

# Gamma

## Lesson 5 Multiply by 10, Metric Measure

- (1) Gamma Instruction Manual, Lesson 5
- (2) Gamma Student Text, Lesson 5
- (3) Gamma Test Booklet, Test 5
- (4) Gamma Instruction Manual, Lesson 5 Solutions

Once students have mastered the concepts of addition and subtraction (covered in Alpha and Beta), they are ready for multiplication. Gamma Level teaches mastery of single-digit facts and multiple-digit multiplication skills.

These Gamma Sample Pages will give you an idea of Math-U-See's unique method of instruction. However, the cornerstone of Math-U-See's success in teaching Multiplication and other topics is our multi-sensory approach to maths instruction. Integrated Manipulative Blocks and Lesson-by-Lesson DVDs are used in every lesson throughout the Gamma Level to incorporate kinaesthetic, visual and auditory learning.

If you believe that Gamma is the level for your student to begin, please confirm this by completing our free online placement tests.

To Your Success!!



## LESSON 5

# Multiply by 10, Metric Measure

### 10¢ Coins

When multiplying by 10, encourage the student to look for patterns. Notice that whenever you multiply 10 times any number, the answer is that number plus a zero. That is because 10 is made up of a “1” digit and a “0” digit. So  $4 \times 10$  is  $4 \times 1 = 4$  and  $4 \times 0 = 0$ , or 40. To make sure the student has this concept, I like to ask, “What is banana times 10?” The answer is “banana zero” pronounced “banana-ty.” The “ty” stands for 10. These are easy facts to learn and remember, but don’t take them for granted. Make sure they are mastered using any of the techniques shown below.

On the worksheets, there have been rectangles where the student wrote in the fact at the end of the line in the space with an underline. These can be put to another use by adding the multiplication problem to the multiple of 10. Here are a few examples.

										10
--	--	--	--	--	--	--	--	--	--	----

Ten counted one time  
equals ten or  $10 \times 1 = 10$ .

										20
--	--	--	--	--	--	--	--	--	--	----

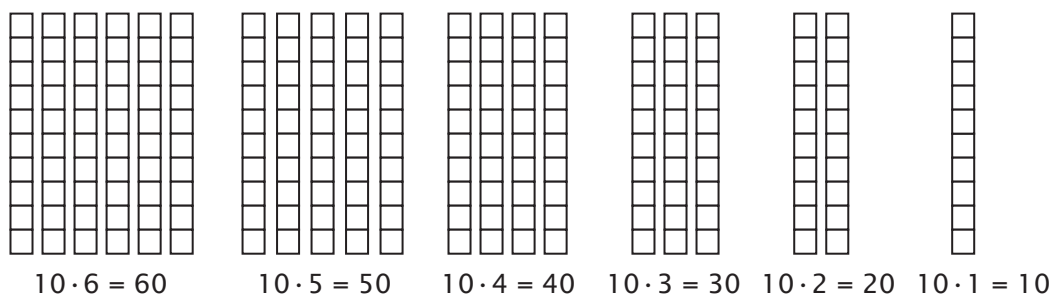
Ten counted two times  
equals twenty or  $10 \times 2 = 20$ .

										30
--	--	--	--	--	--	--	--	--	--	----

Ten counted three times  
equals thirty or  $10 \times 3 = 30$ .

										40
--	--	--	--	--	--	--	--	--	--	----

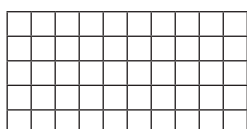
Ten counted four times  
equals forty or  $10 \times 4 = 40$ .



Another way to show this is on a number chart. Circling all of the 10 facts, or multiples of 10, reveals the pattern that corresponds to the blocks above.

0	1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18	19
20	21	22	23	24	25	26	27	28	29
30	31	32	33	34	35	36	37	38	39
40	41	42	43	44	45	46	47	48	49
50	51	52	53	54	55	56	57	58	59
60	61	62	63	64	65	66	67	68	69
70	71	72	73	74	75	76	77	78	79
80	81	82	83	84	85	86	87	88	89
90	91	92	93	94	95	96	97	98	99
100									

Of course each fact can be built in the shape of a rectangle. Whenever illustrating with the blocks, also write it and say it as you build.



10 counted 5 times is the same as 50, or 10 times 5 equals 50, or 10 over and 5 up is 50.

Counting by 10 is the first step. After this is accomplished, say the factors slowly, and then ask the student to say the product. For example, you say “ten counted one time,” or “10 times one,” and the student says “10.” Continue by saying “10 times 2,” and the student says “20.” (I often have the student say “two-ty” as well as 20 to show there is order in our words.) Proceed through all the facts sequentially just as when the student learned to count by 10.

Here are the 10 facts with the corresponding numbering.

0	10	20	30	40	50	60	70	80	90	100
(10)(0)	(10)(1)	(10)(2)	(10)(3)	(10)(4)	(10)(5)	(10)(6)	(10)(7)	(10)(8)	(10)(9)	(10)(10)
	↑			↑					↑	
	10 counted 1 time			10 counted 4 times					10 counted 9 times	

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

↑ ←

### 10¢ Coins

A good place to apply maths is with money. We can ask how many cents in six 10-cent coins to apply  $6 \times 10$ . The answer is 60¢.

#### Example 1

How many cents in six 10-cent coins?



$$6 \cdot 10¢ = 60¢$$

We will be reviewing and using multiplication facts throughout the student textbook. If you find that you need more review of the multiplication facts, consult the Math-U-See website, which provides online drill and downloadable worksheets. Go to [MathUSee.com](http://MathUSee.com) and click on E-Sources.

### *Metric Measure Summary*

The entire metric system of measurement is based on multiplying by ten. Study the charts below. The basic unit is in bold in each list.

#### Liquid

10 millilitres = 1 centilitre

10 centilitres = 1 decilitre

10 decilitres = 1 **litre**

10 litres = 1 dekalitre

10 dekalitres = 1 hectolitre

10 hectolitres = 1 kilolitre

#### Length

10 millimetres = 1 centimetre

10 centimetres = 1 decimetre

10 decimetres = 1 **metre**

10 metres = 1 dekametre

10 dekametres = 1 hectometre

10 hectometres = 1 kilometre

#### Weight or Mass

10 milligrams = 1 centigram

10 centigrams = 1 decigram

10 decigrams = 1 **gram**

10 grams = 1 dekagram

10 dekagrams = 1 hectogram

10 hectograms = 1 kilogram

Not all of these units are commonly used in everyday life. The student should become familiar with millimetre, centimetre, metre, kilometre, millilitre, litre, kilolitre, gram, and kilogram. Give lots of practice in weighing or measuring everyday items. Observe the weight, volume, or size of purchased items.

In the appropriate lessons, the student will practise changing one measure to another by multiplying by 10, 100 (10 x 10), and 1000 (10 x 10 x 10).

### *10 Millimetres = 1 Centimetre*

Use a ruler to show the relationship between *millimetres* and *centimetres*. Practise measuring different objects. The abbreviation for centimetre is cm and for millimetre is mm.

#### **Example 2**

Greg measured his pencil and found it was five centimetres long. How many millimetres long is his pencil?

$$10 \times 5 \text{ cm} = 50 \text{ mm}$$