

## Unit 1 Study Guide

1) Can you find the factors of a number? Using Arrays? Using the divisibility rules?

a. Math journal pages

- p. 5

- p. 10

- p. 13 - 14

b. Study Links

- 1.2

- 1.3

- 1.4

- 1.5

c. Extra practice pages from “Unit 1” on our website

- 1.2

- 1.3

- 1.5

d. SRB pages

- p. 10

e. Try playing *Factor Captor*

2) Can you rename numbers written in exponential notation as repeated factor expressions?  
(Ex:  $3^4 \rightarrow 3 \times 3 \times 3 \times 3$ ) How about the opposite?  $2 \times 2 \times 2 \rightarrow 2^3$

a. SRB p. 6

b. Math journal pages

- p. 20 - 21

c. Study Link

- 1.7

- 1.9

3) Can you find and identify prime and composite numbers?

a. SRB

- p.12

b. Math journal pages

- p. 16 - 17

c. Study Link

- 1.6

d. Extra practice pages from “Unit 1” on our website

- 1.6

4) Can you read and write whole numbers through billions and decimals through thousandths?

a. Math Journal (these are all problems in a math box)

- p.4

- p.11

- p. 15

- p. 22

- p. 27

- p. 28

- 5) Can you find the prime factorization for a number?
- a. SRB p. 12
  - b. Math journal pages
    - p. 25 - 26
  - c. Study Link
    - 1.9
  - d. Extra Practice from Unit 1 on our website
    - 1.9

# Solving Multiplication Number Stories

For each number story:

- ◆ Fill in a multiplication/division diagram. Write ? for the number you need to find. Write the numbers you already know.
- ◆ Write a number model.
- ◆ Use counters or draw pictures to help you find the answer.
- ◆ Record the answer with its unit.

- 1.** Yosh has 8 boxes of mini stock cars. There are 10 stock cars in each box. How many stock cars does he have?

<b>boxes</b>	<b>cars per box</b>	<b>cars in all</b>

Number model: \_\_\_\_\_

Answer: \_\_\_\_\_  
(unit)

- 2.** There are 100 paper clips in each package. How many paper clips are in 7 packages?

<b>packages</b>	<b>clips per package</b>	<b>clips in all</b>

Number model: \_\_\_\_\_

Answer: \_\_\_\_\_  
(unit)

- 3.** There are 40 books on each shelf. How many books are on 9 shelves?

<b>shelves</b>	<b>books per shelf</b>	<b>books in all</b>

Number model: \_\_\_\_\_

Answer: \_\_\_\_\_  
(unit)

# Solving Multiplication Number Stories

1. Solve.

a.  $7 + 7 + 7 + 7 + 7 + 7 =$  \_\_\_\_\_

b.  $8 + 8 =$  \_\_\_\_\_

c.  $5 + 5 + 5 + 5 + 5 =$  \_\_\_\_\_

2. Draw an array to help you find the product. Use Xs to draw your array.

$9 \times 3 =$  \_\_\_\_\_

3. There are 10 birds in each tree.  
There are 7 trees.  
How many birds are there in all?

trees	birds per tree	birds in all

Number model: \_\_\_\_\_

\_\_\_\_\_ birds

4. There are 40 books in each box.  
There are 3 boxes.  
How many books are there in all?

boxes	books per box	books in all

Number model: \_\_\_\_\_

\_\_\_\_\_ books

5. There are 30 students in each class.  
There are 9 classes.  
How many students are there in all?

classes	students per class	students in all

Number model: \_\_\_\_\_

\_\_\_\_\_ students

6. Make up and solve your own Review Box.

# Equal-Groups Riddles

1. Solve.

a.  $8 + 8 + 8 + 8 =$  \_\_\_\_\_

b.  $4 + 4 + 4 =$  \_\_\_\_\_

c.  $3 + 3 + 3 + 3 + 3 + 3 + 3 =$  \_\_\_\_\_

2. Draw an array to help you find the product. Use Xs to draw your array.

$5 \times 5 =$  \_\_\_\_\_

3. If you put me into 7 equal groups with 2 in each group and 2 are left over, what number am I?

\_\_\_\_\_

Draw a picture of what you did.

4. If you put me into 5 equal groups with 5 in each group and 4 are left over, what number am I?

\_\_\_\_\_

Draw a picture of what you did.

5. I am a number between 30 and 40. When you put me into 8 equal groups, there is an even number in each group and 1 is left over. What number am I?

\_\_\_\_\_

Draw a picture of what you did.

6. Write your own equal-groups riddle. Draw a picture to show how you would solve it.

## Factor Pairs for Prime and Composite Numbers

1. In the table below, list all the factor pairs of each number.

Number	Factor Pairs
2	<i>1 and 2</i>
3	
4	
5	
6	<i>1 and 6    2 and 3</i>
7	
8	
9	
10	
11	
12	

2. Name a number in the table above that is not a prime number. Explain how you know it is not prime.

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3. Name at least three prime numbers that are not in the table above.

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4. Choose one of your answers from Problem 3. Explain how you know it is a prime number.

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# Factor Pairs for Prime and Composite Numbers

1. Make a factor rainbow for 14.

2. Make a factor rainbow for 32.

3. List all the factor pairs of 21.

\_\_\_\_\_

Is 21 composite or prime?

\_\_\_\_\_

4. List all the factor pairs of 11.

\_\_\_\_\_

Is 11 composite or prime?

\_\_\_\_\_

5. List all the factor pairs of 12.

\_\_\_\_\_

Is 12 composite or prime?

\_\_\_\_\_

6. Explain your answer for Question 5.





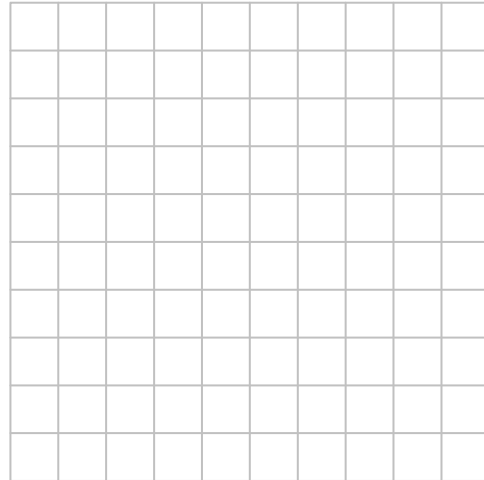
# Arrays for Prime and Composite Numbers

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1. List all the factor pairs of the number.

25 \_\_\_\_\_

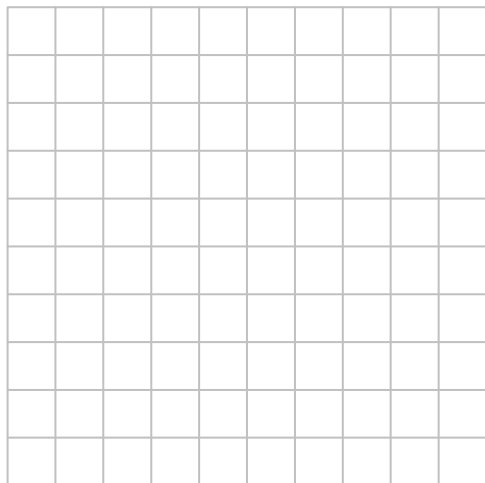
2. Draw as many arrays as you can for 2.



Is 2 a prime number or a composite number?

\_\_\_\_\_

3. Draw as many arrays as you can for 8.



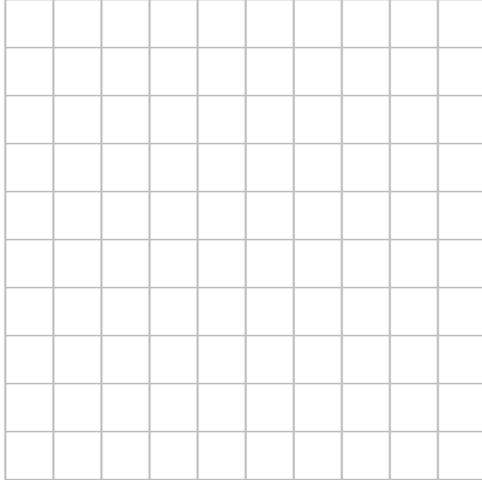
Is 8 a prime number or a composite number?

\_\_\_\_\_

4. Describe how you solved Question 3.

# Arrays for Prime and Composite Numbers

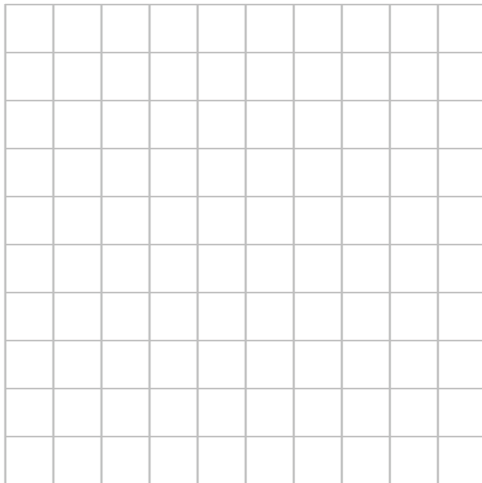
1. Draw as many arrays as you can for 10.



Is 10 a prime number or a composite number?

\_\_\_\_\_

2. Draw as many arrays as you can for 7.



Is 7 a prime number or a composite number?

\_\_\_\_\_

# Factor Pairs



A 2-row-by-5-column array

$$2 * 5 = 10$$



$2 * 5 = 10$  is a number model for the 2-by-5 array.

10 is the **product** of 2 and 5.

2 and 5 are whole-number **factors** of 10.

2 and 5 are a **factor pair** for 10.

1 and 10 are **factors** of 10 too because  $1 * 10 = 10$ .

1 and 10 are another **factor pair** for 10.

1. a. Use counters to make all possible arrays for the number 8.

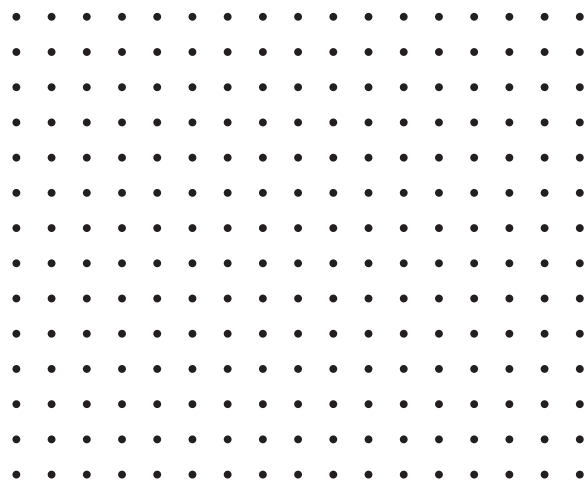
- b. Write a number model for each array you make.

\_\_\_\_\_

\_\_\_\_\_

- c. List all the whole-number factors of 8.

\_\_\_\_\_



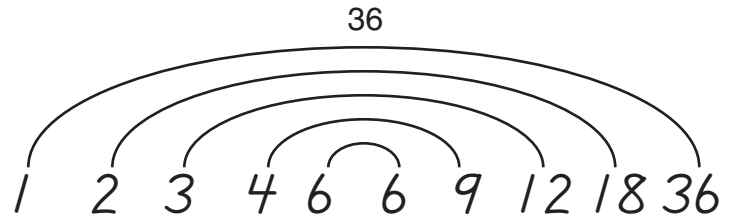
2. Use counters to help you find all the number models and factors for each number.

Number	Number Models with 2 Factors	All Possible Factors
9		
15		
11		
20		
18		

# Factor Rainbows

When listing the factors of a number, you need to be certain that you have included all the factors in your list. Creating a factor rainbow is one way to do this. A **factor rainbow** is an organized list of factor pairs.

To the right is the factor rainbow for 36. Because 36 is a square number, one of the factors (6) is paired with itself.



Complete a factor rainbow for each number.

**1.** 56

**2.** 48

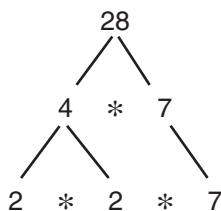
**3.** 81

**4.** 72

# Factor Trees

Make factor trees and find the prime factorization for the following numbers.

**Example:** 28



$$28 = 2 * 2 * 7$$

**1.** 44

**2.** 56

$$44 = \underline{\hspace{2cm}}$$

$$56 = \underline{\hspace{2cm}}$$

**3.** 18

**4.** 30

$$18 = \underline{\hspace{2cm}}$$

$$30 = \underline{\hspace{2cm}}$$

**5. a.** Circle the number that has the most prime factors.

63

32

49

100

**b.** Which has the fewest prime factors? \_\_\_\_\_

# Factor Trees

1. Is 9 composite or prime? Explain.

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2. Make a factor tree and write the prime factorization.

54

Prime factorization: \_\_\_\_\_

3. Make a factor tree and write the prime factorization.

70

Prime factorization: \_\_\_\_\_

4. Explain how you solved Question 3.

## Exploring Exponents

The number sentences below contain exponential and repeated-factor notations. Find the pattern and complete the number sentences.

1.  $3 * 3 = 3^2$

$3 * 3 * 3 = 3^3$

$3 * 3 * 3 * 3 = 3^4$

2.  $5 * 5 = 5^2$

$5 * 5 * 5 = 5^3$

$5 * 5 * 5 * 5 = 5^4$

3.  $18 * 18 = 18^2$

$18 * 18 * 18 = 18^3$

$18 * 18 * 18 * 18 = 18^4$

4.  $7 * 7 = \underline{\hspace{2cm}}$

$\underline{\hspace{2cm}} = 7^3$

$7 * 7 * 7 * 7 = \underline{\hspace{2cm}}$

5.  $4 * 4 * 4 * 4 * 4 * 4 * 4 = \underline{\hspace{2cm}}$

6.  $2^6 = \underline{\hspace{4cm}}$

7. If you were going to explain to someone how to use exponents to write a number, what would you say?

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Write the repeated-factor expression or the exponential notation.

8.  $28^4 = \underline{\hspace{4cm}}$

9.  $309 * 309 * 309 * 309 * 309 = \underline{\hspace{4cm}}$

10.  $2^3 * 2^3 = \underline{\hspace{4cm}}$

## Reviewing Place Value through 5-Digit Numbers

<b>Ten-Thousands</b>	<b>Thousands</b>	<b>Hundreds</b>	<b>Tens</b>	<b>Ones</b>
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Complete.

1. The 9 in 4,965 stands for 9 hundreds or 900.
2. The 4 in 48,215 stands for 4 \_\_\_\_\_ or \_\_\_\_\_.
3. The 0 in 72,601 stands for 0 \_\_\_\_\_ or \_\_\_\_\_.
4. The 7 in 87,629 stands for 7 \_\_\_\_\_ or \_\_\_\_\_.
5. The 8 in 38,291 stands for 8 \_\_\_\_\_ or \_\_\_\_\_.
6. The 3 in 5,413 stands for 3 \_\_\_\_\_ or \_\_\_\_\_.

Follow the steps to write each number.

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>7. Write 6 in the tens place.<br/>Write 4 in the ten-thousands place.<br/>Write 9 in the ones place.<br/>Write 0 in the hundreds place.<br/>Write 1 in the thousands place.<br/><br/>_____</li> </ol> | <ol style="list-style-type: none"> <li>8. Write 6 in the ones place.<br/>Write 4 in the thousands place.<br/>Write 9 in the hundreds place.<br/>Write 0 in the tens place.<br/>Write 1 in the ten-thousands place.<br/><br/>_____</li> </ol>  |
| <ol style="list-style-type: none"> <li>9. Write 6 in the hundreds place.<br/>Write 4 in the tens place.<br/>Write 9 in the ten-thousands place.<br/>Write 0 in the ones place.<br/>Write 1 in the thousands place.<br/><br/>_____</li> </ol> | <ol style="list-style-type: none"> <li>10. Write 6 in the ten-thousands place.<br/>Write 4 in the hundreds place.<br/>Write 9 in the tens place.<br/>Write 0 in the thousands place.<br/>Write 1 in the ones place.<br/><br/>_____</li> </ol> |



# Reviewing Place Value through 5-Digit Numbers

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<p><b>1.</b> In the number 3,845,</p> <p>the 4 means _____.</p> <p>the 5 means _____.</p> <p>the 3 means _____.</p> <p>the 8 means _____.</p>	<p><b>2.</b> Write the number that has</p> <p>3 in the ones place</p> <p>7 in the thousands place</p> <p>4 in the tens place</p> <p>1 in the hundreds place</p> <p>_____ , _____</p>
<p><b>3.</b> Write 4 in the ten-thousands place.</p> <p>Write 7 in the thousands place.</p> <p>Write 3 in the hundreds place.</p> <p>Write 1 in the tens place.</p> <p>Write 6 in the ones place.</p> <p>_____ , _____</p>	<p><b>4.</b> Write 8 in the tens place.</p> <p>Write 2 in the thousands place.</p> <p>Write 3 in the ones place.</p> <p>Write 5 in the hundreds place.</p> <p>Write 7 in the ten-thousands place.</p> <p>_____ , _____</p>
<p><b>5. a.</b> The 8 in 35,846 stands for 8</p> <p>_____ or _____.</p> <p><b>b.</b> The 0 in 50,981 stands for 0</p> <p>_____ or _____.</p>	<p><b>6. a.</b> The 4 in 89,504 stands for 4</p> <p>_____ or _____.</p> <p><b>b.</b> The 9 in 91,688 stands for 9</p> <p>_____ or _____.</p>

## Reviewing Place Value through 5-Digit Numbers

1. Write 1 in the tens place.  
Write 2 in the ones place.  
Write 4 in the thousands place.  
Write 3 in the hundreds place.  
Write 7 in the ten-thousands place.

\_\_\_\_\_ , \_\_\_\_\_

2. Write 1 in the ones place.  
Write 9 in the thousands place.  
Write 5 in the tens place.  
Write 2 in the ten-thousands place.  
Write 7 in the hundreds place.

\_\_\_\_\_ , \_\_\_\_\_

3.
  - a. The 1 in 23,415 stands for 1 \_\_\_\_\_ or \_\_\_\_\_.
  - b. The 2 in 29,843 stands for 2 \_\_\_\_\_ or \_\_\_\_\_.
  - c. The 7 in 85,720 stands for 7 \_\_\_\_\_ or \_\_\_\_\_.
  - d. The 3 in 44,513 stands for 3 \_\_\_\_\_ or \_\_\_\_\_.
  - e. The 8 in 91,578 stands for 8 \_\_\_\_\_ or \_\_\_\_\_.
  - f. The 4 in 14,029 stands for 4 \_\_\_\_\_ or \_\_\_\_\_.