sheet

Multiplication Word Problems

Directions

Use one of the following strategies when solving the following word problems:

Create an Array

Skip Counting

Repeated Addition

Multiplication Sentence

Write the strategy you used on the line provided and show your work.

1. Tiffany wants to make 6 batches of cookies. She will need 2 cups of sugar for each batch of cookies. How many cups of sugar will Tiffany need?

strategy: _____

answer: 12 cups

2. Tommy's mom asked him to help her clean the house. His mom has asked him to clean his bedroom, the laundry room, and the kitchen. He estimates that it is going to take him 10 minutes to clean each room. About how many minutes will it take Tommy to help his mom clean the house?

strategy: _____

answer: 30 minutes

3. Addie visited the elephant exhibit at the zoo. If there were 7 elephants in the exhibit, how many elephant legs did Addie see?

strategy: _____

answer: 28 legs

Answer Sheet

Multiplication Word Problems (Part 2)

Directions

Use one of the following strategies when solving the following word problems:

Create an Array

Skip Counting

Repeated Addition

Multiplication Sentence

Write the strategy you used on the line provided and show your work.

1. Brittany ate 8 oranges in one week. Each orange had 6 slices. How many orange slices did Brittany eat altogether?

strategy: _____

answer: 48 slices

2. Devon collected 5 bags of marbles. Each bag had 12 marbles in it. How many marbles did Devon collect altogether?

strategy: _____

answer: 60 marbles

3. Hillary read 7 chapters in her book on Tuesday. Each chapter had 6 pages in it. How many pages did Hillary read on Tuesday?

strategy: _____

answer: 42 pages

Answer Sheet

Multiplication Word Problems (Part 3)

Directions

Use one of the following strategies when solving the following word problems:

Create an Array

Skip Counting

Repeated Addition

Multiplication Sentence

Write the strategy you used on the line provided and show your work.

1. Lindsay baked 4 apple pies for her school bake sale. Each pie was cut into 6 slices. How many slices total did Lindsay have?

strategy: _____

answer: 24 slices

2. Now, it's your turn to write a word problem! You have 4 equal groups of 8 objects. Choose your object and write your word problem on the lines provided. Then, solve your problem. Remember to show your work.

_____

_____

_____

strategy: _____

answer: 32 items

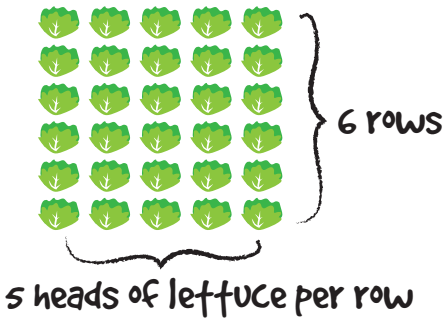
Answer Sheet

Array Multiplication

Directions

Farmer Gordon wants to know how many heads of lettuce he has in his garden. Instead of counting, he is going to show you a faster way of finding the total.

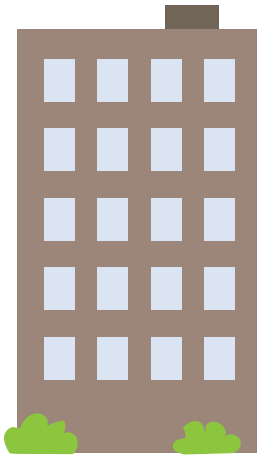
Example



Instead of counting or adding the heads of lettuce, Farmer Gordon wrote the following multiplication sentence:

6 x 5 = 30 heads of lettuce

Now you try! Find out the total number of windows on this building.



How many rows of windows do you see? 5

How many windows per row? 4

Write a multiplication sentence for this array and solve: 5 x 4 = 20