Lesson Title:	Model Multiplication and Division	**Grade Level:**	3

Lesson Objectives:

- Students will be able to model multiplication facts.
- Students will be able to write repeated addition problems to show multiplication.

Learning Modalities Targeted:

☑ Visual ☑ Auditory ☑ Kinesthetic/Tactile

Warm-Up:

- Give students a copy of the Warm-Up Activity, explain the directions, and allow them to work for a few minutes. After students finish, review the answers as a class because answers may vary.

Materials Needed: pencils, Warm-Up Activity, Graphic Organizer, Guided Practice Cards, Independent Practice Activity, Advanced Learner Activity, graph paper, scissors, glue sticks, snap cubes, crayons or colored pencils, number cubes

Procedure:

1. Have students look at the models from the Warm-Up Activity and introduce the term "repeated addition." Make sure students understand why the models represent repeated addition—the same number is added repeatedly. Tell students that the mathematical operation multiplication is defined as repeated addition, and today they will learn how to write repeated addition problems as multiplication problems.

2. Give each student a copy of the Graphic Organizer, and project a copy for the class to see. Record “repeated addition” in the definition section, and ask students to do the same. Have students look at the first example in the “Examples” section. Show them that this is an example of repeated addition, 6 + 6 + 6 + 6 = 24. Explain to the students that because this is repeated addition, it can also be represented as a multiplication problem. Show students that 6 is repeated 4 times, which is the same as 6 x 4 = 24. Repeat this process for the second example in this section.
3. Now, have students look at the “Non-examples” section. Discuss the addition problem shown by the model, and record it on the line beside the model. In addition, discuss why the model is not an example of repeated addition. Repeat this process for the second model in this section.
4. Put students in pairs, and give each pair a set of pre-cut Guided Practice Cards. Have students spread the cards on their desks and separate the problem cards from the model cards. Students should look at the models and problems and make matches. Check for understanding while students work on making matches.

Independent Practice:

- Give each student a copy of the Independent Practice Activity to complete.

Closing Activity:

- Go over the answers to the Independent Practice Activity as a class.

Advanced Learner Option

Procedure:

1. Give each student in the group a copy of the Advanced Learner Activity, 1-2 sheets of graph paper, scissors, and a glue stick. Project the first example from the activity, 5 x 6. Show students how to draw an array on their graph paper to represent this multiplication fact. Then, instruct students to do the same, cut the array out, glue it underneath the problem, and solve it.
2. Once students understand the activity, allow them to work independently. When all students are finished, go over the answers as a group.

Struggling Learner Option

Procedure:

1. Give each student in the group 36 snap cubes. Write the repeated addition problem, 3 + 3 + 3 + 3, where students can see. Ask each student to build the addition problem using the snap cubes.
2. When students have completed their models, tell them that they should have 4 separate groups of 3. This is because 3 is repeated 4 times in the addition problem. Now, to show multiplication and a total amount, have students snap together the 4 separate groups to make an array. Ask students how many total cubes are in the array—12. Show students that 3 + 3 + 3 + 3 = 3 x 4 = 12.
3. Repeat this process with other problems until students understand the connection between repeated addition and multiplication.

Extension Activities

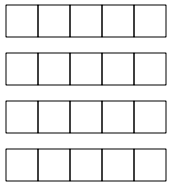
- Have students draw five different arrays on a sheet of graph paper. Then, underneath each array, have students write the repeated addition and multiplication problem. Have students use crayons or colored pencils to color in the arrays.
- Have students roll a number cube twice to create repeated addition problems. The first roll determines the number being repeated, and the second roll determines how many times that number gets repeated. Once the addition sentence is created, have students write the multiplication sentence and solve. Have students to repeat this process ten times.

ELL Teaching Tips

- **Key Lesson Vocabulary**: **general** - repeated; **academic** – multiplication, graphic organizer
- **Visual organizer** – Provide a visual organizer to aid all students in structuring the activity or text. The graphic organizer students complete in the main Procedure section will serve as a valuable reference in this lesson and beyond.
- **Partner work** – Allow students to do individual work with a partner. Give students the option of completing the Warm-Up and the Independent Practice with a partner to give

Name: _____

Directions: Look at the models. Write each model as an addition problem.

1. 

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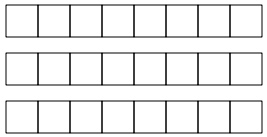
2. 

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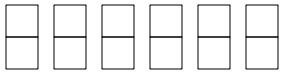
3. 

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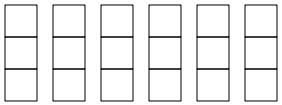
4. 

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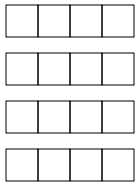
5. 

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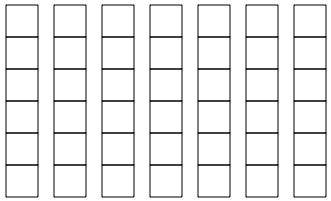
6. 

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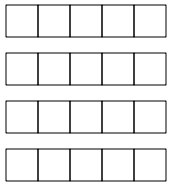
Warm-Up

edmentum

Name: _____

Directions: Look at the models. Write each model as an addition problem.

1. 

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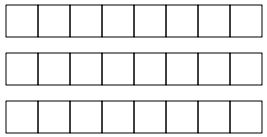
2. 

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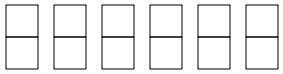
3. 

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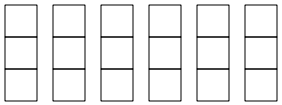
4. 

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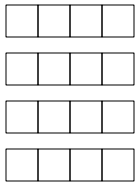
5. 

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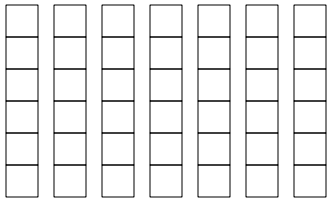
6. 

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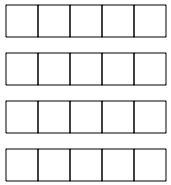
Warm-Up

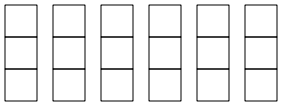
edmentum

Name: _____

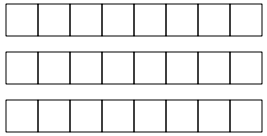
Answer Key

1. 

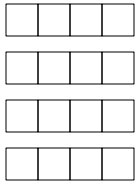
5 + 5 + 5 + 5 = 20

4. 

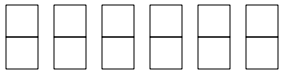
3 + 3 + 3 + 3 + 3 + 3 =18

2. 

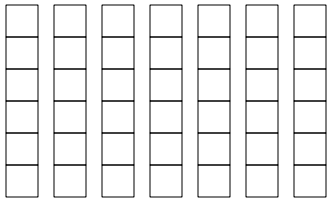
8 + 8 + 8 = 24

5. 

4 + 4 + 4 + 4 = 16

3. 

2 + 2 + 2 + 2 + 2 + 2 = 12

6. 

6 + 6 + 6 + 6 + 6 + 6 + 6 = 42

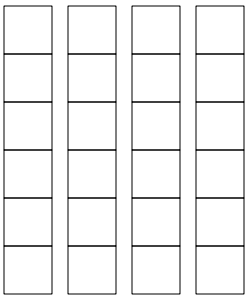
Warm Up

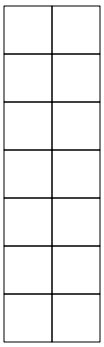
Graphic Organizer

Multiplication

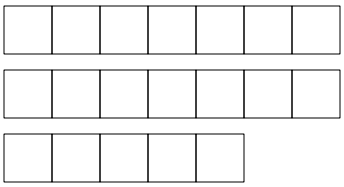
Definition

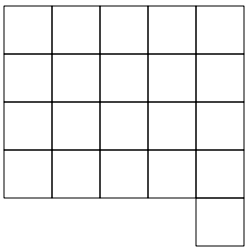
Examples





Non-examples





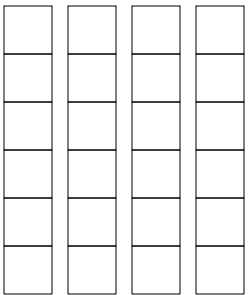
Answer Key

Multiplication

Definition

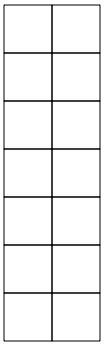
Repeated addition

Examples



6 + 6 + 6 + 6 = 24

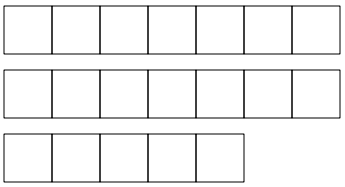
6 x 4 = 24



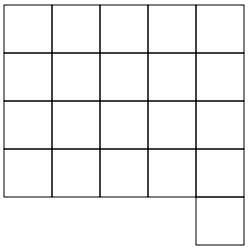
2 + 2 + 2 + 2 + 2 + 2+ 2 = 14

2 x 7 = 14

Non-examples

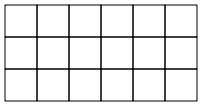
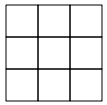
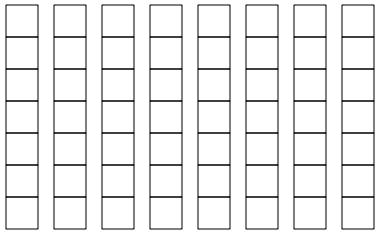
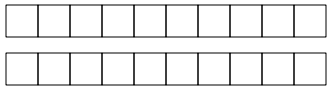
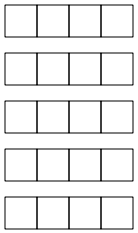
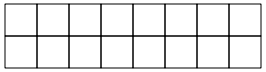
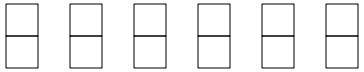
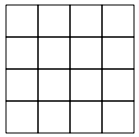
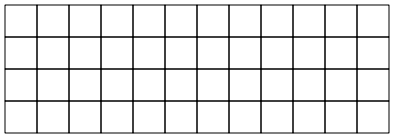
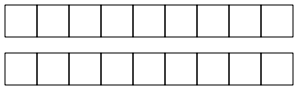


7 + 7 + 6 = 20

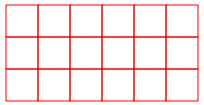


5 + 5 + 5 + 5 + 1 = 21

Guided Practice Cards

		10 + 10 = 20 10 x 2 = 20	4 + 4 + 4 + 4 + 4 = 20 4 x 5 = 20
		4 + 4 + 4 + 4 = 16 4 x 4 = 16	6 + 6 + 6 = 18 6 x 3 = 18
		2 + 2 + 2 + 2 + 2 + 2 = 12 2 x 6 = 12	8 + 8 = 16 8 x 2 = 16
		9 + 9 = 18 9 x 2 = 18	12 + 12 + 12 + 12 = 48 12 x 4 = 48
		7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 56 7 x 8 = 56	3 + 3 + 3 = 9 3 x 3 = 9

Answer Key

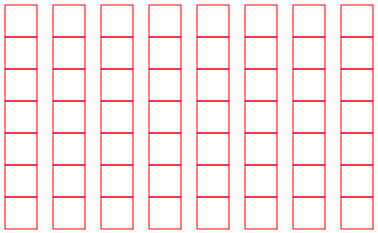


6 + 6 + 6 = 18

6 x 3 = 18

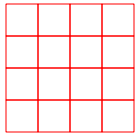
10 + 10 = 20

10 x 2 = 20



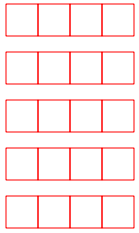
7 + 7 + 7 + 7 + 7 + 7 + 7 + 7 = 56

7 x 8 = 56



4 + 4 + 4 + 4 = 16

4 x 4 = 16

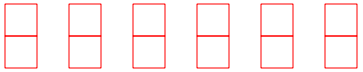


4 + 4 + 4 + 4 + 4 = 20

4 x 5 = 20

8 + 8 = 16

8 x 2 = 16

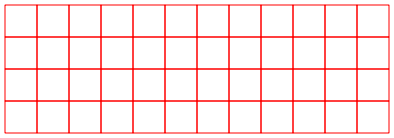


2 + 2 + 2 + 2 + 2 + 2 = 12

2 x 6 = 12

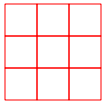
9 + 9 = 18

9 x 2 = 18



12 + 12 + 12 + 12 = 48

12 x 4 = 48



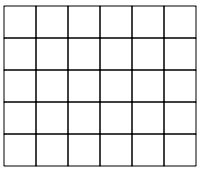
3 + 3 + 3 = 9

3 x 3 = 9

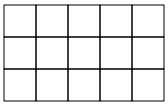
Name: _____

Model Multiplication Independent Practice

Directions: Use the models to find the answers to the following problems.

1. 

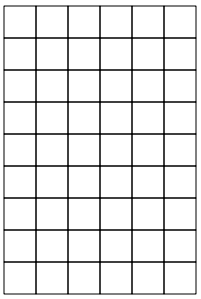
5 x 6 = _____

3. 

5 x 3 = _____

2. 

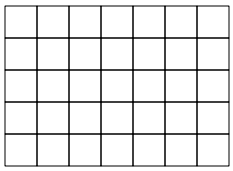
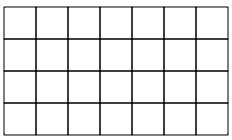
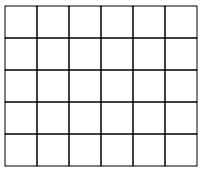
8 x 3 = _____

4. 

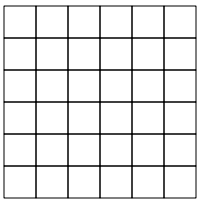
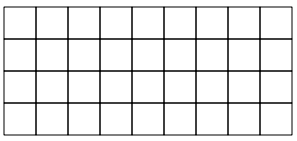
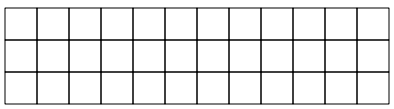
9 x 6 = _____

Directions: Circle the model that represents each problem.

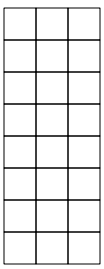
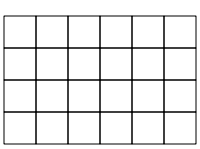
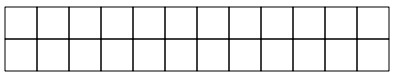
5. 7 x 5 = 35

6. 12 x 3 = 36

7. 4 x 6 = 24

Directions: Write a multiplication problem that is the same as the repeated addition problem.

8. 5 + 5 + 5 + 5 + 5 + 5 = 30

_____

9. 8 + 8 + 8 = 24

_____

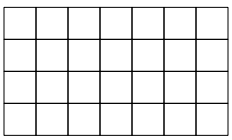
10. 11 + 11 + 11 + 11 = 44

_____

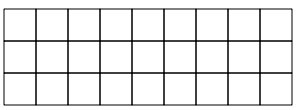
11. 3 + 3 + 3 + 3 + 3 + 3 + 3 = 21

_____

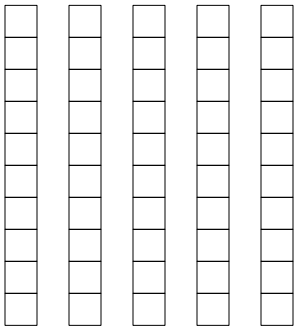
Directions: Write the multiplication problem shown by each model.

12. 

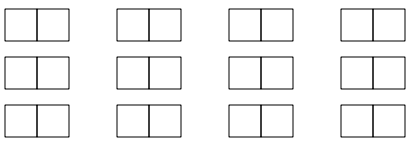
_____

13. 

_____

14. 

_____

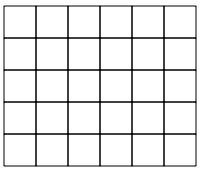
15. 

_____

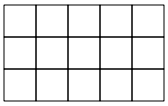
Name: _____

Model Multiplication – Answer Key

Directions: Use the models to find the answers to the following problems.

1. 

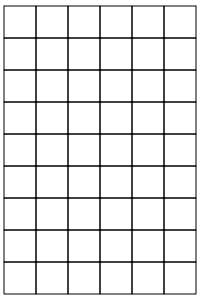
5 x 6 = 30

3. 

5 x 3 = 15

2. 

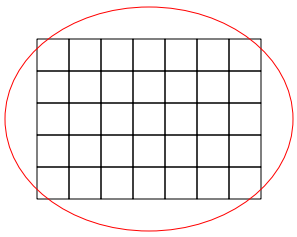
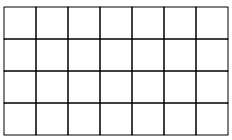
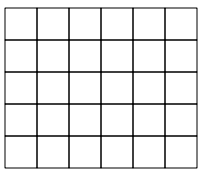
8 x 3 = 24

4. 

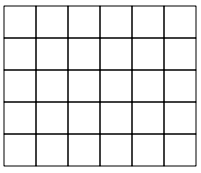
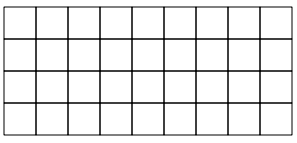
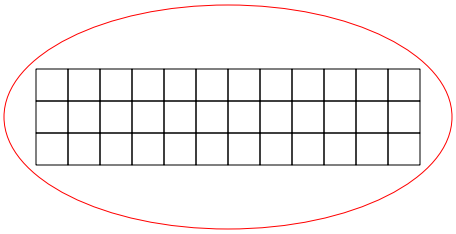
9 x 6 = 54

Directions: Circle the model that represents each problem.

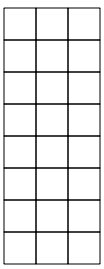
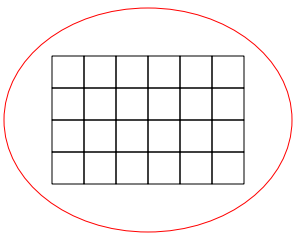
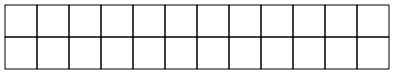
5. 7 x 5 = 35

6. 12 x 3 = 36

7. 4 x 6 = 24

Directions: Write a multiplication problem that is the same as the repeated addition problem.

8. 5 + 5 + 5 + 5 + 5 + 5 = 30

5 x 6 = 30 or 6 x 5 = 30

9. 8 + 8 + 8 = 24

8 x 3 = 24 or 3 x 8 = 24

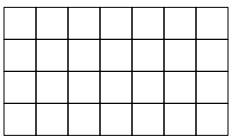
10. 11 + 11 + 11 + 11 = 44

11 x 4 = 44 or 4 x 11 = 44

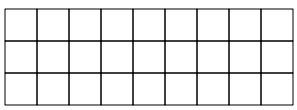
11. 3 + 3 + 3 + 3 + 3 + 3 + 3 = 21

3 x 7 = 21 or 7 x 3 = 21

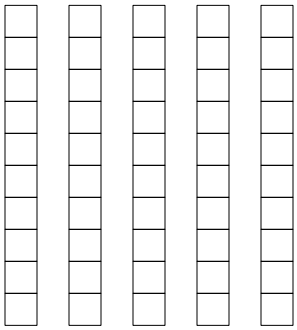
Directions: Write the multiplication problem shown by each model.

12. 

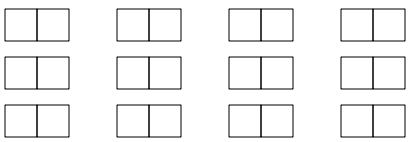
4 x 7 = 28 or 7 x 4 = 28

13. 

3 x 9 = 27 or 9 x 3 = 27

14. 

10 x 5 = 50 or 5 x 10 = 50

15. 

2 x 12 = 24 or 12 x 2 = 24

Name: _____

Model Multiplication Advanced Learner Activity

Directions: Use graph paper to cut out a model that represents each problem. Then, glue it beside or below the problem shown and give the answer in the blank .

1. 5 x 6 = _____

2. 8 x 3 = _____

3. 7 x 5 = _____

4. 4 x 6 = _____

5. 5 x 3 = _____

6. 9 x 6 = _____

7. 3 x 12 = _____

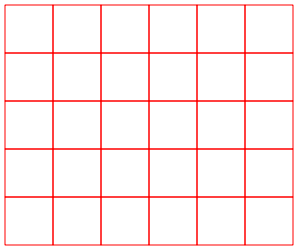
8. 10 x 3 = _____

Name: _____

Model Multiplication – Answer Key

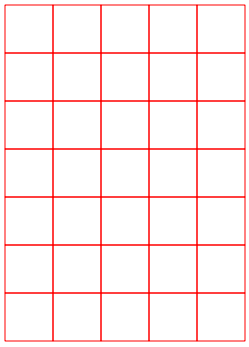
The orientation of the models may differ.

1. 5 x 6 = 30

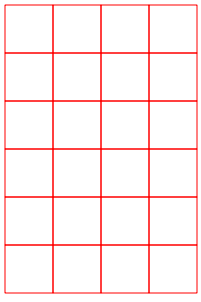


2. 8 x 3 = 24

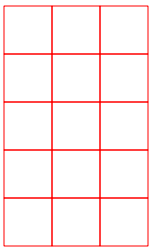
3. 7 x 5 = 35



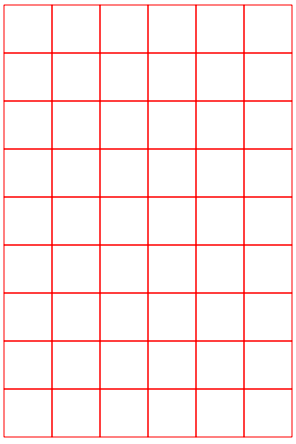
4. 4 x 6 = 24



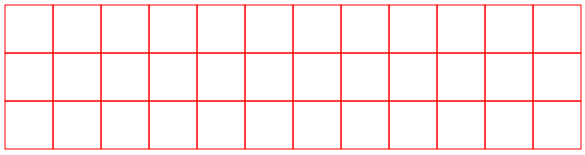
5. 5 x 3 = 15



6. 9 x 6 = 54



7. 3 x 12 = 36



8. 10 x 3 = 30