The
Physical and Conceptual Meaning of Multiplication using Whole Numbers

Pedagogical Tips
and
Student Practice

(2nd through 6th Grades)

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Introduction and Pedagogical Recommendations

This short mathematics unit focuses on the physical and conceptual meaning of multiplication ***using whole numbers***. Multiplication has been 'hanging around' for 5,000 years or more. In fact, on a summer trip to Turkey in my early thirties, I visited a museum in Anatolia where (many millenniums ago) a flat rock had been clearly etched with a sharp tool depicting single digit multiplication facts represented by both equal groups and repeated addition. However, for some bizarre reason, elementary students struggle with this mathematical concept today. It cannot be due to the arduous effort of memorizing and ingraining multiplication facts into long-term memory. ***Why?*** Due to the commutative property of multiplication, there are only 28 discrete **single-digit** multiplication facts to memorize from the 3's through the 9's. It is not memorization that is an issue for students.

The enclosed student practice sheets are designed to be implemented efficiently and effectively each day – via a warm-up or spaced repetition pedagogical technique. This resource is a self-defined "off the shelf" curricular resource, whereas a classroom teacher can implement the content as well as the student practice sheet in subsequent days with little to no preparation time. There is a threshold number of student practice page versions for multiplication skill practice to ensure that students exceed the number of repetitions required to achieve long-term mastery of the content.

It is important to note that the curricular resource sheets can be efficiently implemented every day regardless of the core lesson content designed for that school day. A teacher can provide a 5-minute spaced repetition or warm-up session using the enclosed resources before the onset of the core lesson. The student practice pages are divided into halves giving a teacher the option to use the resource for a quick warm-up, transitional activity, or homework assignment extending the days of daily practice with their students.

Section 1 covers the **multiplication** of single digit (e.g., 5 x 9) whole numbers.

Section 2 covers the **multiplication** of (2 by 1) digit whole numbers. Same concept, of course, as 1 x 1.

The only prerequisite skills are whole number lines, single digit addition facts (for repeated addition modeling of multiplication) and single digit multiplication facts. Note: Begin with small numbers (i.e., 2 x 3, 1 x 5, etc.)

Note: Math facts in all four operations must be learned to automaticity – 3 second recall per fact.

The point is that this pedagogical task is not difficult. It only needs an effective, efficient and consistent means of delivery. Again, students **must** ingrain their single digit multiplication facts. I recommend using a paper pencil WRITING system that breaks the task down into manageable smaller tasks for the students that may struggle with a mixed assessment of 100 individual math facts. In doing so, in as little as 10 days, 70 to 90 percent of the students will have mastered the process. The remaining students usually require focused intervention and accountability. Moreover, the writing aspect is key to success in these types of learning tasks. Unfortunately, a digital program will not yield the same results. Of course, it is easier for the teacher to use a computer program, but the teacher cannot expect 98 percent of their students to master the task. The most effective global numeracy program is **Formative Loop**, and as of this writing, it only costs 9 dollars a student for an entire school year. However, the numeracy program includes both math processing skills as well as math facts. It is recommended to ask the commercial vendor (Formative Loop) for double runs of 5 minutes each for one math fact numeracy task and one processing skill task per day. If this daily program is pressed, results will follow that make a difference in test results and student understanding. This numeracy program also has a skill resource library for grades 1 through 8. Thus, teachers will never be searching the internet for skill resources or support resources needed in their daily instruction or nightly homework.

It is also recommended that an interested educator desiring high student achievement outcomes read, *"Math Fact Mastery – Easy to Do!"* and *"Writing – An Overlooked Learning Modality."* If an educator has questions, please feel free to email, telephone or text. Contact information as well as both documents are free downloads and are located at the website address provided in the footer below. All communication is free for classroom teachers and administrators desiring to be positive difference makers in children's lives.

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Multiplication Modeling – Pedagogical Tips

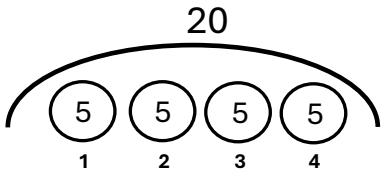
Teacher Pedagogical Tips:

1.) Provide students with sufficient practice, as needed. If some students are struggling, slow down the process and pace. Most importantly, use small multiplication equations when beginning, so students can focus on the concept – 3 x 1, 4 x 2, 2 x 2, 1 x 2, 3 x 3, etc.

2.) Students lacking in multiples mastery will struggle. Multiplication is repeated addition…multiples! Practice this skill with your students. Begin with 2's, 10's and 5's. Slowly, until mastered. Then, proceed with 3's, 4's, 6's, 7's, 8's and 9's. There is a multiples homework and practice sheet at the end of this packet. Students must be confident and possess the ability to skip count adeptly. If a teacher systematically practices this skill set, all the students will know it. There is a tremendous impact in numeracy development with skip counting mastery in an arithmetic environment.

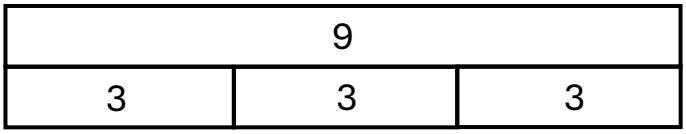
3.) Provide math fact modeling practice, daily in short sessions, as students require it.

For example, a teacher can (quickly) draw multiplication models on the white board and require students to write the multiplication equation. ***Practice as is needed.***

- 

Students write: 5 x 4 = 20

In doing these exercises, the teacher can use larger multiplication equations.

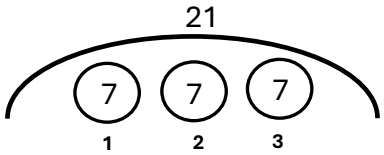
- 

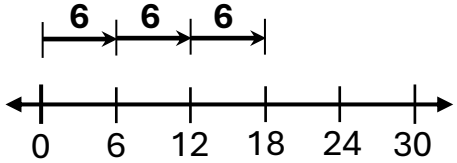
Students write: 3 x 3 = 9

Three equal groups of 3 each total to 9. Or, 3 + 3 + 3 = 9. Repeated Addition.

- **Teacher writes: 7 + 7 + 7 = 21**

Students write: 3 x 7 = 21
Or
Students draw the model



- 

Students write: 3 x 6 = 18

Multiplication Modeling – Pedagogical Tips

Teacher Pedagogical Tips (Continued):

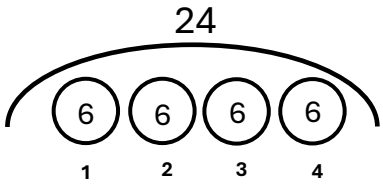
- Teacher writes:

  "4 equal groups of 6"

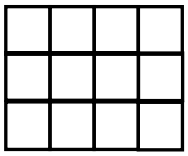
  Students respond with written answer:

  6 x 4 = 24

  and students can also draw the model quickly.



- Teacher draws **<u>area</u>** grid model:



  Students respond with written answer:

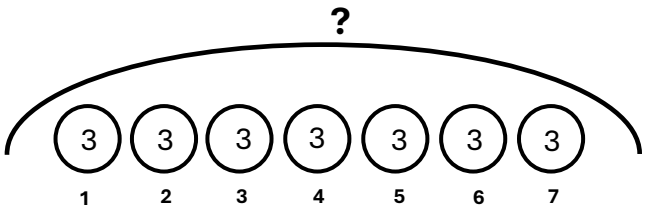
  4 x 3 = 12

4.) The tremendous advantage of a student knowing the 4 math fact models (addition, subtraction, multiplication and division) assists them in understanding the physical meaning of the operation; however, it also provides a benefit in problem solving applications.

For instance, when given a traditional word or story problem, the student can draw the model of the operation and quickly realize – as adults do – that it is a multiplication problem (or addition, subtraction or division).

John went to the store and purchased 7 decks of cards. Each deck of cards cost 3 dollars. How much money did John spend at the store?

Students draw the model of what is physically occurring in the word/story problem:



The model clearly indicates the problem is a multiplication model. Thus, **<u>7 x 3 = 21.</u>**

<u>John spent 21 dollars.</u>

5.) If the teacher practices multiples (i.e., skip counting) to mastery with their students, they will 'own' that important numeracy skill. If the teacher practices math fact models of all four operations, students will understand and apply them with confidence and ease. Whenever a teacher consistently practices and holds pupils accountable to content, then students will ingrain the material to long-term memory. Unfortunately, whatever is not sufficiently practiced, students will **<u>not</u>** master.

Note: Multiples practice sheets are attached at the end of this unit. The white papers or downloadable documents listed on page ***i*** provide pedagogical sequencing of multiples practice; thus, student mastery can be achieved by all students.

Section 1

Single Digit (1 by 1) Physical and Conceptual Meaning of Multiplication

Student Practice Resource

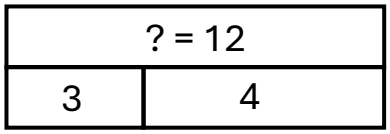
1 by 1 Digit Multiplication Modeling Practice – V1

Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

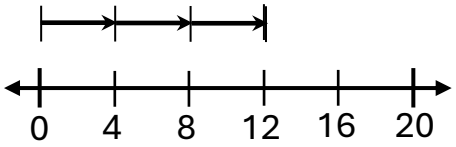
3 x 4 = ?

A. Four equal groups of three

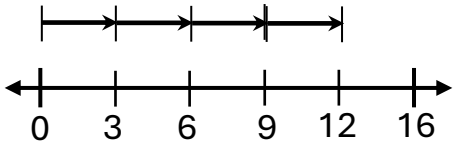
B.



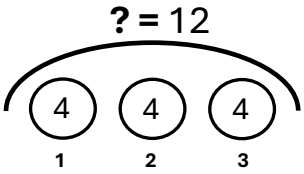
C.



D.



E.

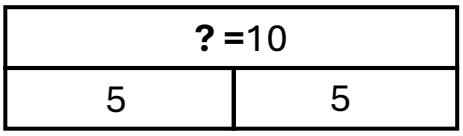


F. 4 + 4 + 4 = 12

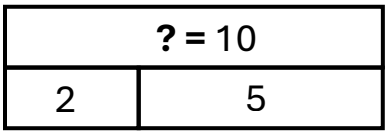
Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

2 x 5 = ?

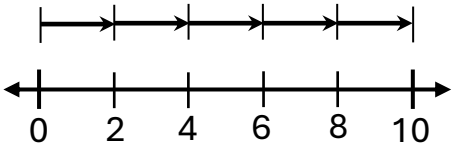
A.



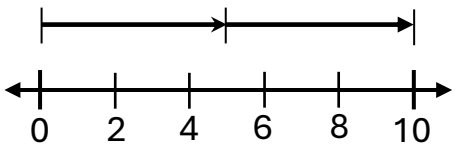
B.



C.



D.



E. Five equal groups of two

F. 2 + 2 + 2 + 2 = ?

1 by 1 Digit Multiplication Modeling Practice – V1

Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

ANSWER KEY

3 x 4 = ?

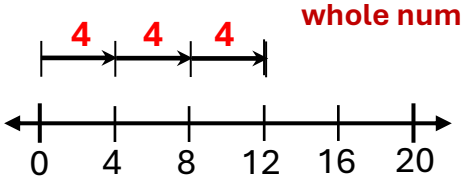
A. Four equal groups of three

B.

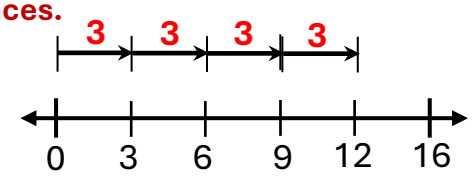
? =12	
3	4

Note: Students should label the whole number line or equal spaces.

C. ✓

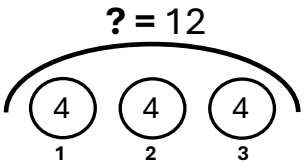


D. ✓



Note: Stress both 3 equal groups of 4 each AND 4 equal groups of 3 each equal 12. Does the model represent this situation?

E. ✓



F. ✓ 4 + 4 + 4 = 12

Note: Multiplication is repeated addition.

Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

Note: 2 equal groups of 5 each equal 10 is the same as 5 + 5 = 10. *Many students do not see this connection as the same thing.*

2 x 5 = ?

Note: Students should be able to skip count (multiples) of numbers 1 through 12. Begin with 2's, 10's and 5's. Practice until mastered. Then, 3's and 4's, etc.

A. ✓

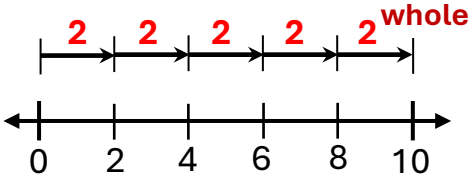
? = 10	
5	5

B.

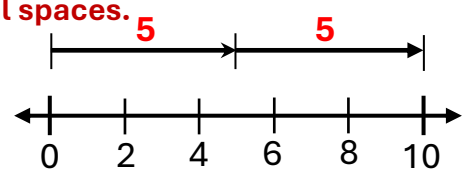
? = 10	
2	5

Note: Students should label the whole number line or equal spaces.

C. ✓



D. ✓



Note: Multiplication is repeated addition. Stress 2 + 2 + 2 + 2 + 2 = 10 and 5 + 5 = 10.

5 equal groups of 2 and 2 equal groups of 5 = 10.

E. ✓ Five equal groups of two

F. ✓ 2 + 2 + 2 + 2 = 8

4 x 2 = 8 not 5 x 2

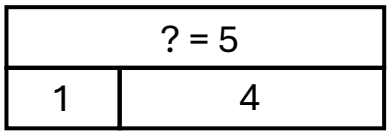
1 by 1 Digit Multiplication Modeling Practice – V2

Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

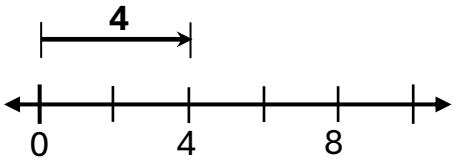
1 x 4 = ?

A. Four equal groups of one

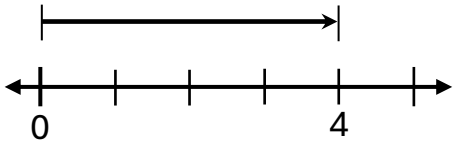
B.



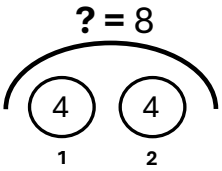
C.



D.



E.

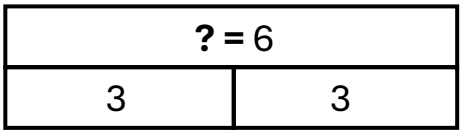


F. 1 + 1 + 1 + 1 = 4

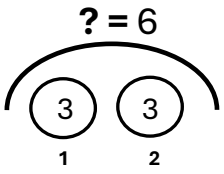
Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

3 x 2 = ?

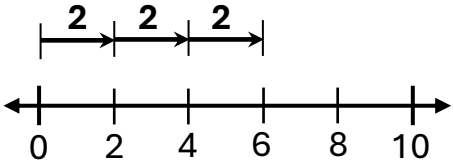
A.



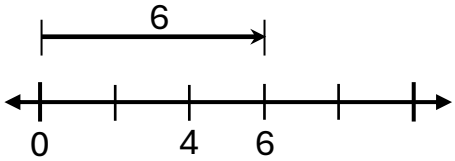
B.



C.



D.



E. 3 equal groups of three

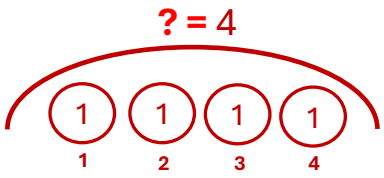
F. 2 + 2 + 2 = 6

1 by 1 Digit Multiplication Modeling Practice – V2

Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

ANSWER KEY

1 x 4 = ?

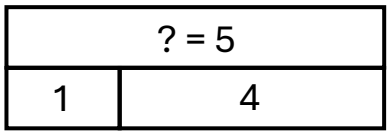


Note: Students should be able to skip count (multiples) of numbers 1 through 12. Practice daily until mastered.

✓ **A.** Four equal groups of one

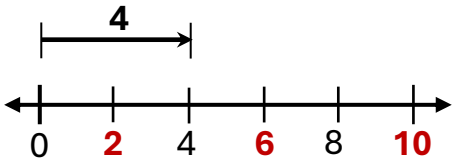
Note: Students should label the whole number line or equal spaces.

B.

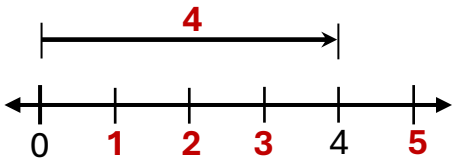


Addition model: 1 + 4 = 5

✓ **C.**

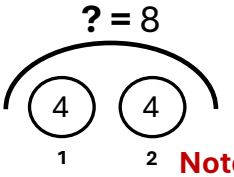


✓ **D.**



Note: Stress 1 equal group equals 4, or 4 equal groups of 1 each = 4. Do the models reflect this mathematical and multiplicative situation?

E.



Note: 2 equal groups of 4 = 8

✓ **F.** 1 + 1 + 1 + 1 = 4

Note: 4 equal groups of 1 each = 4

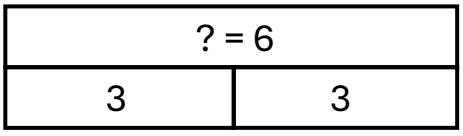
Directions: Identify the correct model or number of the multiplication equation shown below. Choose four (4) correct answers.

Note: 2 equal groups of 3 each equal 6 is the same as 3 + 3 = 6. *Many students do not see this connection as the same thing.*

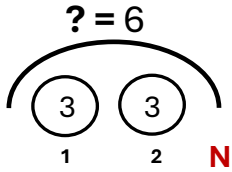
3 x 2 = ?

Note: Students should be able to skip count (multiples) of numbers 1 through 12. Begin with 2's, 10's and 5's. Practice until mastered.

✓ **A.**



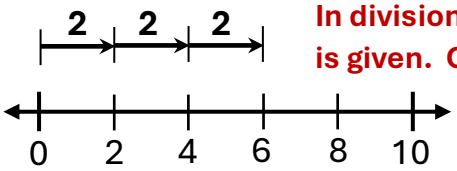
✓ **B.**



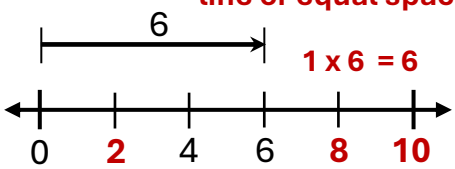
Note: Students should label the whole number line or equal spaces.

Note: Computing the product. In division, the dividend (total) is given. Confusing to kids!

✓ **C.**



D.



1 x 6 = 6

Note: Multiplication is repeated addition. Stress 2 + 2 + 2 = 6 and 3 + 3 = 6. 3 equal groups of 2 and 2 equal groups of 3 = 6.

E. 3 equal groups of three. **Total = 6 not 9.**

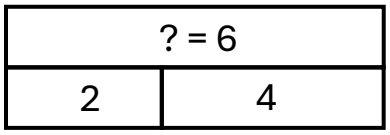
✓ **F.** 2 + 2 + 2 = 6

1 by 1 Digit Multiplication Modeling Practice – V3

Directions: Identify the correct model or product of the multiplication equation shown below. Choose four (4) correct answers.

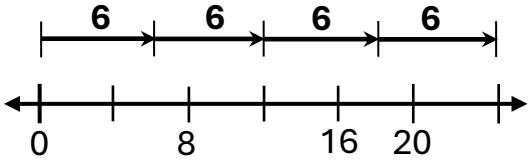
4 x 6 = ?

A.

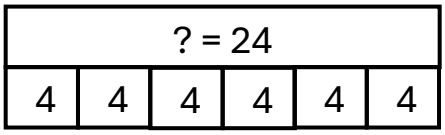


B. Four equal groups of six

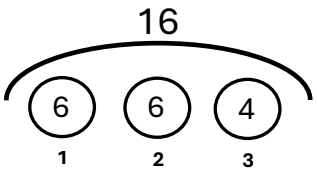
C.



D.



E.

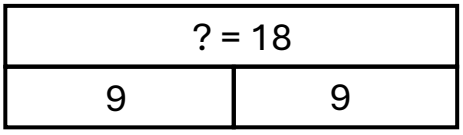


F. 4 + 4 + 4 + 4 + 4 + 4 = 24

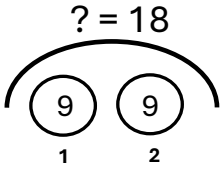
Directions: Identify the correct model or product of the multiplication equation shown below. Choose four (4) correct answers.

9 x 2 = ?

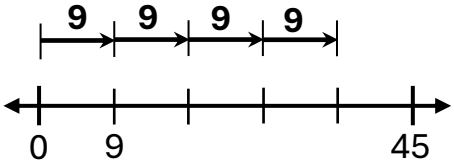
A.



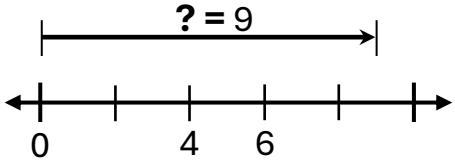
B.



C.



D.



E. 9 equal groups of two

F. 9 + 9 = 18

1 by 1 Digit Multiplication Modeling Practice – V3

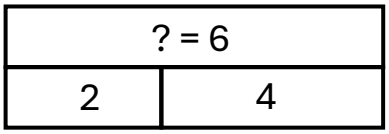
Directions: Identify the correct model or product of the multiplication equation shown below. Choose four (4) correct answers.

ANSWER KEY

4 x 6 = ?

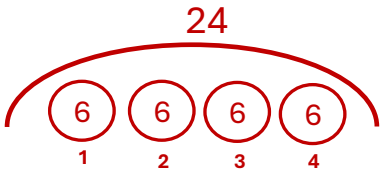
Note: Students should label the whole number line or equal spaces.

A.



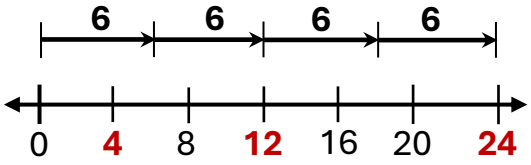
Addition model: 2 + 4 = 6

B. ✓

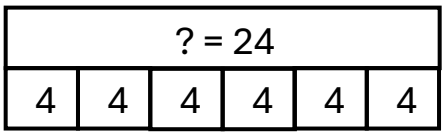


Four equal groups of six

C. ✓

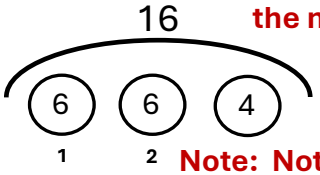


D. ✓



Note: Stress 4 equal groups of 6 = 24, or 6 equal groups of 4 each = 24. Do the models reflect this mathematical and multiplicative situation?

E.



Note: Not equal groups – rubbish.

F. ✓

4 + 4 + 4 + 4 + 4 + 4 = 24

Note: 4 equal groups of 6 = 24

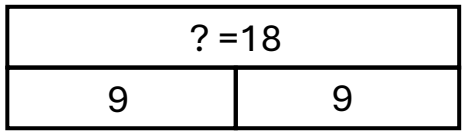
Directions: Identify the correct model or product of the multiplication equation shown below. Choose four (4) correct answers.

9 x 2 = ?

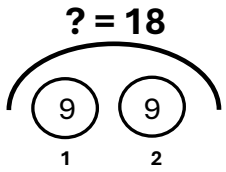
Note: Students should label the whole number line or equal spaces.

Note: 2 equal groups of 9 equal 18 is the same as 9 + 9 = 18.

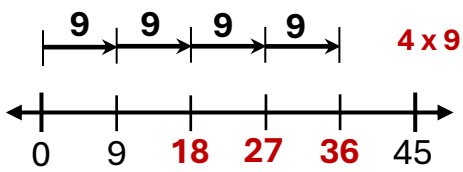
A. ✓



B. ✓

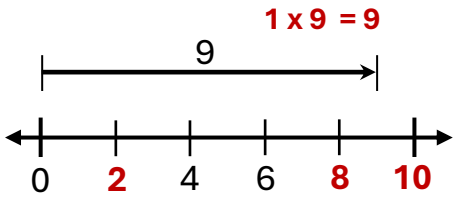


C.



4 x 9 = 36

D.



Note: Multiplication is repeated addition. Stress 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 18 and 9 + 9 = 18. 9 equal groups of 2 and 2 equal groups of 9 both equal 18.

E. ✓ 9 equal groups of two

F. ✓ 9 + 9 = 18

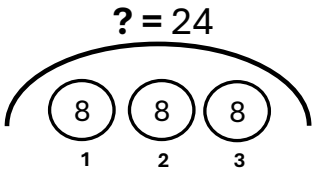
1 by 1 Digit Multiplication Modeling Practice – V4

Directions: Identify the correct model or product of the multiplication equation shown below. **Choose three (3) correct answers**.

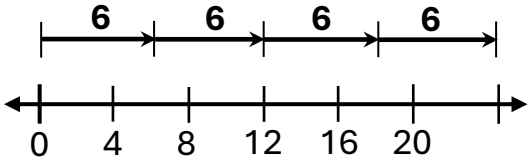
8 x 3 = ?

A. Product = 24

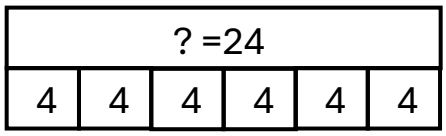
B.



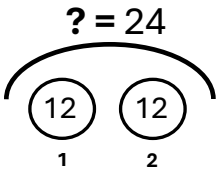
C.



D.



E.

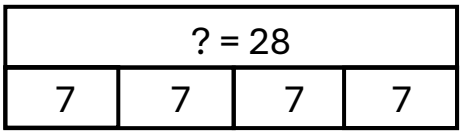


F. 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24

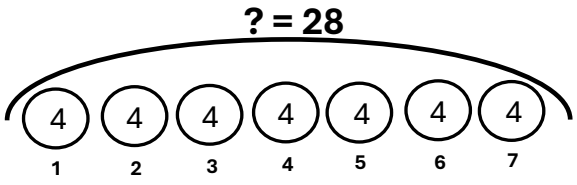
Directions: Identify the correct model or product of the multiplication equation shown below. **Choose three (3) correct answers.**

7 x 4 = ?

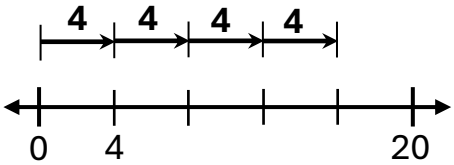
A.



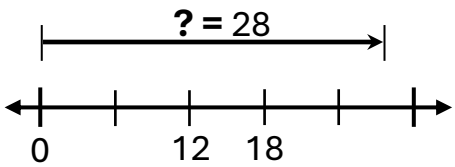
B.



C.



D.



E. 7 equal groups of five

F. 7 + 7 + 7 + 7 = 28

1 by 1 Digit Multiplication Modeling Practice – V4

Directions: Identify the correct model or product of the multiplication equation shown below.
Choose three (3) correct answers.

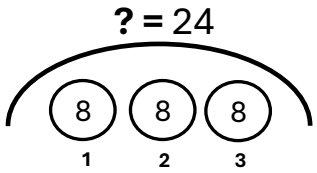
ANSWER KEY

8 x 3 = ?

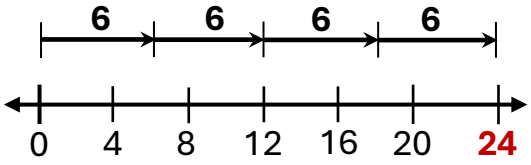
✓ **A.** Product = 24

Stress vocabulary – Factor x Factor = Product

✓ **B.**

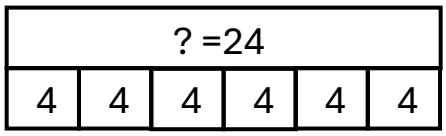


C.



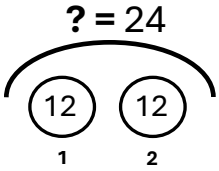
4 x 6 = 24 model

D.



4 x 6 = 24 model

E.



12 x 2 = 24 model

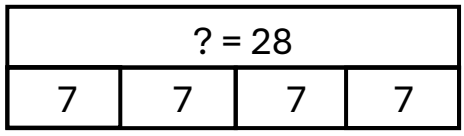
✓ **F.** 3 + 3 + 3 + 3 + 3 + 3 + 3 + 3 = 24

Note: 8 equal groups of 3 = 24

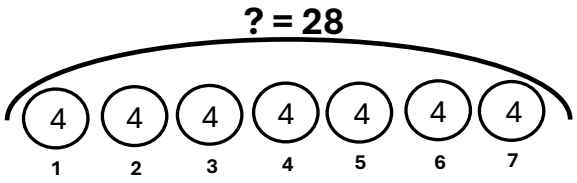
Directions: Identify the correct model or product of the multiplication equation shown below.
Choose three (3) correct answers.

7 x 4 = ?

✓ **A.**

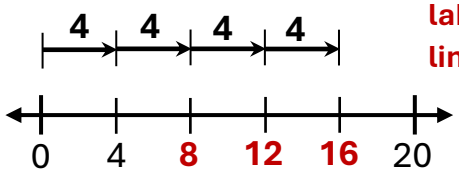


✓ **B.**

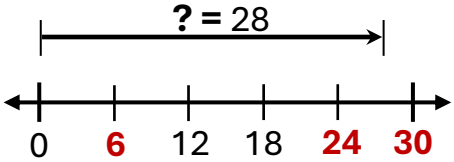


Note: Students should label the whole number line or equal spaces.

C.



D.



E. 7 equal groups of five

✓ **F.** 7 + 7 + 7 + 7 = 28

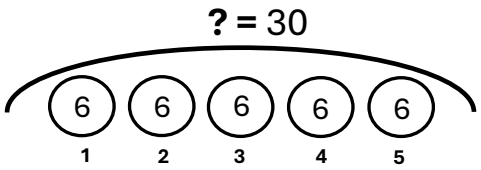
1 by 1 Digit Multiplication Modeling Practice – V5

Directions: Identify the correct model or product of the multiplication equation shown below. **Choose three (3) correct answers**.

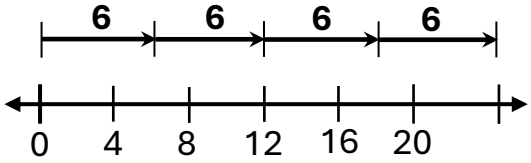
6 x 7 = ?

A. Product = 43

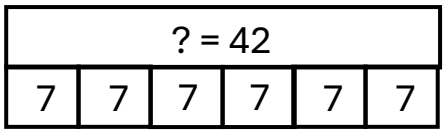
B.



C.

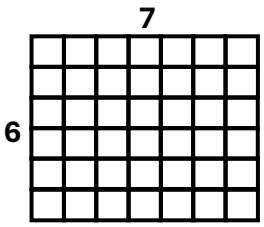


D.



E. 7 equal groups of six

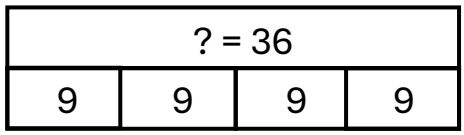
F.



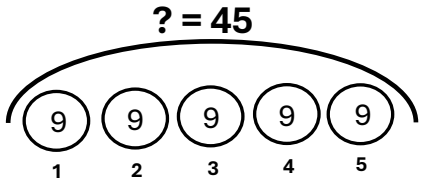
Directions: Identify the correct model or product of the multiplication equation shown below. **Choose four (4) correct answers.**

9 x 5 = ?

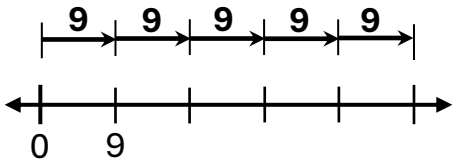
A.



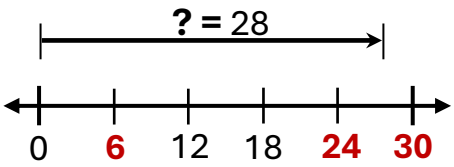
B.



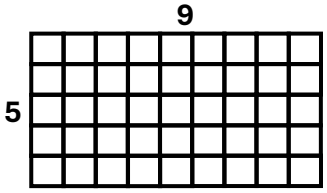
C.



D.



E.



F. 9 + 9 + 9 + 9 + 9 = 45

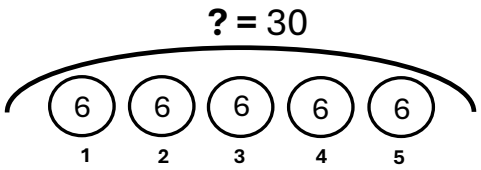
1 by 1 Digit Multiplication Modeling Practice – V5

Directions: Identify the correct model or product of the multiplication equation shown below. **Choose three (3) correct answers**.

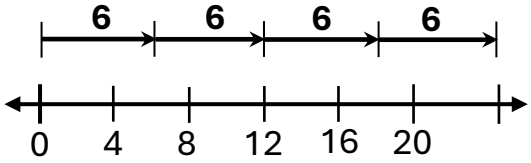
6 x 7 = ?

A. Product = 43

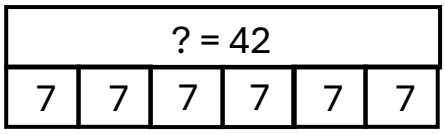
B.



C.

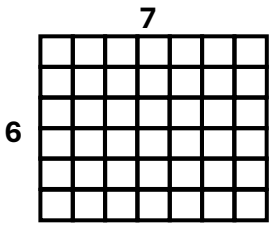


D. ✓



E. ✓ 7 equal groups of six

F. ✓

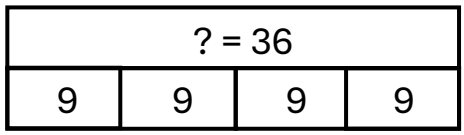


Directions: Identify the correct model or product of the multiplication equation shown below. **Choose four (4) correct answers.**

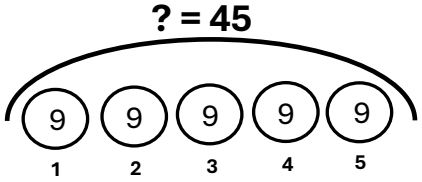
Note: Students should label the whole number line or equal spaces.

9 x 5 = ?

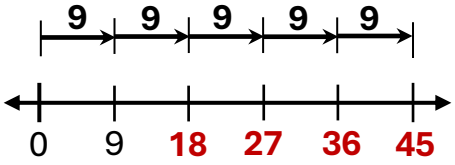
A.



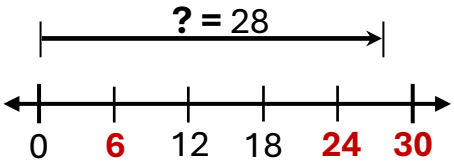
B. ✓



C. ✓

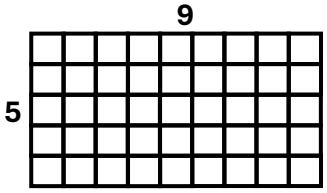


D.



Note: Emphasize 45 equal sized squares

E. ✓



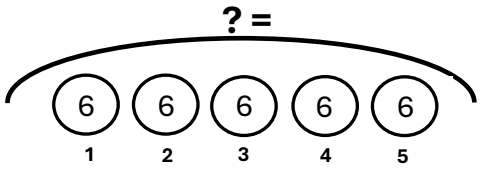
9 x 5 = 45

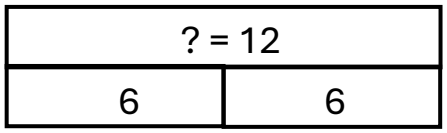
Area or grid model

F. ✓ 9 + 9 + 9 + 9 + 9 = 45

1 by 1 Digit Multiplication Modeling Practice – V6

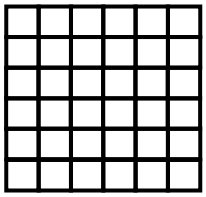
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.

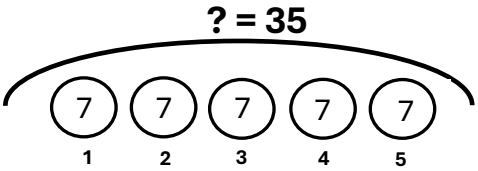




6 x 2 = ?

6 x 5 = 30

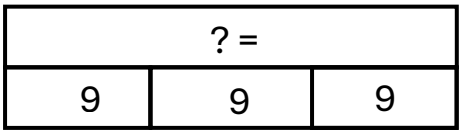




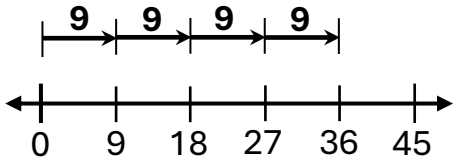
5 equal groups of 7

6 x 6 = 36

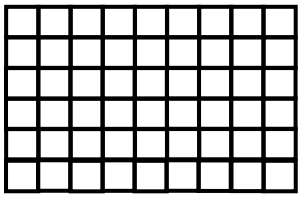
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



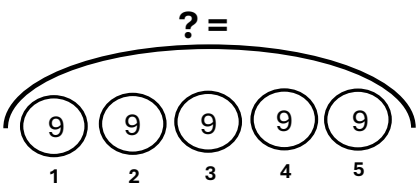
9 x 4 = ?



9 x 6 = 54



5 equal groups of 9

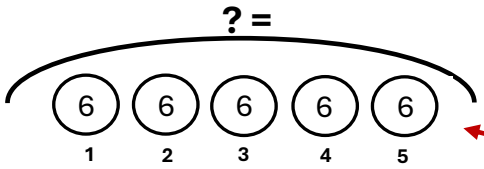


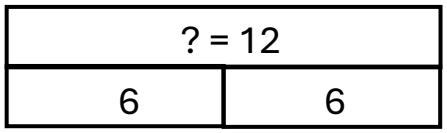
9 + 9 + 9 = 27

1 by 1 Digit Multiplication Modeling Practice – V6

Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.

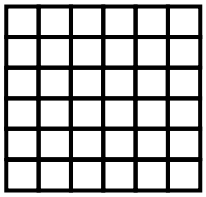
ANSWER KEY

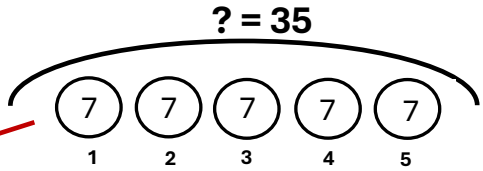




6 x 2 = ?

6 x 5 = 30

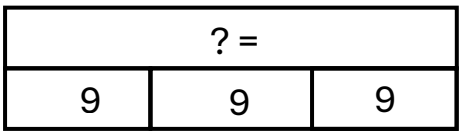




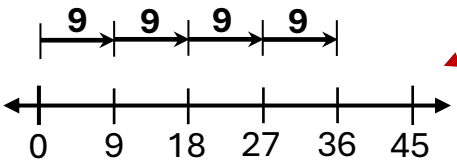
5 equal groups of 7

6 x 6 = 36

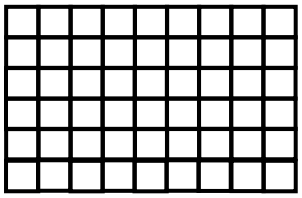
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



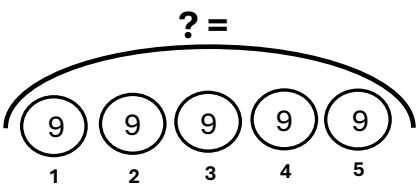
9 x 4 = ?



9 x 6 = 54



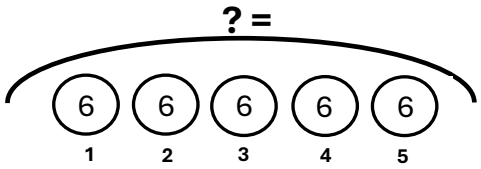
5 equal groups of 9

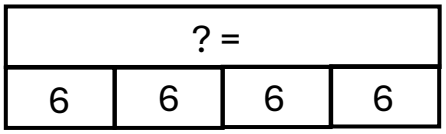


9 + 9 + 9 = 27

1 by 1 Digit Multiplication Modeling Practice – V7

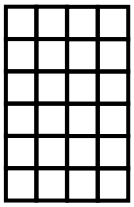
Directions: Match the model or equation on the left with correct model or equation on the right with an arrow.

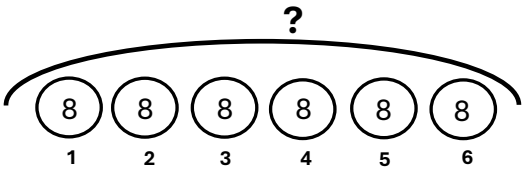




8 x 6 = ?

7 x 9 = 63

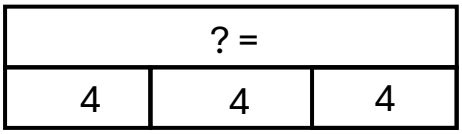




9 equal groups of 7

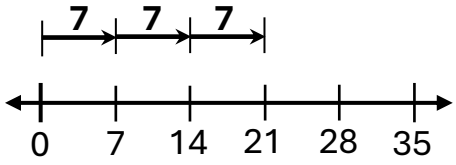
5 x 6 = ?

Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



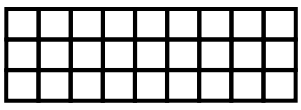
5 equal groups of 2

2 + 2 + 2+ 2 + 2 = ?



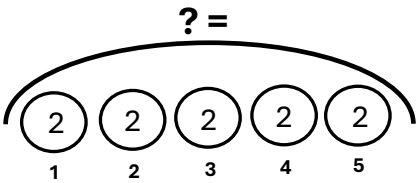
3 x 4 = ?

4 + 4 + 4 = ?



9 x 3 = 27

9 + 9 + 9 = 27



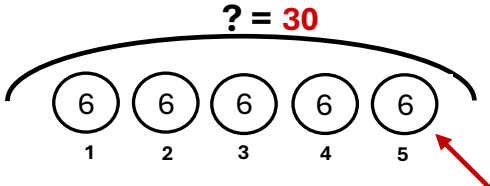
3 x 7 = ?

7 + 7 + 7 = ?

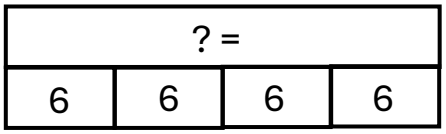
1 by 1 Digit Multiplication Modeling Practice – V7

Directions: Match the model or equation on the left with correct model or equation on the right with an arrow.

ANSWER KEY

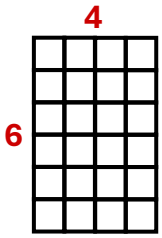


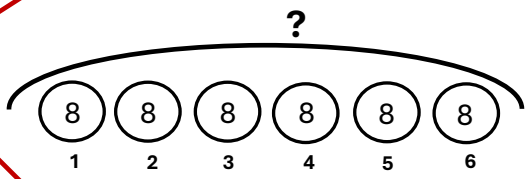
4 x 6 = 24
4 equal groups of 6 = 24



8 x 6 = ?

7 x 9 = 63

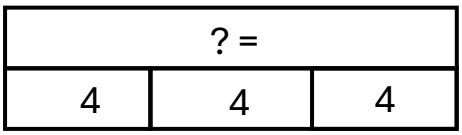




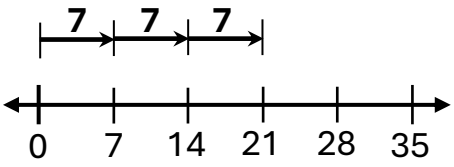
9 equal groups of 7

5 x 6 = ?

Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.

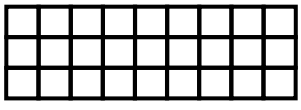


5 equal groups of 2
2 + 2 + 2+ 2 + 2 = ?

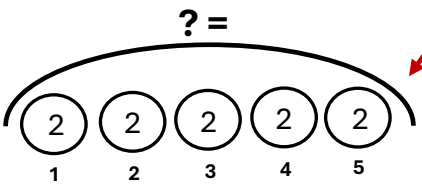


3 x 4 = ?
4 + 4 + 4 = ?

Ask Students, *"How many total square units are on the grid?"*



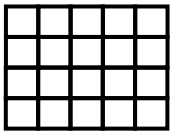
9 x 3 = 27
9 + 9 + 9 = 27

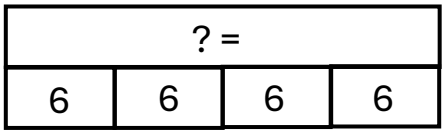


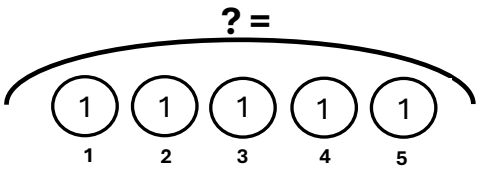
3 x 7 = ?
7 + 7 + 7 = ?

1 by 1 Digit Multiplication Modeling Practice – V8

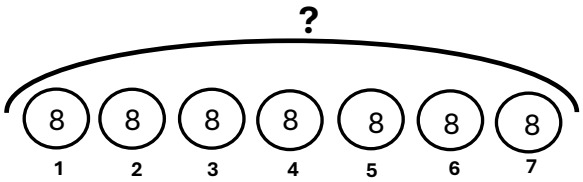
Directions: Match the model or equation on the left with correct model or equation on the right with an arrow.







5 x 4 = ?

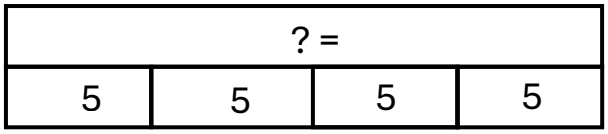


8 x 7 = ?

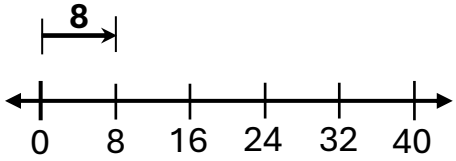
4 equal groups of 6

5 x 1 = ?

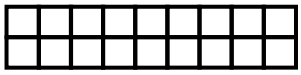
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



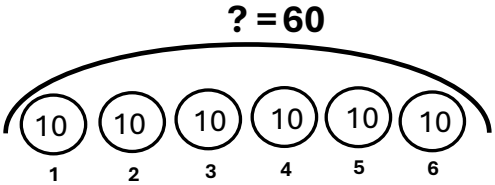
6 equal groups of 10



5 x 4 = 20



9 x 2 = 18

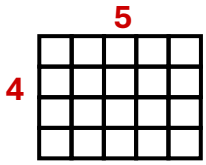


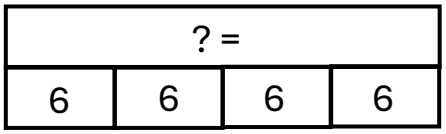
1 x 8 = ?

1 by 1 Digit Multiplication Modeling Practice – V8

Directions: Match the model or equation on the left with correct model or equation on the right with an arrow.

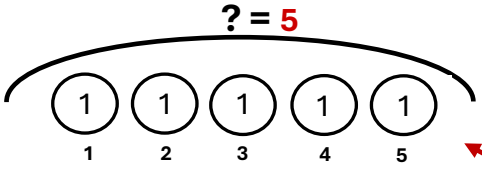
ANSWER KEY

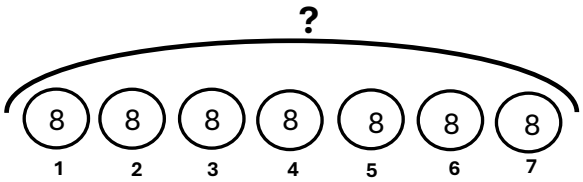




4 x 6 = 24
4 equal groups of 6 = 24

5 x 4 = ?



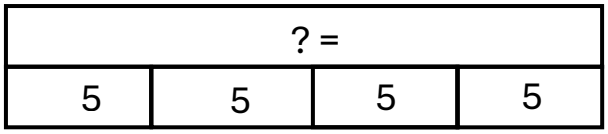


8 x 7 = ?

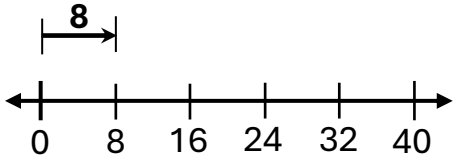
4 equal groups of 6

5 x 1 = ?

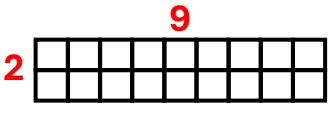
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



6 equal groups of 10

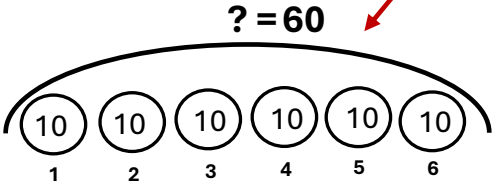


5 x 4 = 20



9 x 2 = 18

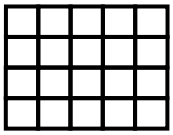
Ask Students, *"How many total square units are on the grid?"*

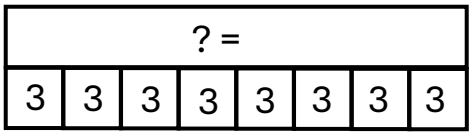


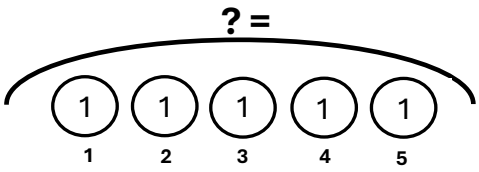
1 x 8 = ?

1 by 1 Digit Multiplication Modeling Practice – V9

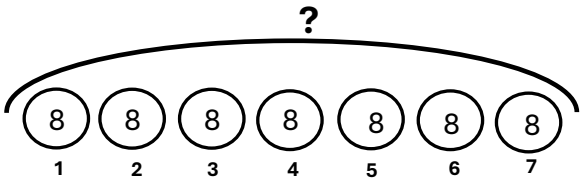
Directions: Match the model or equation on the left with correct model or equation on the right with an arrow.







5 x 4 = ?

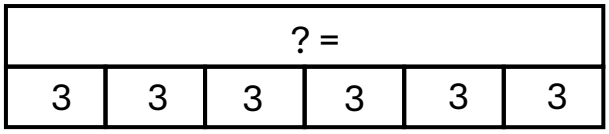


8 equal groups of 3

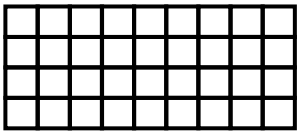
8 x 7 = ?

5 x 1 = ?

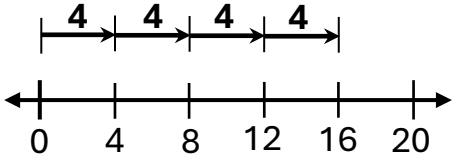
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



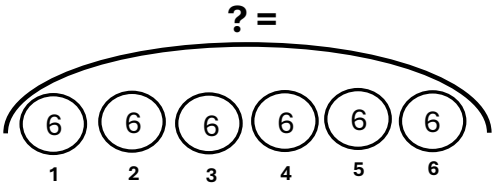
7 x 4 = 28



4 equal groups of 4



6 x 6 = 36

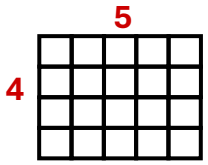


3 x 6 = 18

1 by 1 Digit Multiplication Modeling Practice – V9

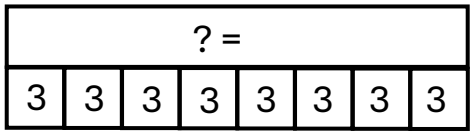
Directions: Match the model or equation on the left with correct model or equation on the right with an arrow.

ANSWER KEY

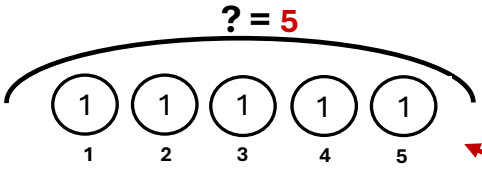


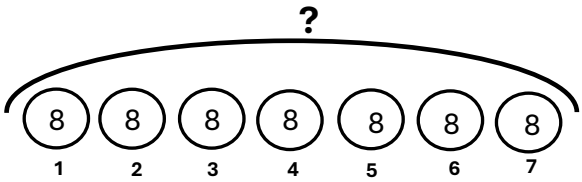
Ask Students, *"How many total square units are on the grid?"*

4 x 6 = 24
4 equal groups of 6 = 24



5 x 4 = ?



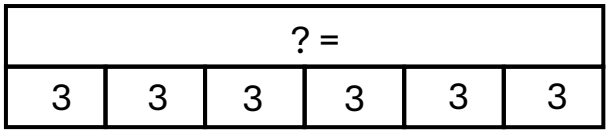


8 equal groups of 3

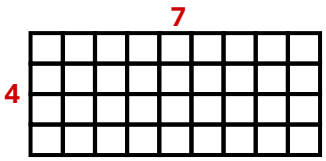
8 x 7 = ?

5 x 1 = ?

Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.

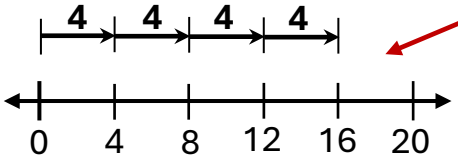


7 x 4 = 28

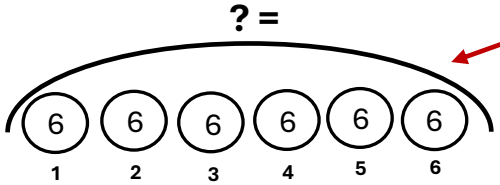


Ask Students, *"How many total square units are on the grid?"*

4 equal groups of 4



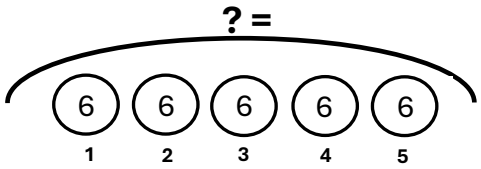
6 x 6 = 36

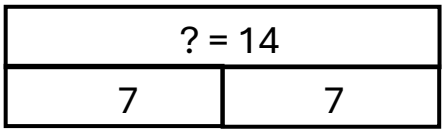


3 x 6 = 18

1 by 1 Digit Multiplication Modeling Practice – V10

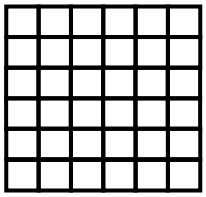
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.

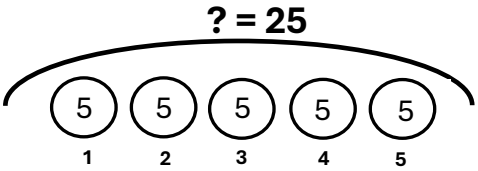




6 x 5 = 30

7 x 2 = ?

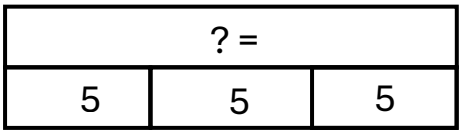




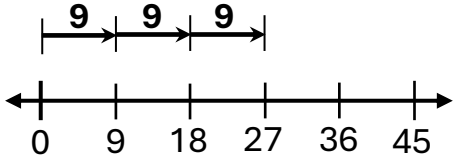
5 equal groups of 5

6 x 6 = 36

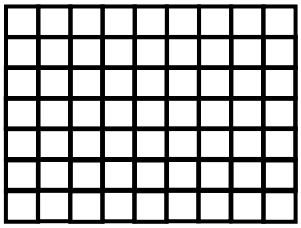
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



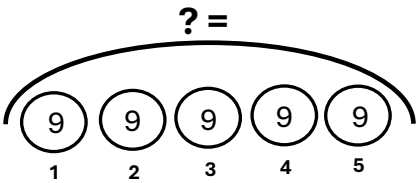
9 x 3 = ?



9 x 7 = 63



5 equal groups of 9

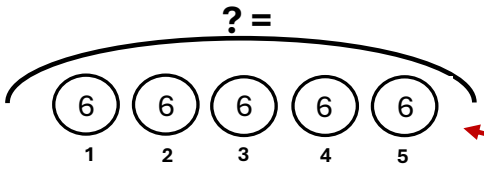


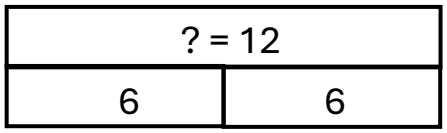
3 x 5 = 15

1 by 1 Digit Multiplication Modeling Practice – V10

Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.

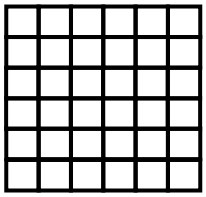
ANSWER KEY

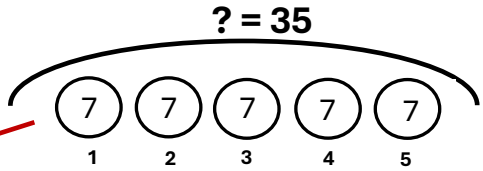




6 x 2 = ?

6 x 5 = 30

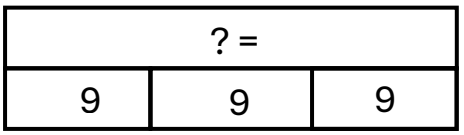




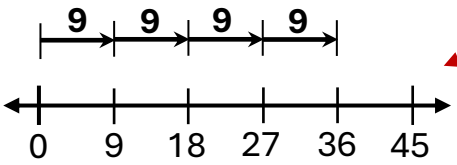
5 equal groups of 7

6 x 6 = 36

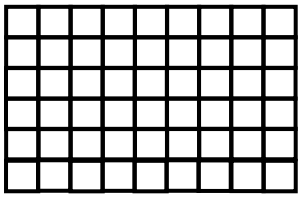
Directions: Match the model or equation on the left with correct operation or equation on the right with an arrow.



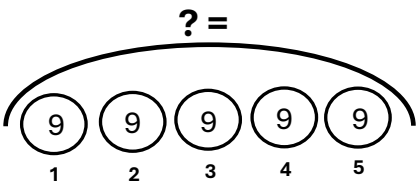
9 x 4 = ?



9 x 6 = 54



5 equal groups of 9



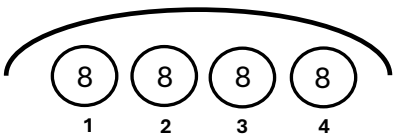
9 + 9 + 9 = 27

1 by 1 Digit Multiplication Modeling Practice – V11

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.

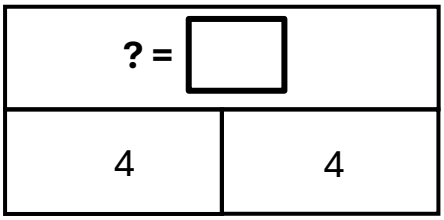
? = 32



4 x 8 = 32

4 equal groups of 8

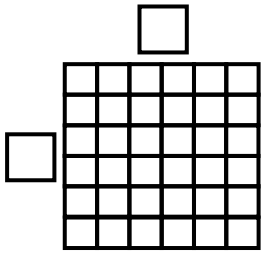
2.



□ x □ = □

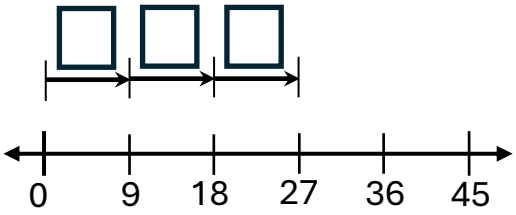
__ equal groups of __

3.



□ x □ = □

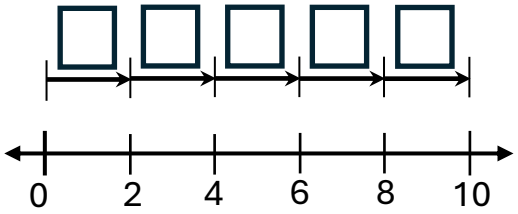
4.



□ x □ = □

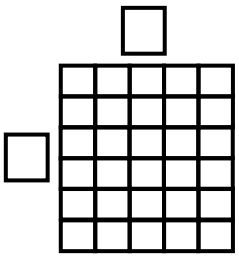
Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.



□ x □ = □

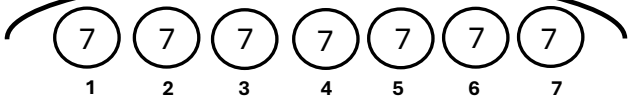
2.



□ x □ = □

3.

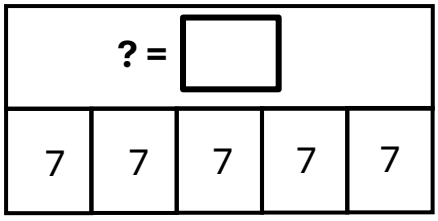
? = □



□ x □ = □

__ equal groups of __

4.



□ x □ = □

__ equal groups of __

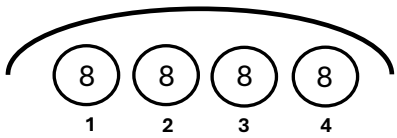
1 by 1 Digit Multiplication Modeling Practice – V11

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

ANSWER KEY

1.

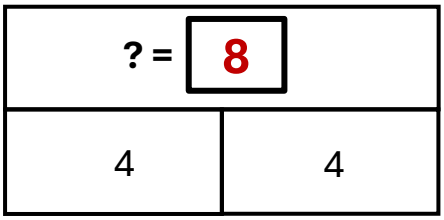
? = 32



4 x 8 = 32

2 equal groups of 4

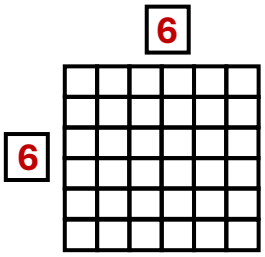
2.



2 x 4 = 8

2 equal groups of 4

3.

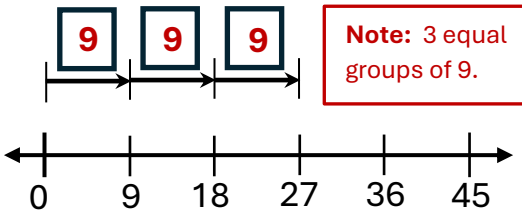


Note: It is still 6 equal groups of 6. – perfect square.

6 x 6 = 36

Stress: Area is 36 square units

4.

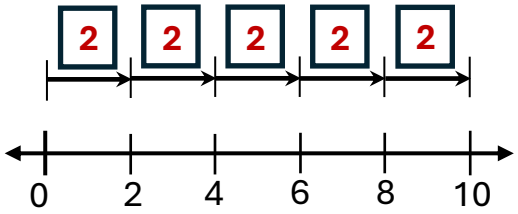


Note: 3 equal groups of 9.

3 x 9 = 27

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

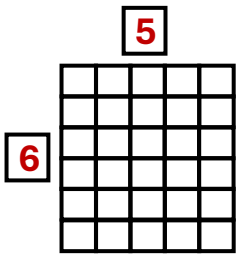
1.



5 x 2 = 10

Note: 5 equal groups of 2.

2.



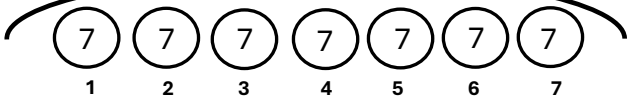
Note: 6 eq. groups of 5. Or, 5 eq. groups of 6

Stress: 30 square unit area.

6 x 5 = 30

3.

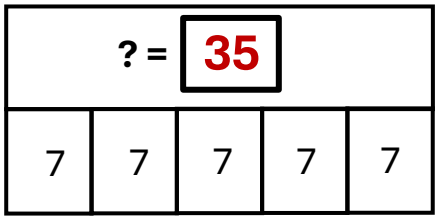
? = 49



7 x 7 = 49

7 equal groups of 7

4.



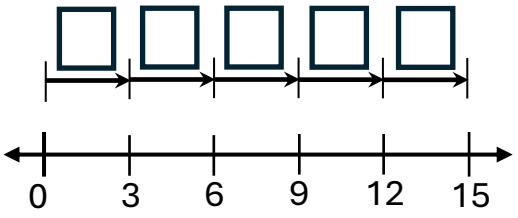
5 x 7 = 35

5 equal groups of 7

1 by 1 Digit Multiplication Modeling Practice – V12

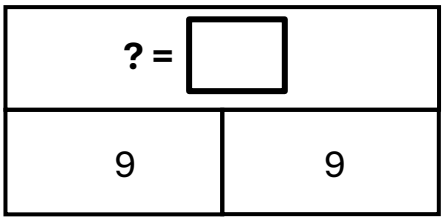
Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.



□ x □ = □

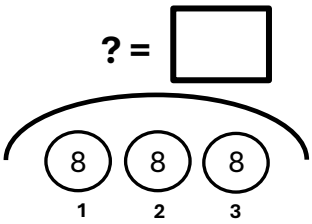
2.



□ x □ = □

__*equal groups of*__

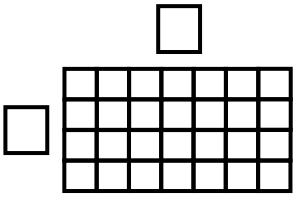
3.



□ x □ = □

__*equal groups of*__

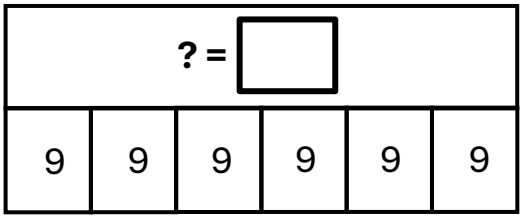
4.



□ x □ = □

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

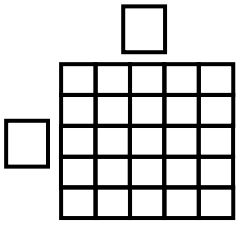
1.



□ x □ = □

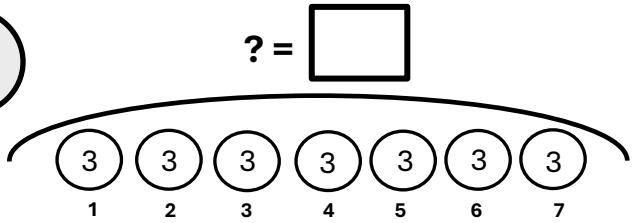
__*equal groups of*__

2.



□ x □ = □

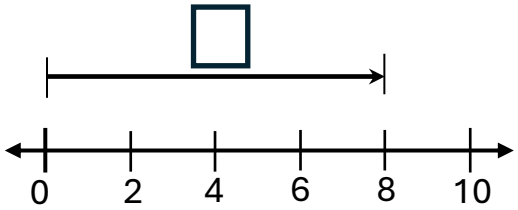
3.



□ x □ = □

__*equal groups of*__

4.

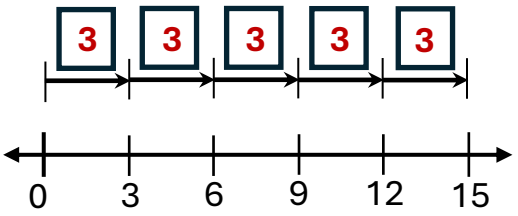


□ x □ = □

1 by 1 Digit Multiplication Modeling Practice – V12

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

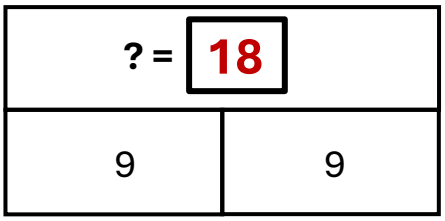
1.



Note: 5 equal groups of 3.

5 x 3 = 15

2.

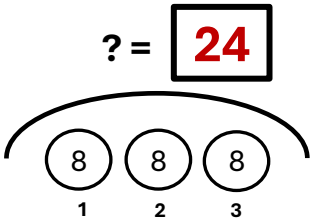


2 x 9 = 18

2 equal groups of 9

ANSWER KEY

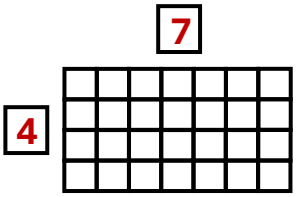
3.



3 x 8 = 24

3 equal groups of 8

4.



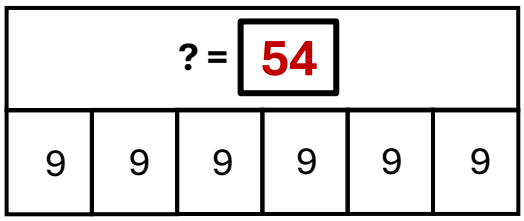
Stress: Area is 28 square units

Note: It is still 4 equal groups of 7. Or, 7 equal groups of 4.

7 x 4 = 28

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

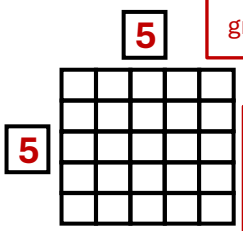
1.



6 x 9 = 54

6 equal groups of 9

2.

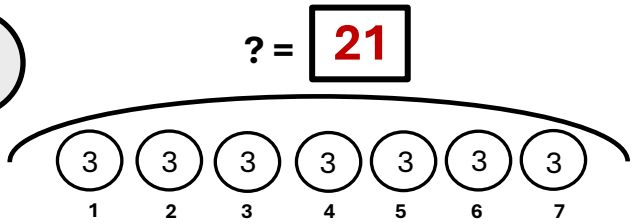


Note: 5 equal groups of 5.

Stress: 25 square unit area.

5 x 5 = 25

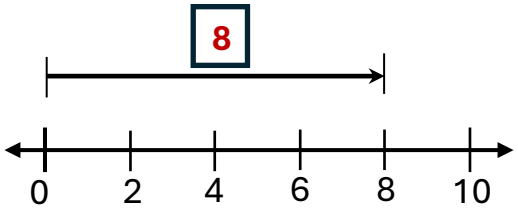
3.



3 x 7 = 21

7 equal groups of 3

4.



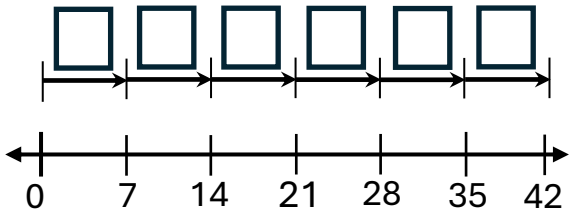
Note: 1 equal group of 8.

1 x 8 = 8

1 by 1 Digit Multiplication Modeling Practice – V13

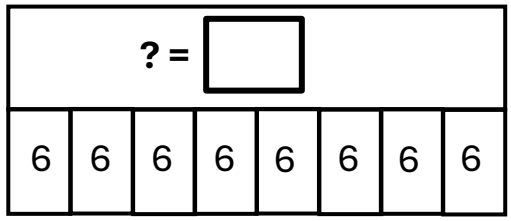
Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.



□ x □ = □

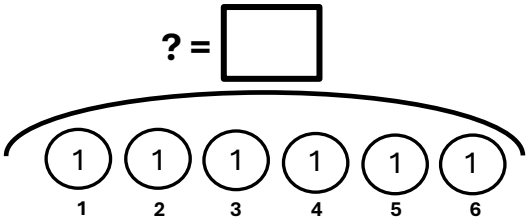
2.



□ x □ = □

__ *equal groups of* __

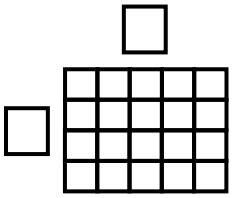
3.



□ x □ = □

__ *equal group of* __

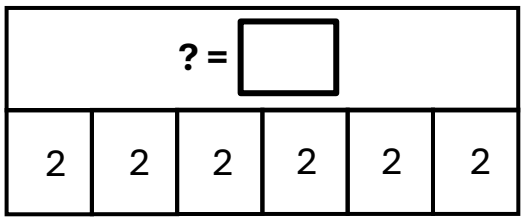
4.



□ x □ = □

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

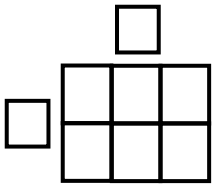
1.



□ x □ = □

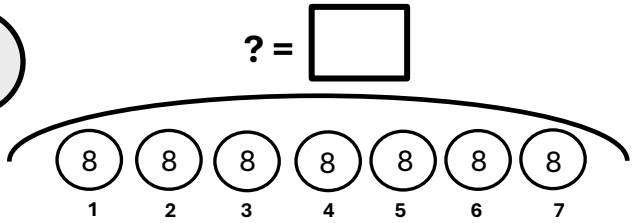
__ *equal groups of* __

2.



□ x □ = □

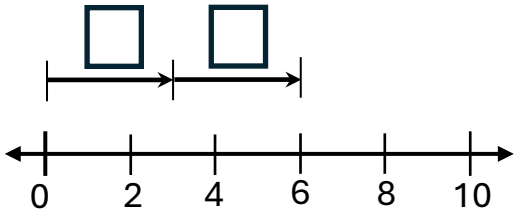
3.



□ x □ = □

__ *equal groups of* __

4.

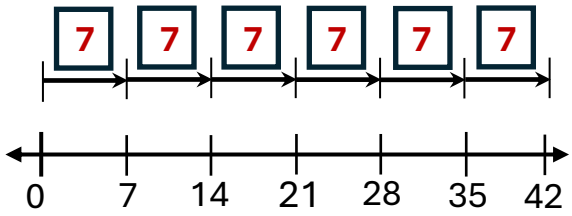


□ x □ = □

1 by 1 Digit Multiplication Modeling Practice – V13

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

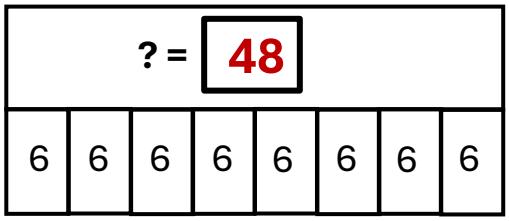
1.



Note: 6 equal groups of 7.

6 x 7 = 42

2.

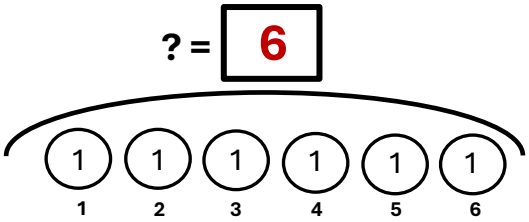


8 x 6 = 48

8 equal groups of 6

ANSWER KEY

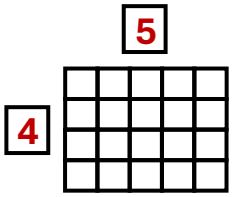
3.



6 x 1 = 6

1 equal group of 6

4.



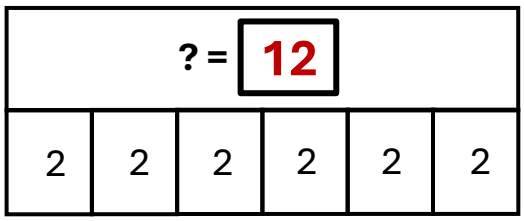
Stress: Area is 20 square units

Note: It is 4 equal groups of 5. Or, 5 equal groups of 4.

5 x 4 = 20

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

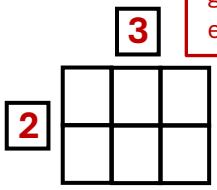
1.



6 x 2 = 12

6 equal groups of 2

2.

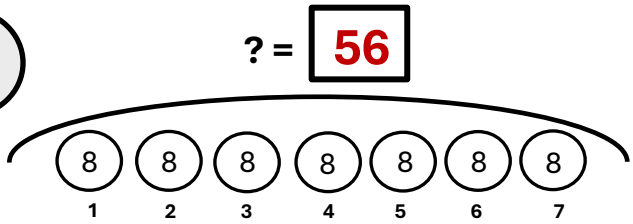


Note: 3 equal groups of 2. Or, 2 eq. groups of 3

Stress: 6 square units

3 x 2 = 6

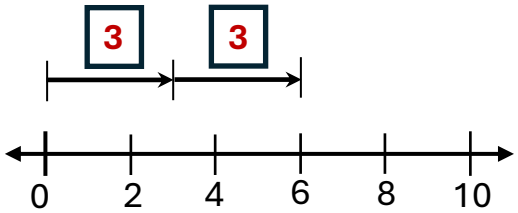
3.



8 x 7 = 56

7 equal groups of 8

4.



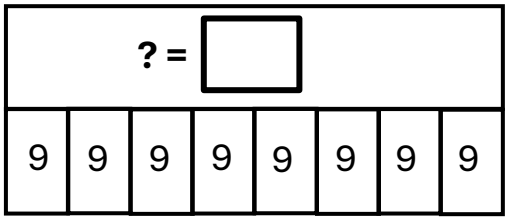
Note: 2 equal groups of 3.

2 x 3 = 6

1 by 1 Digit Multiplication Modeling Practice – V14

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

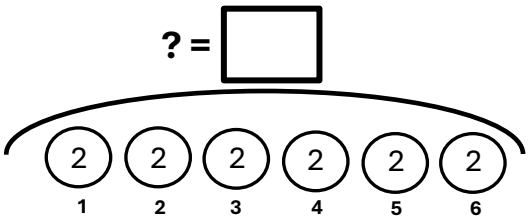
1.



□ x □ = □

__*equal groups of*__

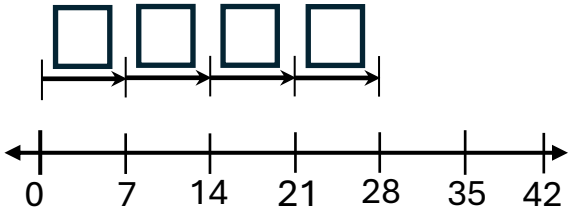
2.



□ x □ = □

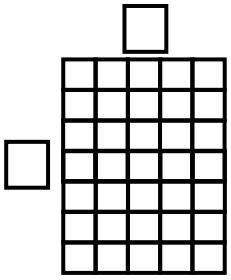
__ *equal groups of* __

3.



□ x □ = □

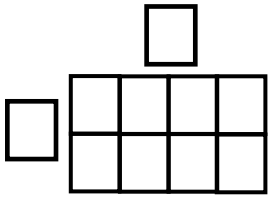
4.



□ x □ = □

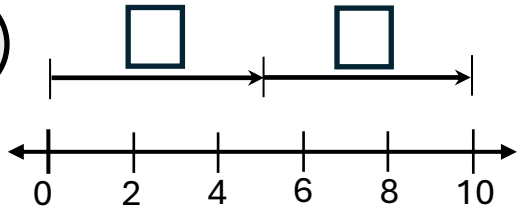
Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.



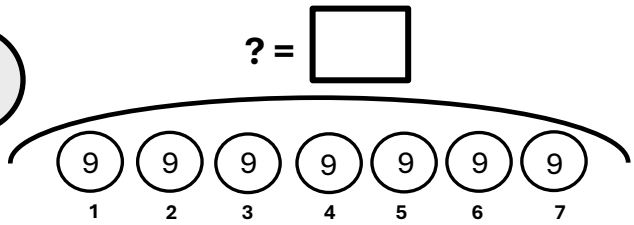
□ x □ = □

2.



□ x □ = □

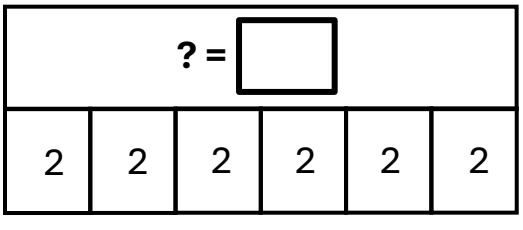
3.



□ x □ = □

__*equal groups of*__

4.



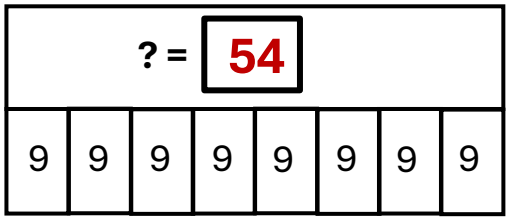
□ x □ = □

__*equal groups of*__

1 by 1 Digit Multiplication Modeling Practice – V14

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

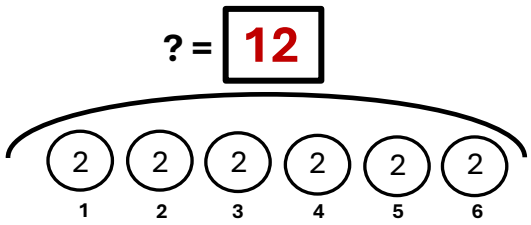
1.



9 x 6 = 54

9 equal groups of 6

2.

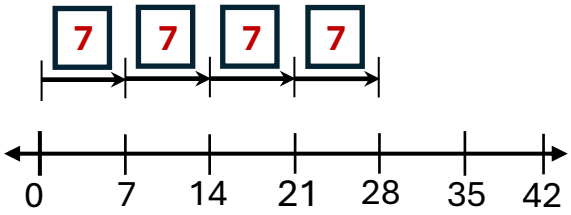


6 x 2 = 12

6 equal groups of 2

ANSWER KEY

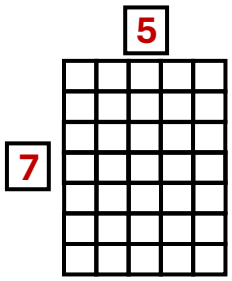
3.



Note: 4 equal groups of 7.

4 x 7 = 28

4.



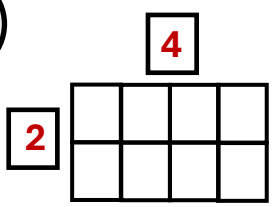
Stress: Area is 35 square units

Note: It is 5 equal groups of 7. Or, 7 equal groups of 5.

7 x 5 = 35

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.

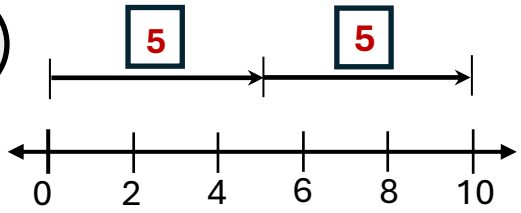


Note: 4 equal groups of 2. Or, 2 eq. groups of 4

Stress: 8 square units

4 x 2 = 8

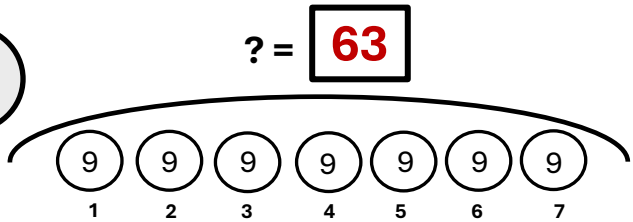
2.



Note: 2 equal groups of 5.

2 x 5 = 10

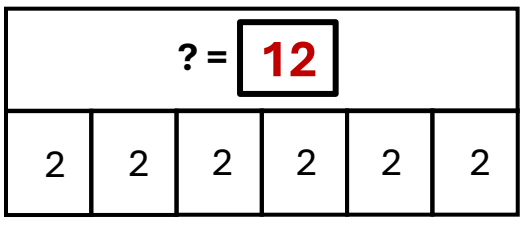
3.



9 x 7 = 63

7 equal groups of 9

4.



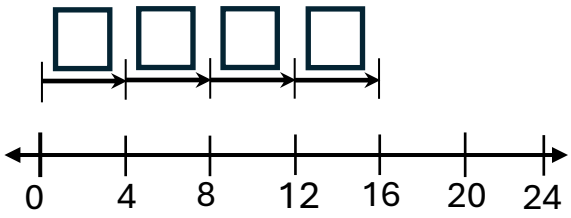
6 x 2 = 12

6 equal groups of 2

1 by 1 Digit Multiplication Modeling Practice – V15

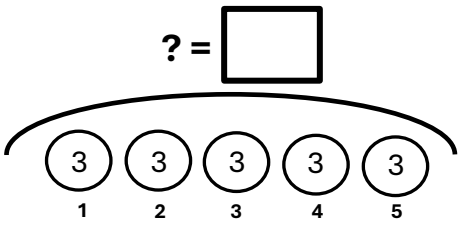
Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.



□ x □ = □

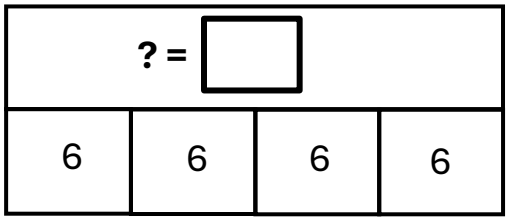
2.



□ x □ = □

___ *equal groups of* ___

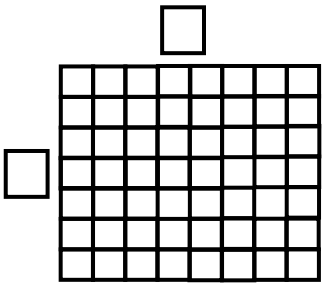
3.



□ x □ = □

__equal groups of__

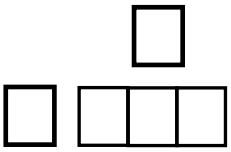
4.



□ x □ = □

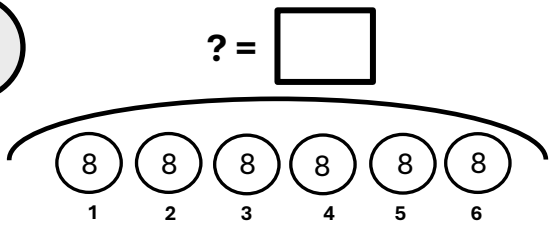
Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.



□ x □ = □

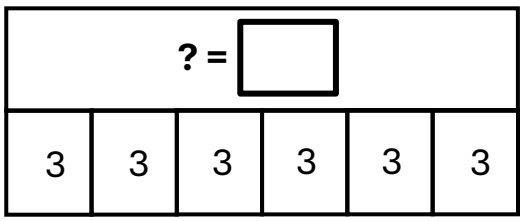
2.



□ x □ = □

__equal groups of __

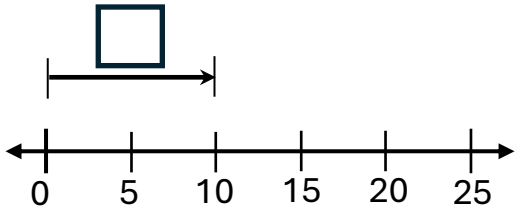
3.



□ x □ = □

__equal groups of__

4.

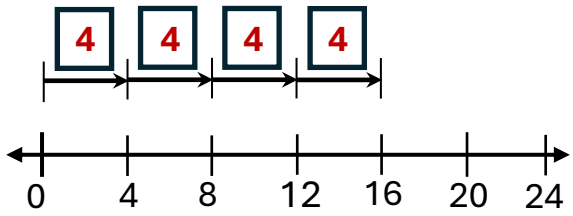


□ x □ = □

1 by 1 Digit Multiplication Modeling Practice – V15

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

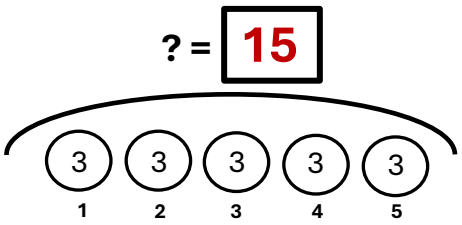
1.



Note: 4 equal groups of 4.

4 x 4 = 16

2.

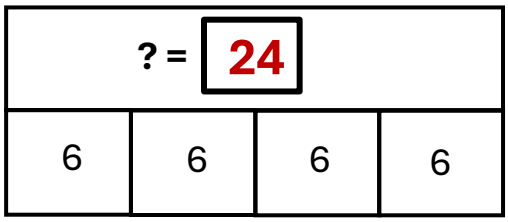


5 x 3 = 15

5 equal groups of 3

ANSWER KEY

3.

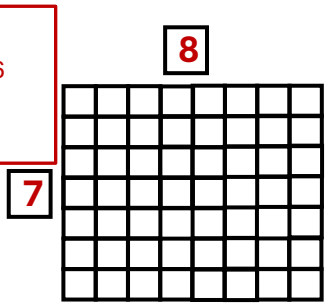


4 x 6 = 24

4 equal groups of 6

4.

Stress: Area is 56 square units

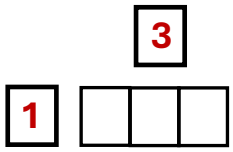


Note: It is 8 equal groups of 7. Or, 7 equal groups of 8.

7 x 8 = 56

Directions: Complete the multiplication model and fill in the boxes/lines to complete the equation.

1.

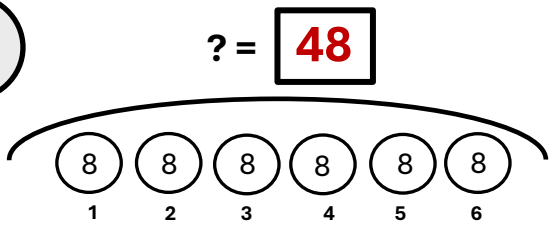


Note: 3 equal groups of 1. Or, 1 eq. groups of 3

Stress: 3 square units

1 x 3 = 3

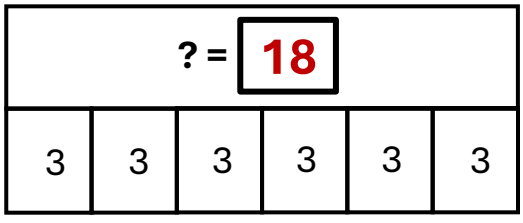
2.



8 x 6 = 48

6 equal groups of 8

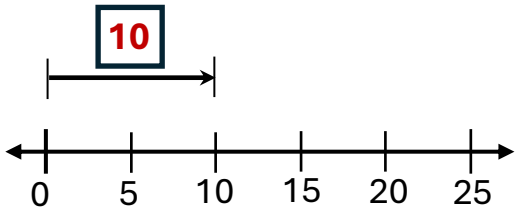
3.



6 x 3 = 18

6 equal groups of 3

4.



Note: 1 equal group of 10.

1 x 10 = 10

Section 2

2 by 1 Digit
Physical and Conceptual Meaning of Multiplication

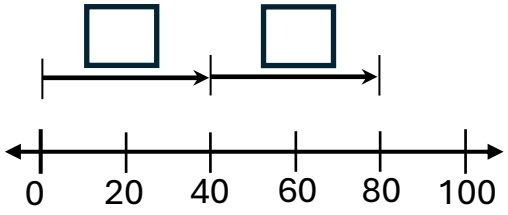
Student Practice Resource

2 by 1 Digit Multiplication Modeling Practice – V1

Directions: Find the **product** and fill in the boxes to complete the model.

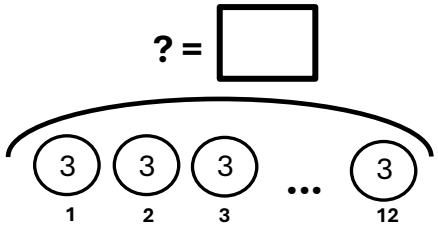
1.

$$\begin{array}{r} 40 \\ \times\ 2 \\ \hline \end{array}$$



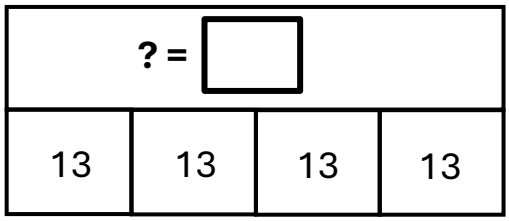
2.

$$\begin{array}{r} 12 \\ \times\ 3 \\ \hline \end{array}$$



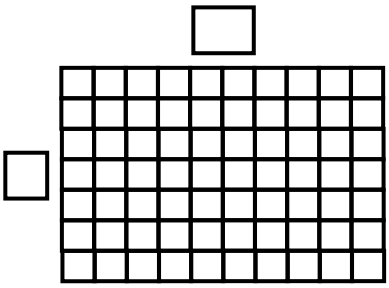
3.

$$\begin{array}{r} 13 \\ \times\ 4 \\ \hline \end{array}$$



4.

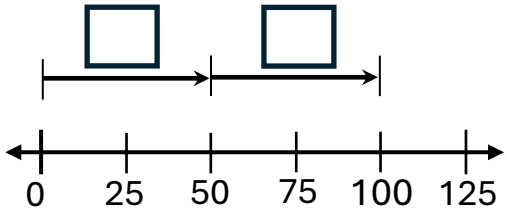
$$\begin{array}{r} 10 \\ \times\ 7 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

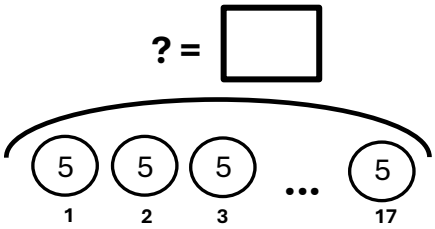
1.

$$\begin{array}{r} 50 \\ \times\ 2 \\ \hline \end{array}$$



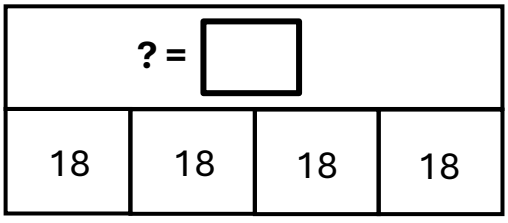
2.

$$\begin{array}{r} 17 \\ \times\ 5 \\ \hline \end{array}$$



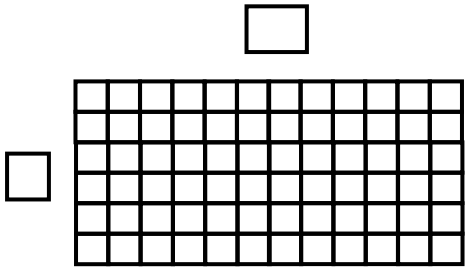
3.

$$\begin{array}{r} 18 \\ \times\ 4 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline \end{array}$$

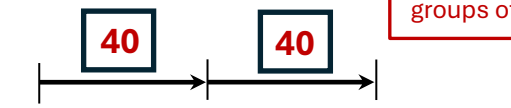


2 by 1 Digit Multiplication Modeling Practice – V1

Directions: Find the **product** and fill in the boxes to complete the model.

ANSWER KEY

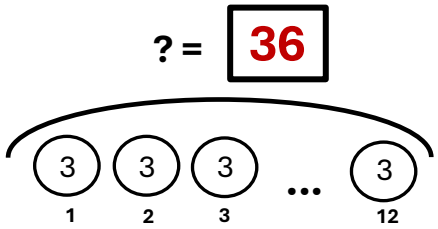
1.



Note: 2 equal groups of 40.

$$40 \times 2 = 80$$

2.

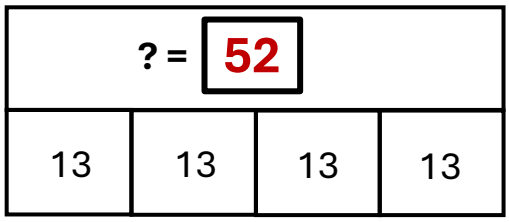


$$12 \times 3 = 36$$

Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

Note: It is 4 equal groups of 13.

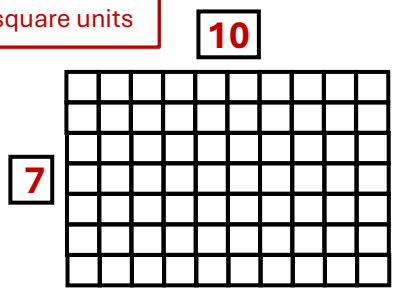


$$13 \times 4 = 52$$

4.

Note: Area is 70 square units

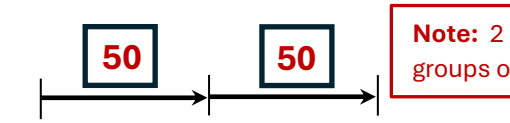
Note: It is 10 equal groups of 7. Or, 7 equal groups of 10.



$$10 \times 7 = 70$$

Directions: Find the **product** and fill in the boxes to complete the model.

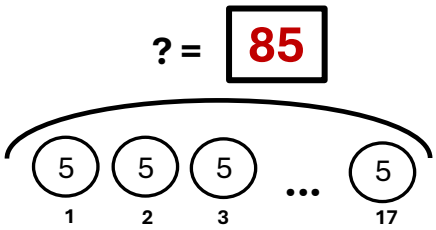
1.



Note: 2 equal groups of 50.

$$50 \times 2 = 100$$

2.

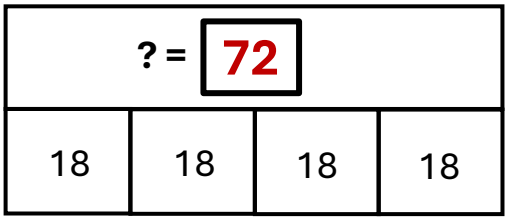


$$17 \times 5 = 85$$

Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

Note: It is 4 equal groups of 18.

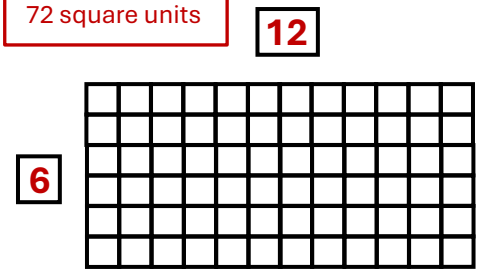


$$18 \times 4 = 72$$

4.

Note: Area is 72 square units

Note: It is 12 equal groups of 6. Or, 6 equal groups of 12.



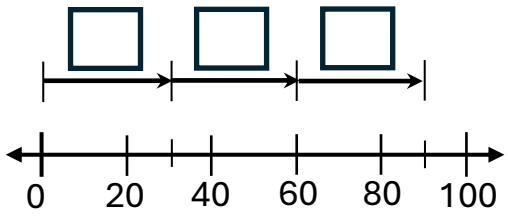
$$12 \times 6 = 72$$

2 by 1 Digit Multiplication Modeling Practice – V2

Directions: Find the **product** and fill in the boxes to complete the model.

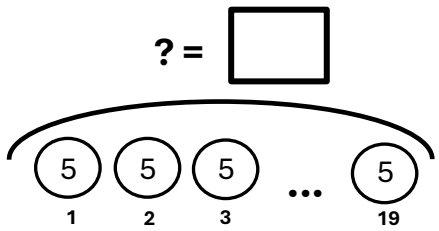
1.

$$\begin{array}{r} 30 \\ \times\ 3 \\ \hline \end{array}$$



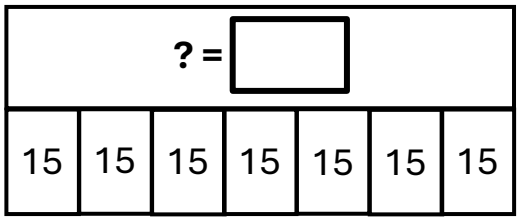
2.

$$\begin{array}{r} 19 \\ \times\ 5 \\ \hline \end{array}$$



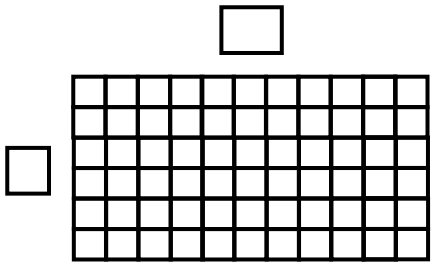
3.

$$\begin{array}{r} 15 \\ \times\ 7 \\ \hline \end{array}$$



4.

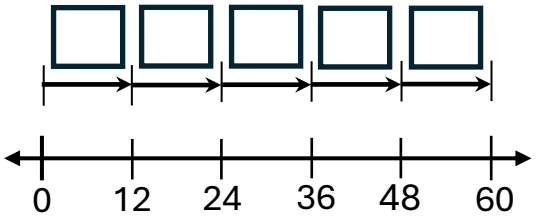
$$\begin{array}{r} 11 \\ \times\ 6 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

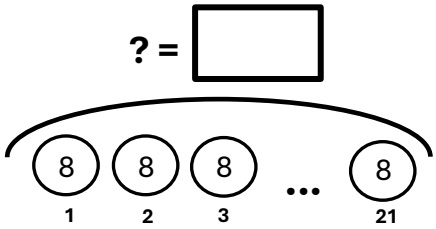
1.

$$\begin{array}{r} 12 \\ \times\ 5 \\ \hline \end{array}$$



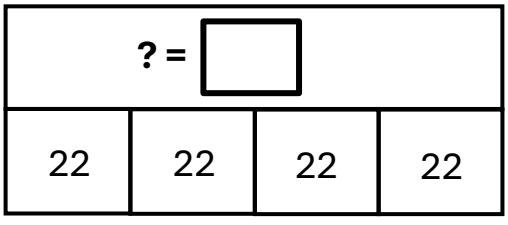
2.

$$\begin{array}{r} 21 \\ \times\ 8 \\ \hline \end{array}$$



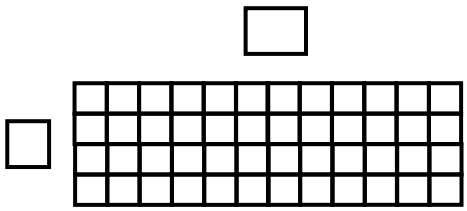
3.

$$\begin{array}{r} 22 \\ \times\ 4 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 12 \\ \times\ 4 \\ \hline \end{array}$$



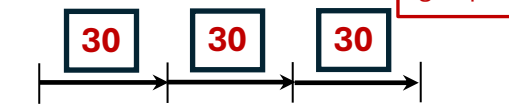
2 by 1 Digit Multiplication Modeling Practice – V2

Directions: Find the **product** and fill in the boxes to complete the model.

ANSWER KEY

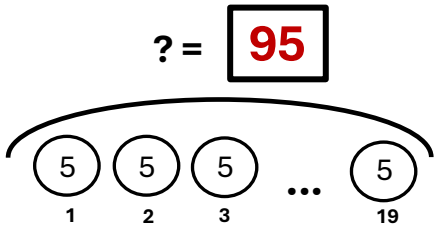
1.

Note: 3 equal groups of 30.



30 x 3 = 90

2.

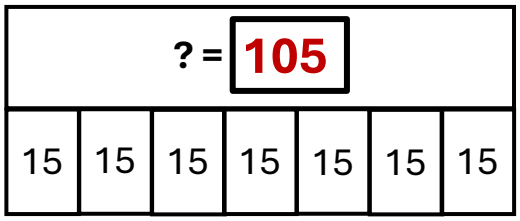


19 x 5 = 95

Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

Note: It is 7 equal groups of 15.

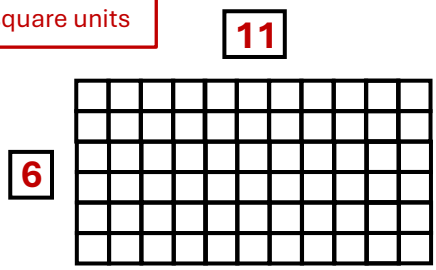


15 x 7 = 105

4.

Note: Area is 66 square units

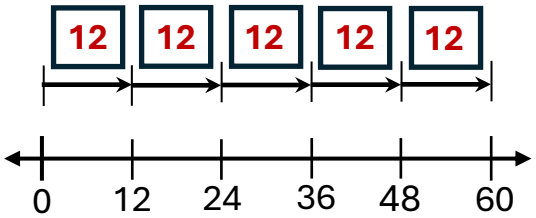
Note: It is 11 equal groups of 6. Or, 6 equal groups of 11.



11 x 6 = 66

Directions: Find the **product** and fill in the boxes to complete the model.

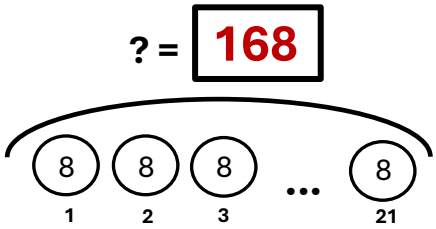
1.



12 x 5 = 60

Note: 5 equal groups of 12.

2.

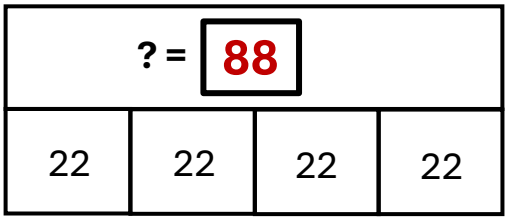


21 x 8 = 168

Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

Note: It is 4 equal groups of 22.

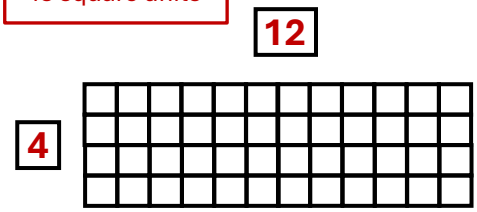


22 x 4 = 88

4.

Note: Area is 48 square units

Note: It is 12 equal groups of 4. Or, 4 equal groups of 12.



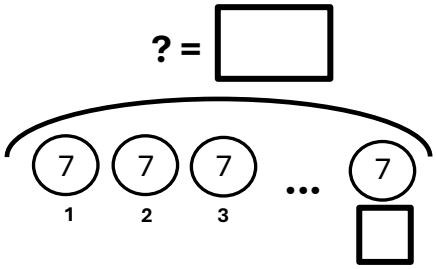
12 x 4 = 48

2 by 1 Digit Multiplication Modeling Practice – V3

Directions: Find the **product** and fill in the boxes to complete the model.

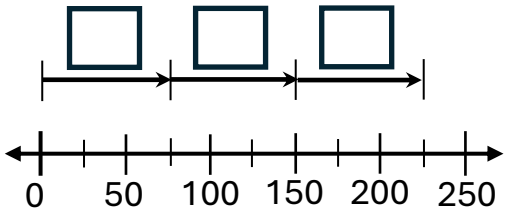
1.

$$\begin{array}{r} 21 \\ \times\ 7 \\ \hline \end{array}$$



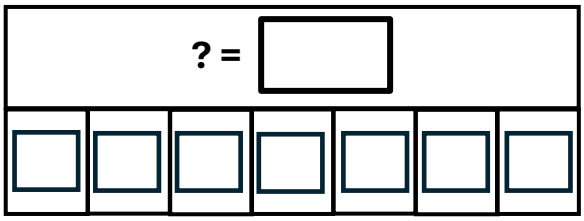
2.

$$\begin{array}{r} 75 \\ \times\ 3 \\ \hline \end{array}$$



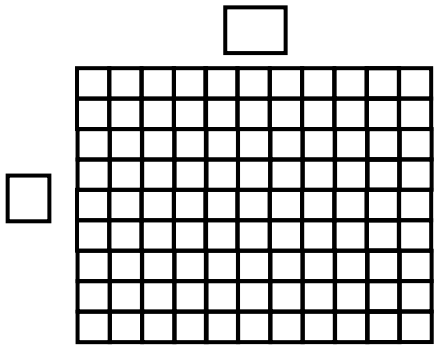
3.

$$\begin{array}{r} 18 \\ \times\ 7 \\ \hline \end{array}$$



4.

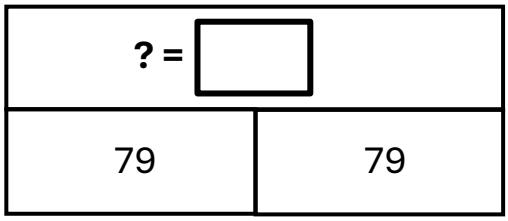
$$\begin{array}{r} 11 \\ \times\ 9 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

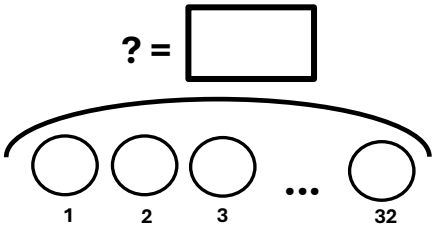
1.

$$\begin{array}{r} 79 \\ \times\ 2 \\ \hline \end{array}$$



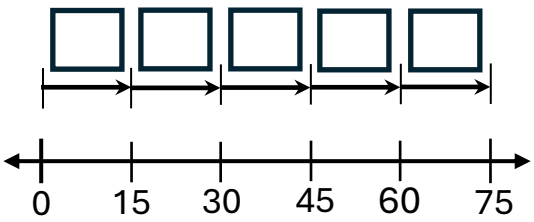
2.

$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline \end{array}$$



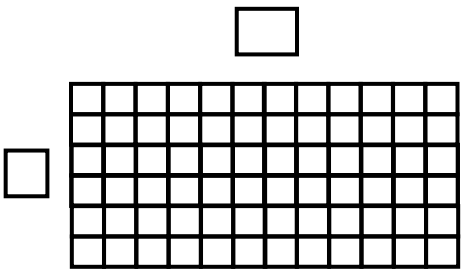
3.

$$\begin{array}{r} 15 \\ \times\ 5 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline \end{array}$$



2 by 1 Digit Multiplication Modeling Practice – V3

Directions: Find the **product** and fill in the boxes to complete the model. **ANSWER KEY**

1.

$$\begin{array}{r} 21 \\ \times\ 7 \\ \hline 147 \end{array}$$

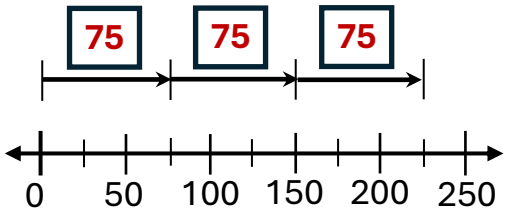
? = 147

7 (1) + 7 (2) + 7 (3) + ... + 7 (21)

2.

$$\begin{array}{r} 75 \\ \times\ 3 \\ \hline 225 \end{array}$$

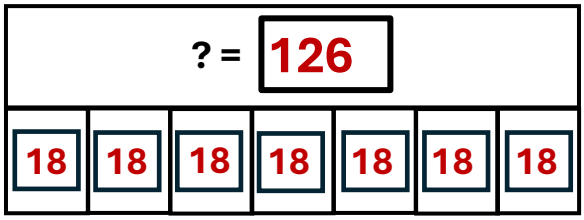
Note: 3 equal groups of 75.



3.

$$\begin{array}{r} 18 \\ \times\ 7 \\ \hline 126 \end{array}$$

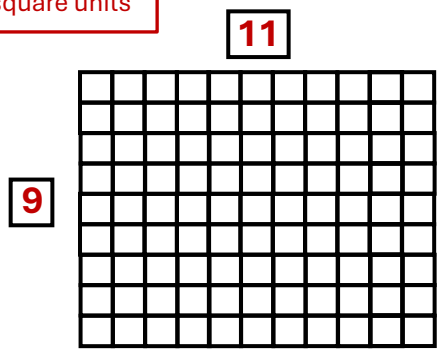
Note: It is 7 equal groups of 18.



4.

$$\begin{array}{r} 11 \\ \times\ 9 \\ \hline 99 \end{array}$$

Note: Area is 99 square units

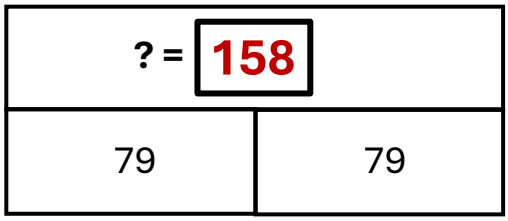


Directions: Find the **product** and fill in the boxes to complete the model.

1.

$$\begin{array}{r} 79 \\ \times\ 2 \\ \hline 158 \end{array}$$

Note: It is 2 equal groups of 79.



2.

$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline 128 \end{array}$$

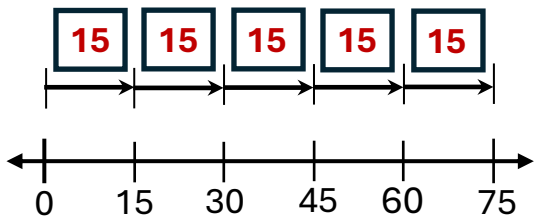
? = 128

4 (1) + 4 (2) + 4 (3) + ... + 4 (32)

Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

$$\begin{array}{r} 15 \\ \times\ 5 \\ \hline 75 \end{array}$$



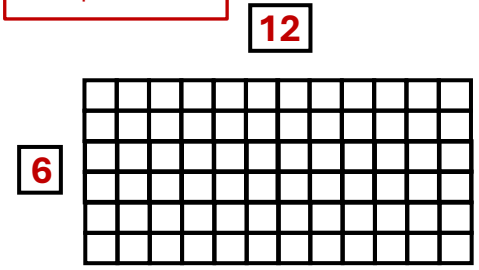
Note: 5 equal groups of 15.

4.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline 72 \end{array}$$

Note: It is 12 equal groups of 6. Or, 6 equal groups of 12.

Note: Area is 72 square units

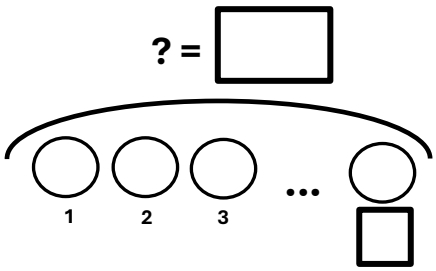


2 by 1 Digit Multiplication Modeling Practice – V4

Directions: Find the **product** and fill in the boxes to complete the model.

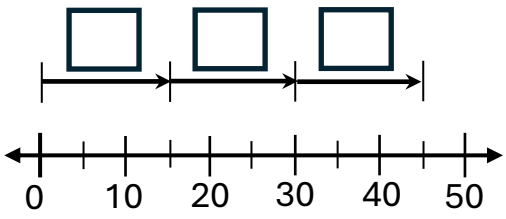
1.

$$\begin{array}{r} 25 \\ \times\ 5 \\ \hline \end{array}$$



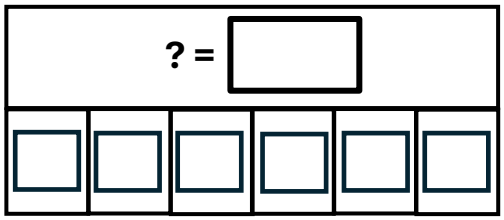
2.

$$\begin{array}{r} 15 \\ \times\ 3 \\ \hline \end{array}$$



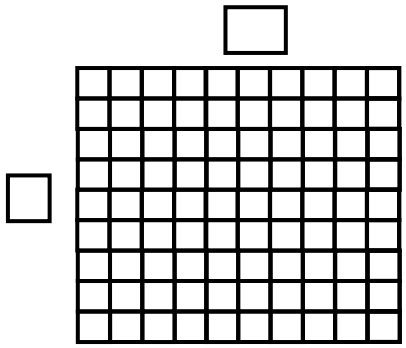
3.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline \end{array}$$



4.

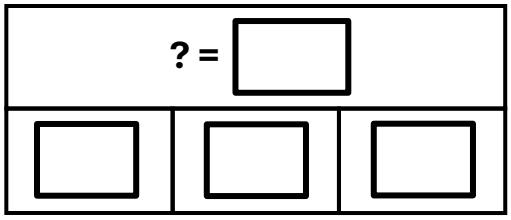
$$\begin{array}{r} 10 \\ \times\ 9 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

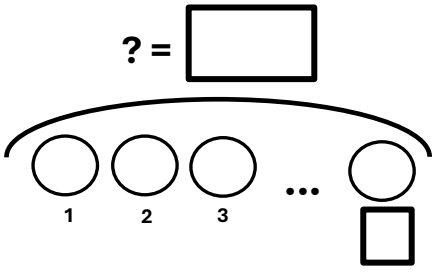
1.

$$\begin{array}{r} 95 \\ \times\ 3 \\ \hline \end{array}$$



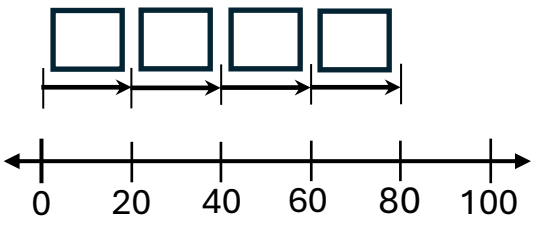
2.

$$\begin{array}{r} 46 \\ \times\ 4 \\ \hline \end{array}$$



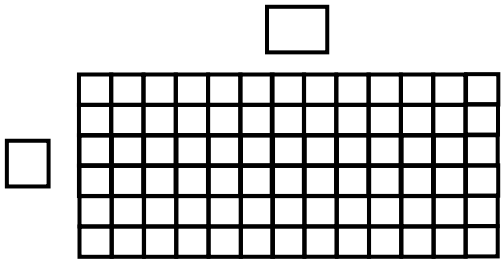
3.

$$\begin{array}{r} 20 \\ \times\ 4 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 13 \\ \times\ 6 \\ \hline \end{array}$$



2 by 1 Digit Multiplication Modeling Practice – V4

Directions: Find the **product** and fill in the boxes to complete the model.

ANSWER KEY

1.

$$\begin{array}{r} 25 \\ \times\ 5 \\ \hline 125 \end{array}$$

? = 125

5 (1) 5 (2) 5 (3) ... 5 (25)

25 and 5 can be exchanged and the multiplication model is still valid.

2.

$$\begin{array}{r} 15 \\ \times\ 3 \\ \hline 45 \end{array}$$

Note: 3 equal groups of 15.

15 15 15

0 10 20 30 40 50

3.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline 72 \end{array}$$

Note: It is 6 equal groups of 12.

? = 72

12 12 12 12 12 12

4.

$$\begin{array}{r} 10 \\ \times\ 9 \\ \hline 90 \end{array}$$

Note: Area is 90 square units

10

9

Directions: Find the **product** and fill in the boxes to complete the model.

46 and 4 (below) can be exchanged and the multiplication model is still valid.

1.

$$\begin{array}{r} 95 \\ \times\ 3 \\ \hline 285 \end{array}$$

Note: It is 3 equal groups of 95.

? = 285

95 95 95

2.

$$\begin{array}{r} 46 \\ \times\ 4 \\ \hline 184 \end{array}$$

? = 184

4 (1) 4 (2) 4 (3) ... 4 (46)

Note: *This group model (above) is the easiest for students to understand and draw.*

3.

$$\begin{array}{r} 20 \\ \times\ 4 \\ \hline 80 \end{array}$$

20 20 20 20

0 20 40 60 80 100

Note: 4 equal groups of 20.

4.

$$\begin{array}{r} 13 \\ \times\ 6 \\ \hline 78 \end{array}$$

Note: Area is 78 square units

Note: It is 13 equal groups of 6. Or, 6 equal groups of 13.

13

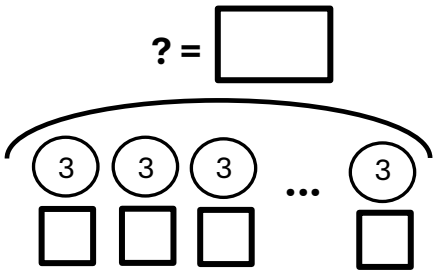
6

2 by 1 Digit Multiplication Modeling Practice – V5

Directions: Find the **product** and fill in the boxes to complete the model.

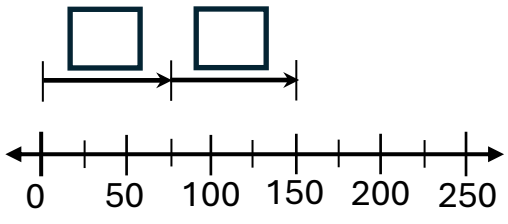
1.

$$\begin{array}{r} 35 \\ \times\ 3 \\ \hline \end{array}$$



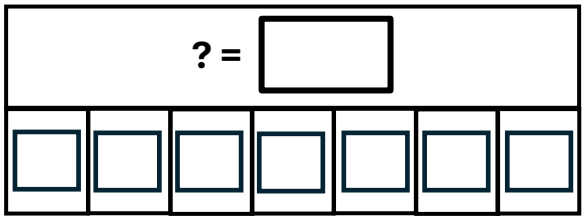
2.

$$\begin{array}{r} 75 \\ \times\ 2 \\ \hline \end{array}$$



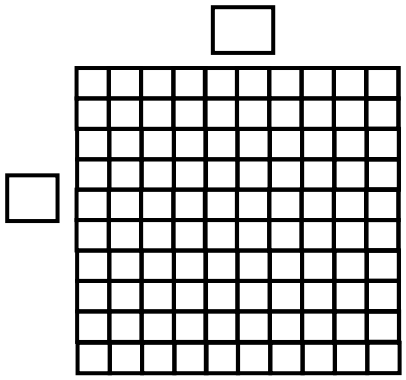
3.

$$\begin{array}{r} 21 \\ \times\ 7 \\ \hline \end{array}$$



4.

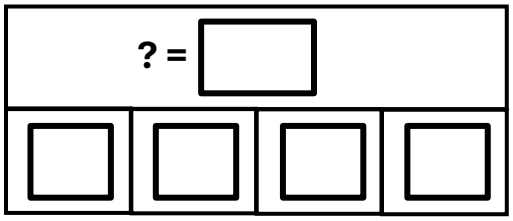
$$\begin{array}{r} 10 \\ \times 10 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

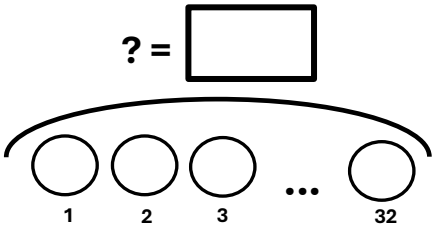
1.

$$\begin{array}{r} 83 \\ \times\ 4 \\ \hline \end{array}$$



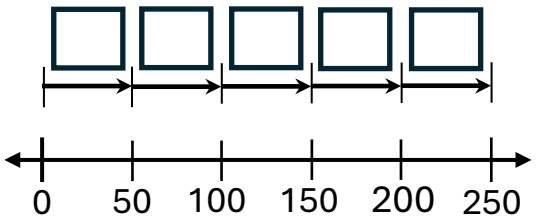
2.

$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline \end{array}$$



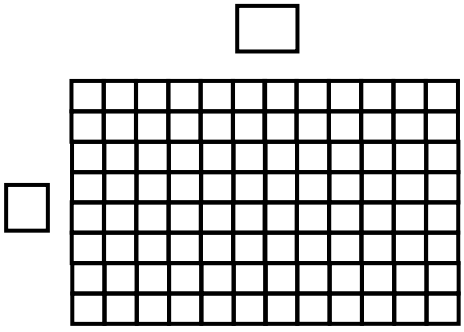
3.

$$\begin{array}{r} 50 \\ \times\ 5 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 12 \\ \times\ 8 \\ \hline \end{array}$$



2 by 1 Digit Multiplication Modeling Practice – V5

Directions: Find the **product** and fill in the boxes to complete the model. **ANSWER KEY**

1.

$$\begin{array}{r} 35 \\ \times\ 3 \\ \hline 105 \end{array}$$

? = 105

3 3 3 ... 3

1 2 3 ... 35

Whatever a teacher practices, the students will know well – and conversely (unfortunately).

2.

$$\begin{array}{r} 75 \\ \times\ 2 \\ \hline 150 \end{array}$$

75 75

0 50 100 150 200 250

Note: 2 equal groups of 75.

3.

$$\begin{array}{r} 21 \\ \times\ 7 \\ \hline 147 \end{array}$$

Note: It is 7 equal groups of 21.

? = 147

21 21 21 21 21 21 21

4.

$$\begin{array}{r} 10 \\ \times 10 \\ \hline 100 \end{array}$$

Note: 2 by 2 multiplying – model is the same

Note: Area is 100 square units

10

10

Directions: Find the **product** and fill in the boxes to complete the model.

1.

$$\begin{array}{r} 83 \\ \times\ 4 \\ \hline 322 \end{array}$$

Note: It is 4 equal groups of 83.

? = 322

83 83 83 83

2.

$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline 128 \end{array}$$

? = 128

4 4 4 ... 4

1 2 3 ... 32

Stress: Same multiplication model with any magnitude of whole numbers multiplied. The multiplication model does not change!

Note: It is 12 equal groups of 8. Or, 8 equal groups of 12.

3.

$$\begin{array}{r} 50 \\ \times\ 5 \\ \hline 250 \end{array}$$

50 50 50 50 50

0 50 100 150 200 250

Note: 5 equal groups of 50.

4.

$$\begin{array}{r} 12 \\ \times\ 8 \\ \hline 96 \end{array}$$

Note: Area is 96 square units

12

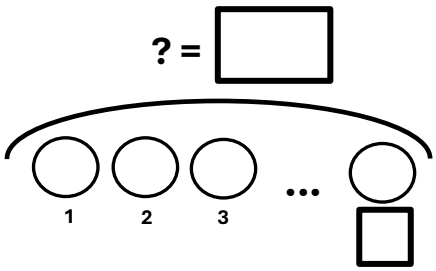
8

2 by 1 Digit Multiplication Modeling Practice – V6

Directions: Find the **product** and fill in the boxes to complete the model.

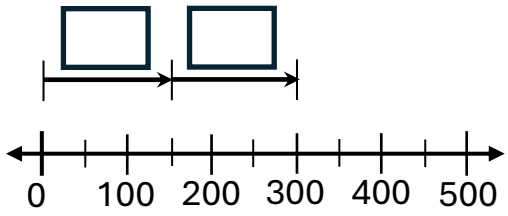
1.

$$\begin{array}{r} 42 \\ \times\ 3 \\ \hline \end{array}$$



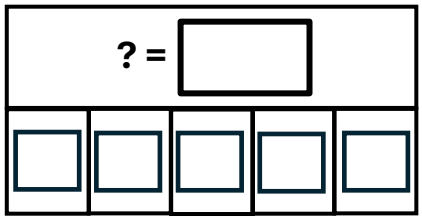
2.

$$\begin{array}{r} 150 \\ \times\ 2 \\ \hline \end{array}$$



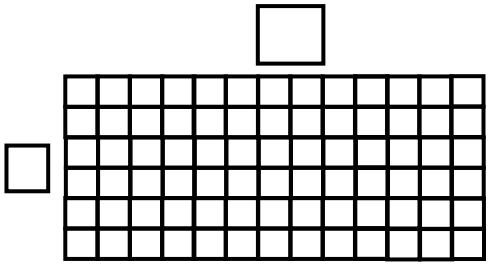
3.

$$\begin{array}{r} 25 \\ \times\ 5 \\ \hline \end{array}$$



4.

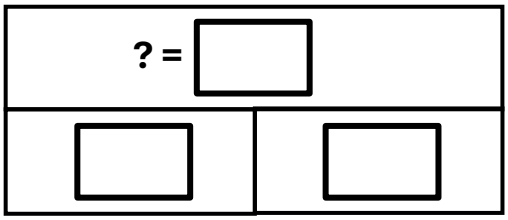
$$\begin{array}{r} 13 \\ \times\ 6 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

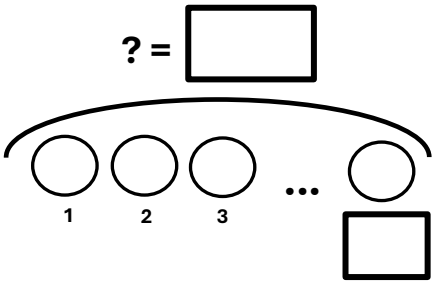
1.

$$\begin{array}{r} 100 \\ \times\ 2 \\ \hline \end{array}$$



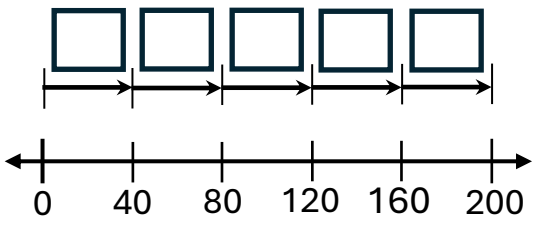
2.

$$\begin{array}{r} 55 \\ \times\ 4 \\ \hline \end{array}$$



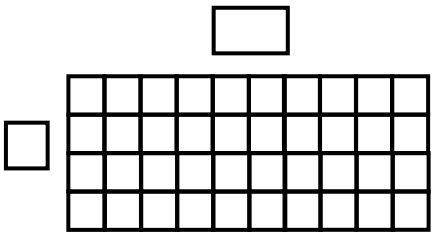
3.

$$\begin{array}{r} 40 \\ \times\ 5 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 10 \\ \times\ 4 \\ \hline \end{array}$$



2 by 1 Digit Multiplication Modeling Practice – V6

Directions: Find the **product** and fill in the boxes to complete the model. **ANSWER KEY**

1.

$$\begin{array}{r} 42 \\ \times\ 3 \\ \hline 126 \end{array}$$

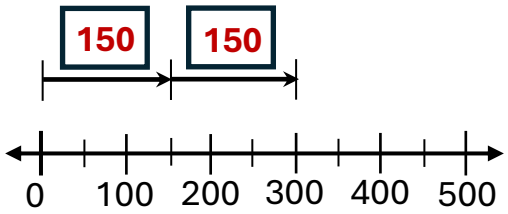
? = 126

3 (1) 3 (2) 3 (3) ... 3 (42)

2.

$$\begin{array}{r} 150 \\ \times\ 2 \\ \hline 300 \end{array}$$

Note: 2 equal groups of 150.



3.

$$\begin{array}{r} 25 \\ \times\ 5 \\ \hline 125 \end{array}$$

Note: It is 5 equal groups of 25.

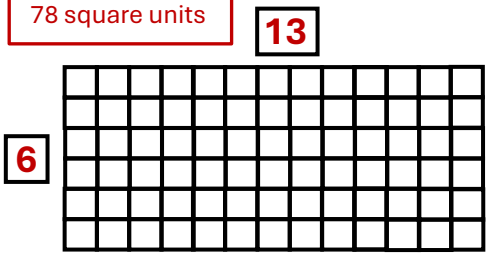
? = 125

25 | 25 | 25 | 25 | 25

4.

$$\begin{array}{r} 13 \\ \times\ 6 \\ \hline 78 \end{array}$$

Note: Area is 78 square units



Directions: Find the **product** and fill in the boxes to complete the model.

1.

$$\begin{array}{r} 100 \\ \times\ 2 \\ \hline 200 \end{array}$$

Note: 3 by 1 – same Mult. model

? = 200

100 | 100

2.

$$\begin{array}{r} 55 \\ \times\ 4 \\ \hline 220 \end{array}$$

? = 220

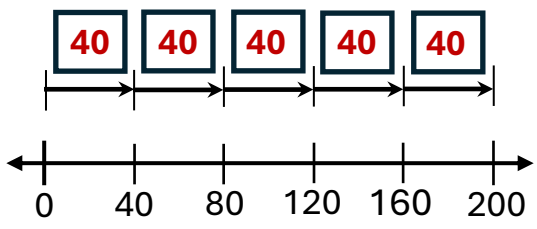
4 (1) 4 (2) 4 (3) ... 4 (55)

Note: It is 10 equal groups of 4. Or, 4 equal groups of 10.

Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

$$\begin{array}{r} 40 \\ \times\ 5 \\ \hline 200 \end{array}$$

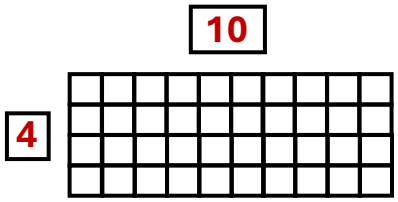


Note: 5 equal groups of 40.

4.

$$\begin{array}{r} 10 \\ \times\ 4 \\ \hline 40 \end{array}$$

Note: Area is 40 square units

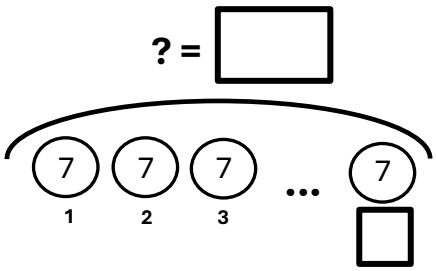


2 by 1 Digit Multiplication Modeling Practice – V7

Directions: Find the **product** and fill in the boxes to complete the model.

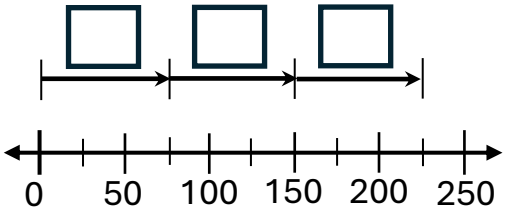
1.

$$\begin{array}{r} 21 \\ \times\ 7 \\ \hline \end{array}$$



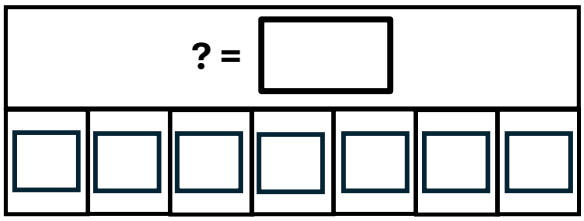
2.

$$\begin{array}{r} 75 \\ \times\ 3 \\ \hline \end{array}$$



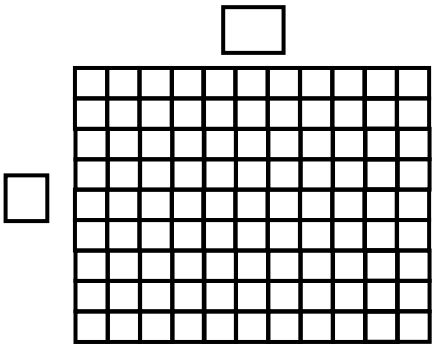
3.

$$\begin{array}{r} 18 \\ \times\ 7 \\ \hline \end{array}$$



4.

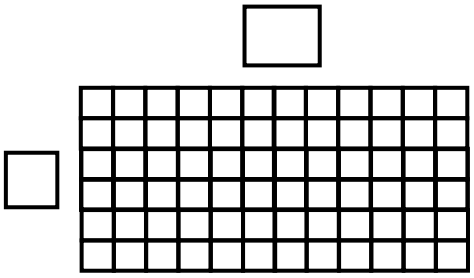
$$\begin{array}{r} 11 \\ \times\ 9 \\ \hline \end{array}$$



Directions: Find the **product** and fill in the boxes to complete the model.

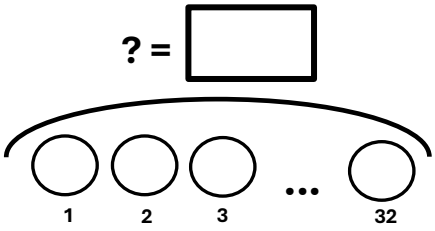
1.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline \end{array}$$



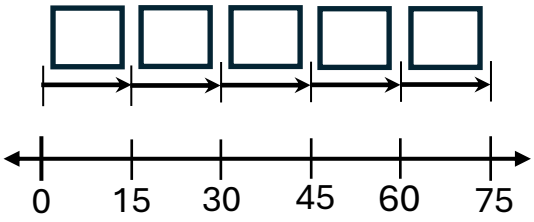
2.

$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline \end{array}$$



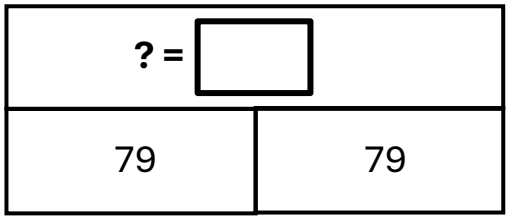
3.

$$\begin{array}{r} 15 \\ \times\ 5 \\ \hline \end{array}$$



4.

$$\begin{array}{r} 79 \\ \times\ 2 \\ \hline \end{array}$$



2 by 1 Digit Multiplication Modeling Practice – V7

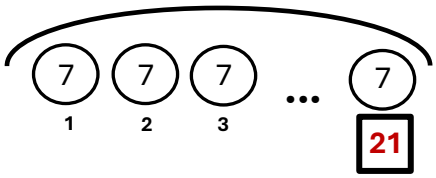
Directions: Find the **product** and fill in the boxes to complete the model.

ANSWER KEY

1.

$$\begin{array}{r} 21 \\ \times\ 7 \\ \hline 147 \end{array}$$

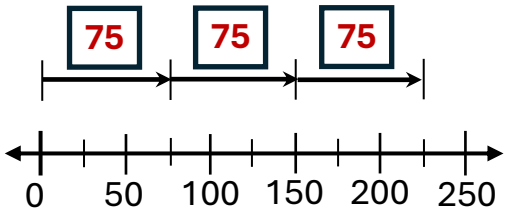
? = 147



2.

$$\begin{array}{r} 75 \\ \times\ 3 \\ \hline 225 \end{array}$$

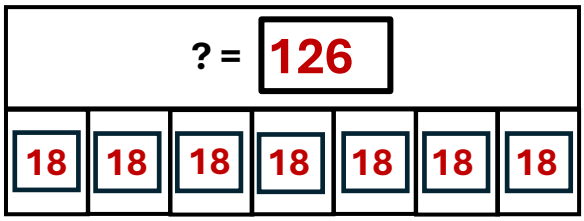
Note: 3 equal groups of 75.



3.

$$\begin{array}{r} 18 \\ \times\ 7 \\ \hline 126 \end{array}$$

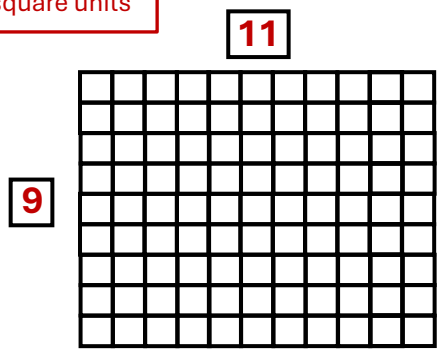
Note: It is 7 equal groups of 18.



4.

$$\begin{array}{r} 11 \\ \times\ 9 \\ \hline 99 \end{array}$$

Note: Area is 99 square units



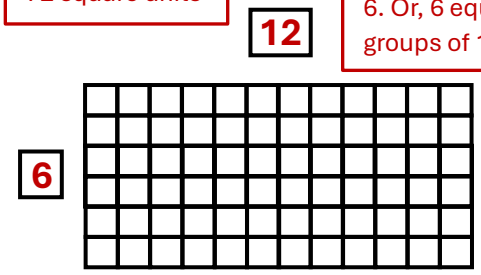
Directions: Find the **product** and fill in the boxes to complete the model.

1.

$$\begin{array}{r} 12 \\ \times\ 6 \\ \hline 72 \end{array}$$

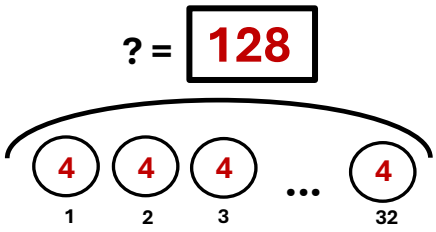
Note: Area is 72 square units

Note: It is 12 equal groups of 6. Or, 6 equal groups of 12.



2.

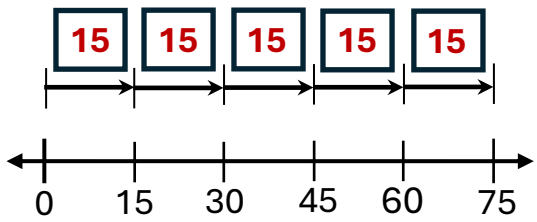
$$\begin{array}{r} 32 \\ \times\ 4 \\ \hline 128 \end{array}$$



Stress: Same multiplication model with any magnitude of whole numbers multiplied.

3.

$$\begin{array}{r} 15 \\ \times\ 5 \\ \hline 75 \end{array}$$

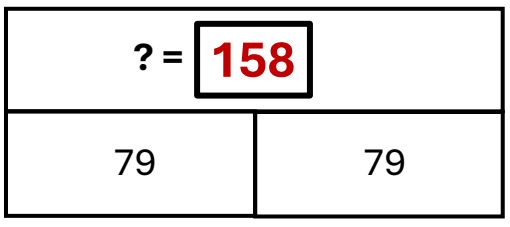


Note: 5 equal groups of 15.

4.

$$\begin{array}{r} 79 \\ \times\ 2 \\ \hline 158 \end{array}$$

Note: It is 2 equal groups of 79.



Appendix

Multiples 1 and 2
Practice Sheets

Classwork and Homework Practice

Also, Assessment (5-minute time frame to demonstrate student mastery).

Multiples Challenge 1 – (1 through 12)

<u>Directions:</u> In 5 minutes, fill in the table with the correct multiples by skip counting downward.

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

Multiples Challenge 1 – (1 through 12)

Directions: **In 5 minutes, fill in the table with the correct multiples by skip counting downward.**

1	2	3	4	5	6	7	8	9	10	11	12
0	*0*	*0*	*0*	*0*	*0*	**0**	**0**	**0**	**0**	**0**	**0**
1	*2*	*3*	*4*	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
2	*4*	*6*	**8**	**10**	**12**	**14**	**16**	**18**	**20**	**22**	**24**
3	*6*	**9**	**12**	**15**	**18**	**21**	**24**	**27**	**30**	**33**	**36**
4	**8**	**12**	**16**	**20**	**24**	**28**	**32**	**36**	**40**	**44**	**48**
5	**10**	**15**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**55**	**60**
6	**12**	**18**	**24**	**30**	**36**	**42**	**48**	**54**	**60**	**66**	**72**
7	**14**	**21**	**28**	**35**	**42**	**49**	**56**	**63**	**70**	**77**	**84**
8	**16**	**24**	**32**	**40**	**48**	**56**	**64**	**72**	**80**	**88**	**96**
9	**18**	**27**	**36**	**45**	**54**	**63**	**72**	**81**	**90**	**99**	**108**
10	**20**	**30**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**120**
11	**22**	**33**	**44**	**55**	**66**	**77**	**88**	**99**	**110**	**121**	**132**
12	**24**	**36**	**48**	**60**	**72**	**84**	**96**	**108**	**120**	**132**	**144** ★

MULTIPLES 1-12 *Name*_____

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

MULTIPLES 1-12 *Name*_____

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

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Multiples Challenge 2 – (10 through 90)

<u>Directions:</u> In 5 minutes, fill in the table with the correct multiples by skip counting downward.

(Hint 1: Think about counting by 1's, 2's, 3's, 4's, 5's 6's, 7's, 8's, and 9's. Then add a zero.)
Example: 2, 4, 6, 8… Then, add a zero to get - 20, 40, 60, 80…

(Hint 2: Practice the 25's and 75's in small segments until you can do them all in order.
Example: 0, 25, 50 Then, 0, 25, 50, 75… adding a number, and you will be fast.

10	15	20	25	30	40	50	60	70	75	80	90
0	*0*										
10											
20											

Multiples Challenge 2 – (10 through 90)

Directions: **In 5 minutes, fill in the table with the correct multiples by skip counting downward.**

(Hint 1: Think about counting by 1's, 2's, 3's, 4's, 5's 6's, 7's, 8's, and 9's. Then add a zero.)
Example: 2, 4, 6, 8… Then, add a zero to get - 20, 40, 60, 80…

(Hint 2: Practice the 25's and 75's in small segments until you can do them all in order.
Example: 0, 25, 50 Then, 0, 25, 50, 75… adding a number, and you will be fast.

10	15	20	25	30	40	50	60	70	75	80	90
0	*0*	0	0	0	0	0	0	0	0	0	0
10	15	20	25	30	40	50	60	70	75	80	90
20	30	40	50	60	80	100	120	140	150	160	180
30	45	60	75	90	120	150	180	210	225	240	270
40	60	80	100	120	160	200	240	280	300	320	360
50	75	100	125	150	200	250	300	350	375	400	450
60	90	120	150	180	240	300	360	420	450	480	540
70	105	140	175	210	280	350	420	490	525	560	630
80	120	160	200	240	320	400	480	540	600	640	720
90	135	180	225	270	360	450	540	630	675	720	810
100 ★	150 ★	200 ★	250 ★	300 ★	400 ★	500 ★	600 ★	700 ★	750 ★	800 ★	900 ★

MULTIPLES 2 Skip count downwards and correctly fill in the blanks. *Name*_____

12	15	20	25	30	40	50	60	70	75	80	90
0	0	0	0	0	0	0	0	0	0	0	0
12	15	20									
24	30										
36											

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MULTIPLES 2 Skip count downwards and correctly fill in the blanks. *Name*_____

12	15	20	25	30	40	50	60	70	75	80	90
0	0	0	0	0	0	0	0	0	0	0	0
12	15	20									
24	30										
36											

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