



### OBJECTIVE

You will be able to find out if one number can be divided evenly into another number.

### VOCABULARY

**factor** – a whole number that will divide into another number evenly with no remainder

### THINGS TO THINK ABOUT

Will 5 divide into 16 evenly (with no remainder)?

$$5 \overline{)16} \quad \begin{array}{r} 3 \text{ R}1 \end{array}$$



No. Dividing 5 into 16 leaves a remainder of 1.

Will 3 divide into 15 evenly?

$$3 \overline{)15} \quad \begin{array}{r} 5 \end{array}$$



Yes. Dividing 3 into 15 does not leave any remainder, because  $15 \div 3 = 5$ .

How do you know if 2 will be a factor of a number? If the number is even, then 2 must be a factor.

Think of ways to determine if 5 and 10 are factors of a number.

### LEARNING

#### **What is a factor?**

A **factor** is a whole number that can be divided evenly into another number. This means there is no remainder when dividing the two numbers.

Is 5 a factor of 20? Yes, because  $20 \div 5 = 4$  and  $5 \times 4 = 20$ .

Is 9 a factor of 30? No, because  $30 \div 9 = 3 \text{ R}3$ . There is a remainder.

#### **Using divisibility rules to find factors**

Divisibility rules can help you find factors of numbers. Here are the divisibility rules you will use the most.

Number	Divisibility Rule	Examples
2	Last digit is even number	4, 10, 68, 356
3	Sum of digits is evenly divisible by 3	12, 39, 123, 1,572
5	Last digit is 5 or 0	45, 100, 205, 13,475
9	Sum of digits is evenly divisible by 9	54, 81, 351, 5,643
10	Last digit is 0	10, 250, 390, 27,630

## LOOK AT THIS

### **Divisibility rules for 2s**

Is 2 a factor of 1,336?

Think: Last digit is 6, an even number.

Therefore, 2 is a factor of 1,336.

Is 2 a factor of 227?

Think: Last digit is 7, an odd number.

Therefore, 2 is not a factor of 227.

### **Divisibility rules for 5s and 10s**

Is 5 a factor of 245?

Think: Last digit is 5.

Therefore, 5 is a factor of 245.

Is 10 a factor of 123?

Think: Last digit is 3.

Therefore, 10 is not a factor of 123.

### **Divisibility rules for 3s and 9s**

Is 3 a factor of 43?

Add the digits:  $4 + 3 = 7$ . Is 3 a factor of 7? No.

Therefore, 3 is not a factor of 43.

Is 9 a factor of 684?

Add the digits:  $6 + 8 + 4 = 18$ . Is 9 a factor of 18? Yes.

Therefore, 9 is a factor of 684.

### **Creating new rules — divisibility rule for 6s**

Sometimes you can combine divisibility rules to make new rules. If a number is divisible by both 2 and 3, that number is divisible by 6.

Is 6 a factor of 138?

Think: Is 2 a factor of 138?      Yes

Think: Is 3 a factor of 138?      Yes

Then 6 is a factor of 138.

Is 6 a factor of 242?

Think: Is 2 a factor of 242?      Yes

Think: Is 3 a factor of 242?      No

Then 6 is not a factor of 242.

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

 <b>Unit</b> <b>1</b>	<b>Lesson 1.1</b> Divisibility Rules - Worksheet A
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**Directions:** Answer the questions below. Then explain the reasons for your answers. Write your answers on the lines.

1. Is 2 a factor of 32? \_\_\_\_\_  
Reason: \_\_\_\_\_
2. Is 5 a factor of 40? \_\_\_\_\_  
Reason: \_\_\_\_\_
3. Is 10 a factor of 35? \_\_\_\_\_  
Reason: \_\_\_\_\_
4. Is 3 a factor of 62? \_\_\_\_\_  
Reason: \_\_\_\_\_
5. Is 9 a factor of 379? \_\_\_\_\_  
Reason: \_\_\_\_\_

**Directions:** Look at the number at the top of each column. Circle the numbers in each column that have the top number as a factor.

2	3	5	9	10
64	12	57	18	80
30	83	105	144	55
21	123	90	837	1,320
49	506	380	521	605