

4-5 Least Common Multiple - Practice and Problem Solving

Identify the first three common multiples of each set of numbers.

7. 1, 7

List the common multiples of each number.

multiples of 1: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, **14**, 15, 16, 17, 18, 19, 20, **21**, ...

multiples of 7: **7**, **14**, **21**, ...

The first three common multiples are 7, 14, and 21.

9. 3, 8

List the common multiples of each number.

multiples of 3: 3, 6, 9, 12, 15, 18, 21, **24**, 27, 30, 33, 36, 39, 42, 45, **48**, 51, 54, 57, 60, 63, 66, 69, **72**, ...

multiples of 8: 8, 16, **24**, 32, 40, **48**, 56, 64, **72**, ...

The first three common multiples are 24, 48, and 72.

11. 3, 9, 18

List the common multiples of each number.

multiples of 3: 3, 6, 9, 12, 15, **18**, 21, 24, 27, 30, 33, **36**, 39, 42, 45, 48, 51, **54**, ...

multiples of 9: 9, **18**, 27, **36**, 45, **54**, ...

multiples of 18: **18**, **36**, **54**, ...

The first three common multiples are 18, 36, and 54.

Find the LCM of each set of numbers.

13. 7, 9

Write the prime factorization of each number.

$$7 = 7$$

$$9 = 3 \times 3$$

Find the product of the prime factors using each common prime factor only once and any remaining factors. In this case, there are no common prime factors.

The LCM is $3 \times 3 \times 7$ or 63.

15. 15, 12

Write the prime factorization of each number.

$$15 = \textcircled{3} \times 5$$

$$12 = 2 \times 2 \times \textcircled{3}$$

Find the product of the prime factors using each common prime factor only once and any remaining factors. In this case, there is a common factor 3, and two 2's and a 5 remaining.

The LCM is $2 \times 2 \times 3 \times 5$ or 60.

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17. 9, 12, 15

Write the prime factorization of each number.

$$9 = \textcircled{3} \times 3$$

$$12 = 2 \times 2 \times \textcircled{3}$$

$$15 = \textcircled{3} \times 5$$

Find the product of the prime factors using each common prime factor only once and any remaining factors. In this case, there is a common factor 3, and two 2's, a 3, and a 5 remaining.

The LCM is $2 \times 2 \times 3 \times 3 \times 5$ or 180.

19. **EVENTS** The cycles for two different events are shown in the table. Each of these events happened in the year 2000. What is the next year in which both will both happen?

Event	Cycle (yr)
Summer Olympics	4
United States Census	10

Write the prime factorization of each number.

$$4 = 2 \times 2$$

$$10 = 2 \times 5$$

$$2 \times 2 \times 5 = 20$$

The next year in which both events will happen is 20 year from 2000. $2000 + 20 = 2020$.

NUMBER SENSE For Exercises 20 and 21, use the following information.

The common multiples of x and 16 are 16, 32, 48, 64, 80,

The common multiples of y and z are 18, 36, 54, 72, 90,

21. Find two different possible values each of y and z .

Sample answer: $y = 2$ and $z = 18$; $y = 2$ and $z = 9$

23. **FIND THE ERROR** D.J. and Trina are finding the LCM of 6 and 8. Who is correct? Explain your reasoning.

D.J.		Trina
$6 = 2 \times 3$ $8 = 2 \times 2 \times 2$ The LCM of 6 and 8 is 2.		$6 = 2 \times 3$ $8 = 2 \times 2 \times 2$ The LCM of 6 and 8 is $2 \times 2 \times 2 \times 3$ or 24.

Trina is correct. Trina found the LCM. D.J. found the GCF.

25. **WRITING IN MATH** Create a problem about a real-world situation in which it would be helpful to find the least common multiple.

Sample answer: Balloons are sold in packages of 20. Balloon weights are sold in packages of 8. What is the least number of balloons and weights Samantha should buy to not have any left over?

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27. What is the least common multiple of 5, 9, and 15?
F 3
G 29
H 45
J 60

Write the prime factorization of each number.

$$5 = \textcircled{5}$$

$$9 = \textcircled{3} \times 3$$

$$15 = \textcircled{3} \times \textcircled{5}$$

The LCM is $3 \times 3 \times 5$ or 45.

The correct answer is H.

29. **FOOD** Sabino bought a carton of 18 eggs for his mom at the grocery store. How many dozen eggs did Sabino buy?

Divide 18 by one dozen, or 12.

$$\begin{array}{r} 1\frac{6}{12} \\ 12 \overline{) 18} \\ \underline{- 12} \\ 6 \end{array}$$

So, $\frac{18}{12}$ can be written as $1\frac{6}{12}$ or $1\frac{1}{2}$.

Sabino bought $1\frac{1}{2}$ dozen eggs for his mom.

Replace each ■ with a number so the fractions are equivalent.

31. $\frac{3}{17} = \frac{9}{\blacksquare}$

$$\frac{3}{17} = \frac{9}{\square}$$

$$\frac{3}{17} = \frac{9}{\bullet},$$

$$\text{so } \frac{3}{17} = \frac{9}{51}.$$

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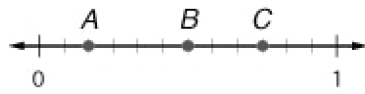
33. $\frac{33}{55} = \frac{3}{\blacksquare}$

$$\frac{33}{55} = \frac{3}{\square}$$

$$\begin{array}{c} \xrightarrow{\div 11} \\ \frac{33}{55} = \frac{3}{5} \\ \xleftarrow{\div 11} \end{array}$$

so $\frac{33}{55} = \frac{3}{5}$.

PREREQUISITE SKILL Choose the letter of the point that represents each fraction.



35. $\frac{3}{4}$

C; C is at the 9th out of 12 tick marks.

$$\frac{9}{12} = \frac{3}{4}$$