

# TOUCHMATH<sup>®</sup>

THE ALPHABET OF MATHEMATICS

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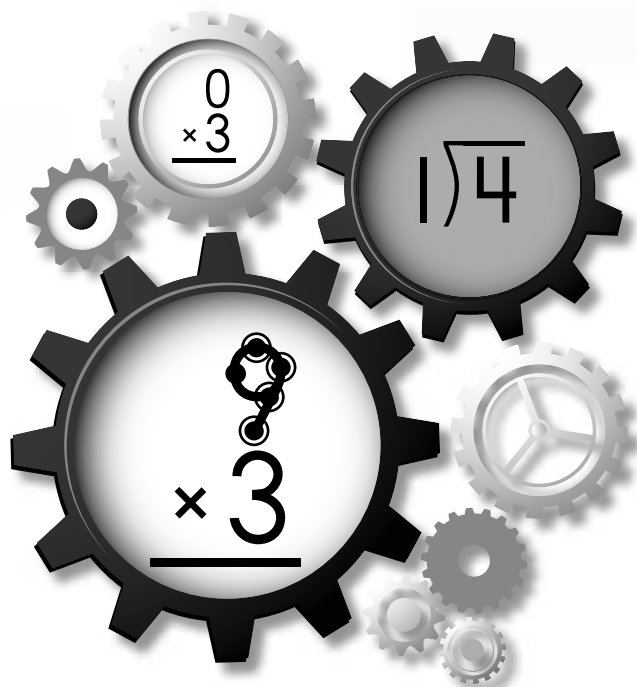


UNIT  
4

## CLASSIC UPPER GRADES MULTIPLICATION & DIVISION 1

### MODULE TITLES

- 1: Skip Counting Review
- 2: Multiplication
- 3: Division
- 4: Strategies
- 5: Multiples and Factors
- 6: Mixed Multiplication and Division



# ► Multiplication & Division 1

## Unit 4 ◉

## Table of Contents

	Module Guide	Activity Sheet
<b>Upper Grades Program Introduction . . . . .</b>	<b>2</b>	
<b>Unit Overview</b>		
• Overview of Content • Objectives • Vocabulary . . . . .	5	
• Common Core State Standards . . . . .	6	
• Parent/Guardian Communication Letter. . . . .	8	
<b>Progress Monitoring Records</b>		
• Unit Pretest . . . . .	9	
• Unit Review and Posttest. . . . .	10	
<b>Unit Pretest Directions . . . . .</b>	<b>11</b>	
• Multiplication & Division 1 Pretest. . . . .		1–4
<b>Module 1: Skip Counting Review. . . . .</b>	<b>14</b>	
<b>Module 2: Multiplication . . . . .</b>	<b>30</b>	
<b>Module 3: Division. . . . .</b>	<b>70</b>	
<b>Module 4: Strategies . . . . .</b>	<b>106</b>	
<b>Module 5: Multiples and Factors . . . . .</b>	<b>126</b>	
<b>Module 6: Mixed Multiplication and Division. . . . .</b>	<b>142</b>	
<b>Unit Review Directions . . . . .</b>	<b>169</b>	
• Multiplication & Division 1 Review. . . . .		193–196
<b>Unit Posttest Directions . . . . .</b>	<b>171</b>	
• Multiplication & Division 1 Posttest . . . . .		197–200
<b>Answer Key . . . . .</b>	<b>A1</b>	

### Organization

The following paragraphs describe the structure of the curriculum. If you would like more information about TouchMath, our teacher training DVD is available at no charge. Request online at [www.touchmath.com/freetraining](http://www.touchmath.com/freetraining), or call 1-800-888-9191.

### Unit Components

The goals for each unit are defined in the overview of skills. These broad proficiencies often establish the framework for concepts of increasing complexity. The goals are broken down into clear, manageable objectives that list the academic expectations of the students and summarize the module-level objectives. Unit vocabulary and detailed Common Core State Standards complete the unit overview. The unit pre- and post-tests immediately follow with directions for administering, recording results, and using the results to determine each student's educational plan.

### Module Guides

The table of contents provides the skeleton of the activities within each module guide. The modules include clusters—subsets of the featured skill. A paragraph overview of the module

- identifies the clusters,
- explains the activities,
- lists the Common Core State Standards by their code,
- specifies objectives in the order of presentation,
- labels basic prerequisites,
- lists vocabulary necessary for skill attainment, and
- suggests readily available materials that would be helpful during the lesson

The lessons in the modules begin with a pretest, which gives basic directions for completion. It is recommended that you give little instruction related to the skill before testing. A record sheet is included for tracking student achievement. This record is found on the third page of each module guide. Instructional strategies follow the pretest, providing ideas for the most effective use of the student activity sheets. Four different formatting conventions reveal which type of strategy is being offered:

**Box**: Information in this shape is background information for the teacher, explaining the skill and illuminating the purpose and/or value of mastery.

☞: A speech bubble offers what the teacher is to say to the class. Anyone presenting the lesson could use this script.

◆: A diamond bullet suggests action for the teacher. It typically includes directions such as "Write ... on the whiteboard." "Monitor students as they complete the row of problems."

**Bold**: Directions in bold type suggest actions relating to transitions. These include statements such as "Distribute activity sheets ... to the students." "Activity Sheet ... Directions." "Repeat the activity sheet xx process ..."

The answer keys are imbedded in the instructional strategies for a quick reference while planning or presenting the lesson. Modified directions for the activity sheets are included for use after the detailed, step-by-step process to ensure understanding of the concepts.

A posttest follows the instruction within the module. Refer to the module guide for directions for administering the posttest. You can record results and compare them to the pretest. The module concludes with suggestions for differentiated instruction and real world applications.

- The rule in this box is to divide by 1. Do you see where the rule is written? Point to it with your pencil. We are dividing each of the numbers in the first column by 1. The number in the In column is the dividend, the number in the Out column is the quotient. Think of a machine that does what you tell it to do. You are telling it that every time you put a number *in*, you want the machine to apply the rule and put that number *out*.

In the first box, we are putting 9 *in* and applying the rule to divide by 1. The number that comes *out* is 9. Trace the 9. Who remembers which **property** of division this is? Yes, it is the **identity property**. The **property** shows us that the dividend, the number we put *in*, is the same as the quotient, the number that comes *out*.

Complete the first box.

Please use your crayon to draw a ring around the rule in each table on the rest of the activity sheet. Remember, this is the divisor.

Complete this activity sheet. Share your work with your partner.

### Independent Practice

- Complete the in/out table. Use the dividend given in the In column. Write the quotient in the Out column.

Distribute activity sheet 137 to the students.

### Instruction: activity sheet 137

- This activity sheet uses in/out tables again. This time the numbers for each column are given. You must find the rule.

We will do the first two tables together.

The first table has 21 and 7, 24 and 8, and 27 and 9. We know the dividend and the quotient. We need to find the divisor. The divisor is the rule that was applied to the dividend.

Think about  $21 \div x = 7$ . If you don't know the divisor, you can say  $7 \times x = 21$ . If you think the divisor is 3, try it. Does  $21 \div 3 = 7$ ? Yes. Now apply the rule to all of the other dividends, the numbers in the In column. Does  $24 \div 3 = 8$ ? Does  $27 \div 3 = 9$ ? The answer to these questions is yes. The rule that was applied was  $\div 3$ . Read the choices. Fill in the bubble for  $\div 3$ .

Do not guess at the answer. Use a strategy to find the divisor. Remember, the divisor and the quotient can be **reversed**. The product of the divisor and quotient must be the dividend.

Look at the second table. What number is used to divide 30 into five equal sets? What number is used to divide 36 into six equal sets? What number is used to divide 42 into seven equal sets? How many would be in each set in these three problems?

Yes, 6 is used to divide each of the numbers into equal sets. The divisor is 6. The rule is  $\div 6$ . Fill in the bubble for  $\div 6$ .<sup>1</sup>

In		Out	In		Out	In		Out
21	7		30	5		54	6	
24	8		36	6		63	7	
27	9		42	7		72	8	
What is the rule?		<input type="radio"/> + 2 <input type="radio"/> + 3 <input type="radio"/> + 4 <input type="radio"/> + 5	What is the rule?		<input type="radio"/> + 5 <input type="radio"/> + 6 <input type="radio"/> + 7 <input type="radio"/> + 8	What is the rule?		<input type="radio"/> + 6 <input type="radio"/> + 7 <input type="radio"/> + 8 <input type="radio"/> + 9
In		Out	In		Out	In		Out
7	7		12	3		28	4	
8	8		16	4		35	5	
9	9		20	5		42	6	
What is the rule?		<input type="radio"/> + 1 <input type="radio"/> + 2 <input type="radio"/> + 3 <input type="radio"/> + 4	What is the rule?		<input type="radio"/> + 3 <input type="radio"/> + 4 <input type="radio"/> + 5 <input type="radio"/> + 6	What is the rule?		<input type="radio"/> + 9 <input type="radio"/> + 6 <input type="radio"/> + 8 <input type="radio"/> + 7
In		Out	In		Out	In		Out
12	6		35	7		40	5	
14	7		40	8		48	6	
16	8		45	9		56	7	
What is the rule?		<input type="radio"/> + 3 <input type="radio"/> + 5 <input type="radio"/> + 2 <input type="radio"/> + 4	What is the rule?		<input type="radio"/> + 3 <input type="radio"/> + 5 <input type="radio"/> + 7 <input type="radio"/> + 9	What is the rule?		<input type="radio"/> + 8 <input type="radio"/> + 6 <input type="radio"/> + 4 <input type="radio"/> + 2

137

### Basic Background

<sup>1</sup>Fluency with division facts makes the process easier. Strategies reinforce the concept and the process.

Independent Practice

- Read the numbers in the in/out table. Identify the rule that was applied. Fill in the bubble.

Distribute activity sheet 138 to the students.

Instruction: activity sheet 138

- This is another tool you can use to learn multiplication and division facts. Do you remember the hundred chart? It was a tool to see the sequence and patterns of numbers when counting by 1 or 10. As we went across each row, the numbers increased by 1. As we went down a column, the numbers increased by 10.

On a multiplication table, all of the facts are included. One factor is in the top row. The other factor is in the first column.

Let's look at the patterns on the table. Put your finger on the 4 on the top row. Read the numbers as we go down the column: 4, 8, 12, ..., 40.

What do you notice about this sequence? Yes, it is the skip counting sequence for 4.

With your partner, pick out a number. One of you read the multiples in the column going down. The other read the numbers going across for the same number.

What did you learn? Yes, the multiples are in the same sequence going down and across.

Now let's practice using the table. Place the first finger on your left hand on the 4 in the first column. Place the first finger on your right hand on the 7 in the top row. Move your fingers across the 4 row and down the 7 column until they meet. At which square do they **intersect**? Yes, 28.  $7 \times 4 = 28$ .

This time place the first finger on your left hand on the 6 in the first column. Place the first finger on your right hand on the 8 in the top row. Move your right hand down the column and your left hand across the row until they meet. What number did you find? Yes, 48.  $8 \times 6 = 48$ .

Let's try another way. Take out your **ruler**. Place it across the paper so that it lines up with the row for 5. Try moving the **ruler** up or down the activity sheet.

Find 9 in the first column. Move your **ruler** to the bottom of the box with 9 in it. Make sure the **ruler** is straight across the activity sheet, using the line below the 9 as your guide.

Holding the **ruler** in place with your left hand, put the first finger on your right hand on the 3 in the top row. Move your finger down that column. Where does it touch the **ruler**? Yes, at 27, the product of  $3 \times 9$ .<sup>1</sup>

Look at the symbol in the upper left corner of the table. It is a multiplication sign. We say one factor and find it in the top row. We then say the other factor and find it in the first column. We follow the numbers down and across until they **intersect**. That number is the product.

Name \_\_\_\_\_ Date \_\_\_\_\_

×	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

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Differentiated Directions

<sup>1</sup>Provide as much practice and guidance as needed to ensure that students know how to use the table for multiplication.

2

6

60

3

4

20

5

50

$4 \times 5$	0	$5 \times 4$
$4 \times 0$	5	$5 \times 1$
$4 \times 3$	10	$5 \times 2$
$4 \times 7$	12	$5 \times 0$
$4 \times 6$	15	$5 \times 3$
$4 \times 8$	20	$5 \times 5$
	24	
	25	
	28	
	32	

There are 6 rows of desks in a classroom. There are 5 desks in each row. How many desks are there in all? Choose the factors and solve.

- A  $5 \times 6$     B  $5 \times 5$     C  $5 \times 4$     D None of these \_\_\_\_\_

$$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$$

(A) 24  
(B) 10  
(C) 26  
(D) 21

$$\begin{array}{r} 7 \\ \times 0 \\ \hline \end{array}$$

(A) 9  
(B) 0  
(C) 7  
(D) 8

$$\begin{array}{r} 0 \\ \times 3 \\ \hline \end{array}$$

(A) 3  
(B) 2  
(C) 30  
(D) 0

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

(A) 10  
(B) 20  
(C) 30  
(D) 25

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

(A) 8  
(B) 2  
(C) 0  
(D) 4

$$\begin{array}{r} 5 \\ \times 4 \\ \hline \end{array}$$

(A) 20  
(B) 9  
(C) 11  
(D) 24

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

(A) 14  
(B) 40  
(C) 13  
(D) 30

$$\begin{array}{r} 1 \\ \times 1 \\ \hline \end{array}$$

(A) 11  
(B) 8  
(C) 9  
(D) 10

$$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$$

(A) 19  
(B) 12  
(C) 18  
(D) 9

$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

(A) 12  
(B) 30  
(C) 28  
(D) 35

$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

(A) 36  
(B) 13  
(C) 27  
(D) 30

$$\begin{array}{r} 8 \\ \times 0 \\ \hline \end{array}$$

(A) 18  
(B) 0  
(C) 8  
(D) 80

$$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$$

(A) 35  
(B) 30  
(C) 11  
(D) 25

$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

(A) 36  
(B) 17  
(C) 27  
(D) 12

$$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$$

(A) 10  
(B) 18  
(C) 12  
(D) 16

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

(A) 28  
(B) 11  
(C) 21  
(D) 35

There are 4 sets of twins. How many children are there in all?  
Choose an expression and solve.

- (A)  $3 \times 4$  (B)  $4 \times 4$  (C)  $4 \times 2$  (D) None of these \_\_\_\_\_ children



0	8	16	24	32	40	48	56	64	72	80
---	---	----	----	----	----	----	----	----	----	----

$$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 8 \\ \hline \end{array}$$

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

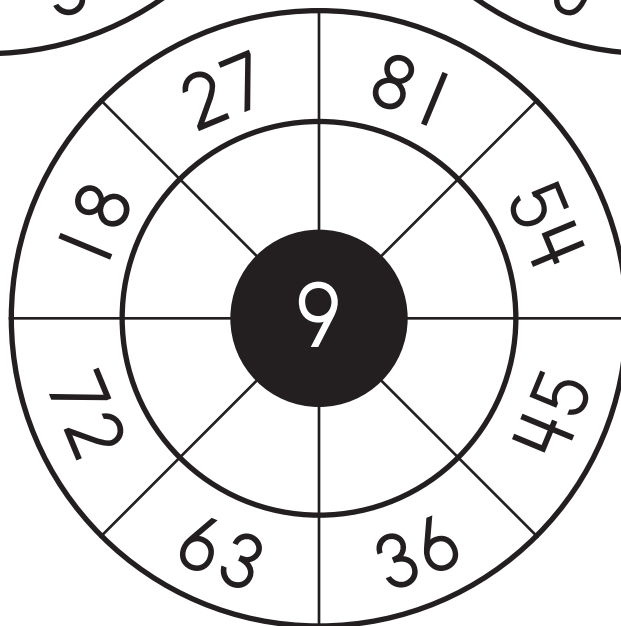
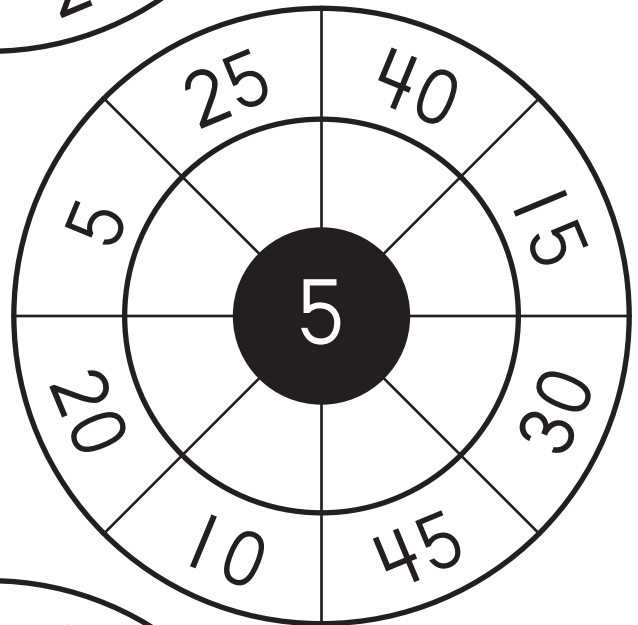
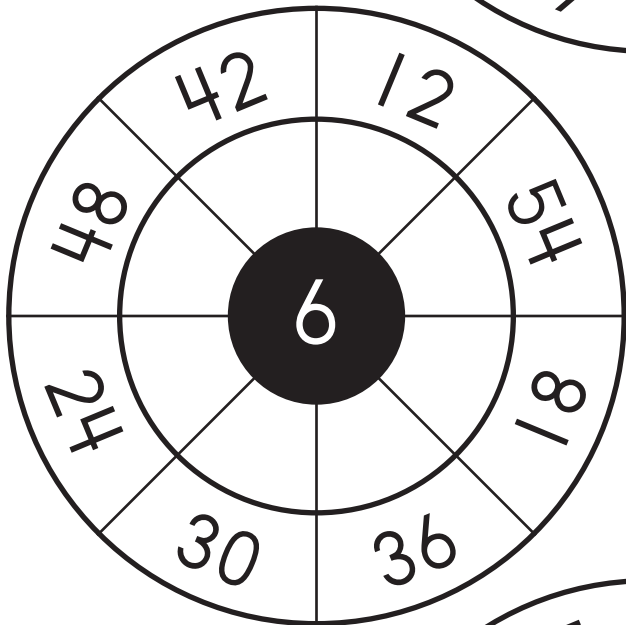
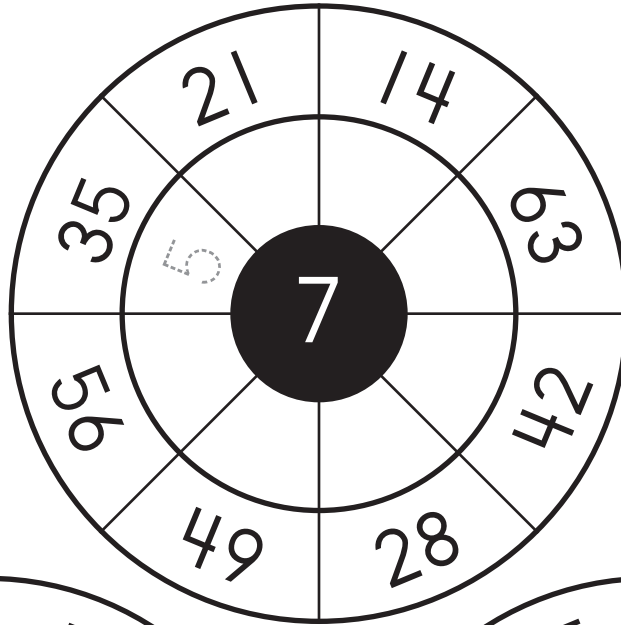
$$\begin{array}{r} 0 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 8 \\ \hline \end{array}$$

$8 \times 9 = \underline{\quad}$      $8 \times 8 = \underline{\quad}$      $8 \times 5 = \underline{\quad}$

At a party, there were 5 tables. Each table seated 8 people.  
 How many people could be seated at the party?  
 Write a sentence with an unknown and solve.

\_\_\_\_\_



In	Out
21	7
24	8
27	9

- What is the rule?
- (A)  $\div 2$
  - (B)  $\div 3$
  - (C)  $\div 4$
  - (D)  $\div 5$

In	Out
30	5
36	6
42	7

- What is the rule?
- (A)  $\div 5$
  - (B)  $\div 6$
  - (C)  $\div 7$
  - (D)  $\div 8$

In	Out
54	6
63	7
72	8

- What is the rule?
- (A)  $\div 6$
  - (B)  $\div 7$
  - (C)  $\div 8$
  - (D)  $\div 9$

In	Out
7	7
8	8
9	9

- What is the rule?
- (A)  $\div 1$
  - (B)  $\div 2$
  - (C)  $\div 3$
  - (D)  $\div 4$

In	Out
12	3
16	4
20	5

- What is the rule?
- (A)  $\div 3$
  - (B)  $\div 4$
  - (C)  $\div 5$
  - (D)  $\div 6$

In	Out
28	4
35	5
42	6

- What is the rule?
- (A)  $\div 9$
  - (B)  $\div 6$
  - (C)  $\div 8$
  - (D)  $\div 7$

In	Out
12	6
14	7
16	8

- What is the rule?
- (A)  $\div 3$
  - (B)  $\div 5$
  - (C)  $\div 2$
  - (D)  $\div 4$

In	Out
35	7
40	8
45	9

- What is the rule?
- (A)  $\div 3$
  - (B)  $\div 5$
  - (C)  $\div 7$
  - (D)  $\div 9$

In	Out
40	5
48	6
56	7

- What is the rule?
- (A)  $\div 8$
  - (B)  $\div 6$
  - (C)  $\div 4$
  - (D)  $\div 2$

$4 = 2 \times 2$

True  
 False

$15 = 3 \times 5 \text{ or } 2 \times 6$

True  
 False

$40 = 5 \times 8 \text{ or } 4 \times 10$

True  
 False

$64 = 9 \times 9$

True  
 False

$35 = 5 \times 7$

True  
 False

$27 = 3 \times 9$

True  
 False

$14 = 2 \times 7$

True  
 False

$42 = 6 \times 7$

True  
 False

$24 = 3 \times 7 \text{ or } 4 \times 6$

True  
 False

$18 = 2 \times 9 \text{ or } 3 \times 6$

True  
 False

$$9 \times 4 \bigcirc 7 \times 5$$

36                      35

$$32 \div 8 \bigcirc 15 \div 5$$

\_\_\_\_\_                      \_\_\_\_\_

$$8 \times 3 \bigcirc 6 \times 4$$

\_\_\_\_\_                      \_\_\_\_\_

$$42 \div 6 \bigcirc 56 \div 7$$

\_\_\_\_\_                      \_\_\_\_\_

$$4 \times 5 \bigcirc 7 \times 3$$

\_\_\_\_\_                      \_\_\_\_\_

$$36 \div 9 \bigcirc 48 \div 8$$

\_\_\_\_\_                      \_\_\_\_\_

$$3 \times 9 \bigcirc 4 \times 7$$

\_\_\_\_\_                      \_\_\_\_\_

$$28 \div 7 \bigcirc 27 \div 9$$

\_\_\_\_\_                      \_\_\_\_\_

$$5 \times 5 \bigcirc 4 \times 6$$

\_\_\_\_\_                      \_\_\_\_\_

$$45 \div 9 \bigcirc 54 \div 9$$

\_\_\_\_\_                      \_\_\_\_\_

$$4 \times 4 \bigcirc 8 \times 2$$

\_\_\_\_\_                      \_\_\_\_\_

$$25 \div 5 \bigcirc 30 \div 6$$

\_\_\_\_\_                      \_\_\_\_\_