

Name _____

Factors and Multiples

I Can recognize how factors and multiples are related.

Florida's B.E.S.T.

- Algebraic Reasoning 4.AR.3.1, 4.AR.1.1
- Number Sense & Operations 4.NSO.2.1
- Mathematical Thinking & Reasoning MTR.2.1, MTR.3.1, MTR.4.1, MTR.5.1, MTR.7.1



UNLOCK the Problem



Toy animals are sold in sets of 3, 5, 10, and 12. Rafa wants to make a display with 3 animals in each row. Which sets could he buy, if he wants to display all of the animals?

The product of two numbers is a multiple of each number. Factors and multiples are related.

$$\begin{array}{ccccccc} 3 & \times & 4 & = & 12 \\ \uparrow & & \uparrow & & \uparrow \\ \text{factor} & & \text{factor} & & \text{multiple of 3} \\ & & & & \text{multiple of 4} \end{array}$$

One Way Find factors.

Tell whether 3 is a factor of each number.

Think: If a number is divisible by 3, then 3 is a factor of the number.

Is 3 a factor of 3? _____

Is 3 a factor of 5? _____

Is 3 a factor of 10? _____

Is 3 a factor of 12? _____

3 is a factor of _____ and _____.

Another Way Find multiples.

Multiply and make a list. $\begin{array}{ccccccc} & 3 & & & & & \\ 1 \times 3 & 2 \times 3 & 3 \times 3 & 4 \times 3 & 5 \times 3 & & \end{array}$

_____ and _____ are multiples of 3.

So, Rafa could buy sets of _____ and _____ toy animals.

Math Talk

MTR 4.1 Engage in discussions on mathematical thinking.

Explain how you can use what you know about factors to determine whether one number is a multiple of another number.



Common Multiples A **common multiple** is a multiple that is shared by two or more numbers.

Example Find common multiples.

Tony works every 3 days and Svetlana works every 5 days. If Tony works June 3 and Svetlana works June 5, on what days in June will they work together?

Circle multiples of 3. Draw a box around multiples of 5.

June						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

Think: The common multiples have both a circle and a box.

The common multiples are _____ and _____.

So, Tony and Svetlana will work together on June _____ and June _____.

Share and Show

Math Board

1. Multiply to list the next five multiples of 4.

4, _____, _____, _____, _____, _____

1×4



MTR
4.1

Engage in discussions on mathematical thinking.

Discuss how factors and multiples are related. Give an example.

Is the number a factor of 12? Write *yes* or *no*.



2. 3

3. 6

4. 16

5. 18

Is the number a multiple of 6? Write *yes* or *no*.



6. 3

7. 6

8. 16

9. 18

Name _____

On Your Own

Is the number a multiple of 3? Write *yes* or *no*.

10. 4

11. 8

12. 24

13. 38

14. List the next nine multiples of each number. Find the common multiples.

Multiples of 2: 2, _____

Multiples of 8: 8, _____

Common multiples: _____

MTR Find the unknown number.

15. 12, 24, 36, _____

16. 25, 50, 75, 100, _____

Tell whether 20 is a factor and or multiple of the number.

Write *factor*, *multiple*, or *neither*.

17. 10

18. 20

19. 30

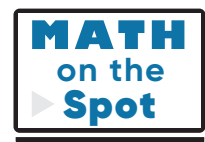
Write *true* or *false*. Explain.

20. Every whole number is a multiple of 1.

21. Every whole number is a factor of 1.

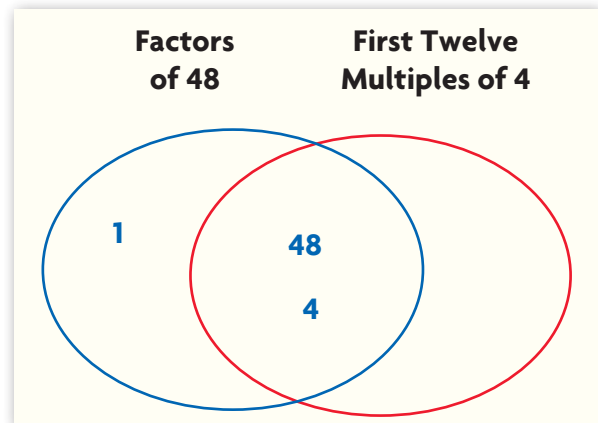
22. Julio wears a blue shirt every 3 days. Larry wears a blue shirt every 4 days. On April 12, both Julio and Larry wore a blue shirt. What is the next date that they will both wear a blue shirt?

April						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					



Problem Solving · Applications

Complete the Venn diagram. Then use it for Problems 23–25.



23. What multiples of 4 are not factors of 48?

24. What factors of 48 are multiples of 4?

25. Look back at Problem 24. Write a similar problem by changing the numbers. Then solve.

26. Kia paid \$10 for two charms. The price of each charm was a multiple of \$2. What are the possible prices of the charms?

27. **MTR** The answer is 9, 18, 27, 36, 45. What is the question?

28. **WRITE**  *Math* How do you know whether a number is a multiple of another number?

29. For problems 29a–29e, select True or False for each statement.

29a. The number 45 is a multiple of 9. ☐ True ☐ False

29b. The number 4 is a multiple of 16. ☐ True ☐ False

29c. The number 33 is a multiple of 3. ☐ True ☐ False

29d. The number 4 is a factor of 28. ☐ True ☐ False

29e. The number 32 is a factor of 8. ☐ True ☐ False

Show the Math

Demonstrate Your Thinking

Factors and Multiples

Go Online

Interactive Examples

Is the number a multiple of 8? Write *yes* or *no*.

1. 4

2. 8

3. 20

4. 40

Think: Since $4 \times 2 = 8$,
4 is a *factor* of 8, not a
multiple of 8.

no

List the next nine multiples of each number.

Find the common multiples.

5. Multiples of 4: 4, _____

Multiples of 7: 7, _____

Common multiples: _____

6. Multiples of 3: 3, _____

Multiples of 9: 9, _____

Common multiples: _____

Tell whether 24 is a factor or multiple of the number.

Write *factor*, *multiple*, or *neither*.

7. 6 _____

8. 36 _____

9. 48 _____

Problem Solving

10. Duy paid \$12 for two magazines. The cost of each magazine was a multiple of \$3. What are the possible prices of the magazines?

11. Nhi bought some shirts for \$12 each. Marge bought some shirts for \$8 each. The girls spent the same amount of money on shirts. What is the least amount they could have spent?

12.  **WRITE** *Math* Write a word problem that can be solved by finding the numbers that have 11 as a factor.

Lesson Check

- 13.** Of the numbers listed below, which are not multiples of 4?

2, 4, 7, 8, 12, 15, 19, 24, 34

- 14.** What number is a common multiple of 6 and 9?

Spiral Review

- 15.** Jenny has 50 square tiles. She arranges the tiles into a rectangular array of 4 rows. How many tiles will be left over?

- 16.** Jerome added two numbers. The sum was 83. One of the numbers was 45. What was the other number?

- 17.** There are 18 rows of seats in the auditorium. There are 24 seats in each row. How many seats are in the auditorium?

- 18.** The population of Riverdale is 6,735. What is the value of the 7 in the number 6,735?