



PicScience Presents:

**LEAST COMMON
DENOMINATOR
PRACTICE GUIDE**



How to Make the Most of This Workbook

This little workbook is a great way to help you practice and learn how to find the least common denominator. A unique aspect of the design is that it will help you identify any areas that may be causing trouble with finding the least common denominator.

First, you will go through the tutorial to refresh yourself and review the least common denominator. This tutorial will help you reinforce the basic concepts so you will be ready to practice in the next sections of the workbook.

The workbook then guides you through the exercises based on your scores. You'll check your answers at the end of each exercise.

For example, if you answer more than 7 correctly on the first least common denominator exercise, you'll move to the next least common denominator exercise.

However, if you answer less than 7 problems correctly on the first least common denominator quiz, this may mean that you could benefit from some additional guidance and examples in least common denominators. We will want to make sure that you can find the least common multiple of a problem before we continue to give you more practice on least common denominators. Why? Because, to find the least common denominator, you need to be able to easily find the least common multiple of a fraction.

At the end of each exercise, you'll be given instructions on how to proceed based on your score.

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How to Find a Common Denominator

Tutorial

In order to add, subtract, or compare two fractions, we need to first find a common denominator.

Example) The fractions $\frac{1}{4}$ and $\frac{1}{6}$ have different denominators.

The fraction $\frac{1}{4}$ has a denominator of 4.

The fraction $\frac{1}{6}$ has a denominator of 6.

The way to find a common denominator is to find a pair of fractions that are equivalent to the fractions $\frac{1}{4}$ and $\frac{1}{6}$.

Here is how we will find a common denominator of $\frac{1}{4}$ and $\frac{1}{6}$:

We want to multiply the numerator and denominator of $\frac{1}{4}$ by a different number to make a new fraction that is equivalent to $\frac{1}{4}$.

We want to multiply the numerator and denominator of $\frac{1}{6}$ by a different number to make a new fraction that is equivalent to $\frac{1}{6}$.

We will choose the number for each case such that the two new fractions have the same denominator. $\frac{1}{4}$ and $\frac{1}{6}$

Let us Think: What number is a multiple of both 4 and 6?

The number 12 is the smallest multiple of both 4 and 6.

We will make a common denominator of 12.

Multiply the numerator and denominator by 3 to make an equivalent fraction with a denominator of 12.

$$\frac{1}{4} = \frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

How to Find a Common Denominator (continued)

Multiply the numerator and denominator of $\frac{1}{6}$ by 2 in order to make an equivalent fraction with a denominator of 12.

$$\frac{1}{6} = \frac{1}{6} \times \frac{2}{2} = \frac{2}{12}$$

The fraction $\frac{3}{12}$ is equivalent to the original fraction $\frac{1}{4}$.

The fraction $\frac{2}{12}$ is equivalent to the original fraction $\frac{1}{6}$.

Since $\frac{3}{12}$ and $\frac{2}{12}$ now have the same denominator, we have successfully found a common denominator, and we can add, subtract, or compare these fractions!

We have also found the lowest common denominator because 12 is the smallest multiple of the original denominators (4 and 6).

Least Common Denominator 1

Find the least common denominator.

1. $\frac{3}{5}, \frac{4}{9}, \frac{2}{3}$

2. $\frac{2}{3}, \frac{5}{9}, \frac{7}{12}$

3. $\frac{7}{8}, \frac{11}{12}, \frac{13}{18}$

4. $\frac{1}{6}, \frac{2}{3}, \frac{4}{12}$

5. $\frac{2}{4}, \frac{3}{8}, \frac{1}{2}$

6. $\frac{4}{5}, \frac{6}{10}, \frac{3}{10}$

7. $\frac{2}{5}, \frac{12}{15}, \frac{2}{3}$

8. $\frac{6}{12}, \frac{3}{4}, \frac{1}{3}$

9. $\frac{1}{2}, \frac{7}{9}, \frac{1}{6}$

10. $\frac{3}{20}, \frac{1}{4}, \frac{5}{10}$

Least Common Denominator Solutions 1

1. LCD = 45
2. LCD = 36
3. LCD = 72
4. LCD = 12
5. LCD = 8
6. LCD = 10
7. LCD = 15
8. LCD = 12
9. LCD = 18
10. LCD = 20

***Keep score of your answers. How many did you get right and wrong?**

Option 1:

If you answered 7 or more problems correctly on Least Common Denominator 1, go to the Least Common Denominator 2 on page 9.

Option 2:

If you answered fewer than 7 problems correctly on Least Common Denominator 1, go to Least Common Multiple Tutorial on page 11.

Least Common Denominator 2

Find the least common denominator.

1. $\frac{3}{4}$ and $\frac{9}{10}$

2. $\frac{1}{6}$ and $\frac{3}{8}$

3. $\frac{1}{4}$ and $\frac{5}{12}$

4. $\frac{8}{9}$ and $\frac{1}{18}$

5. $\frac{2}{9}$ and $\frac{5}{6}$

6. $\frac{5}{6}$ and $\frac{3}{16}$

7. $\frac{1}{9}$ and $\frac{7}{12}$

8. $\frac{5}{8}$ and $\frac{8}{9}$

9. $\frac{7}{9}$ and $\frac{1}{3}$

10. $\frac{3}{5}$ and $\frac{3}{10}$

Least Common Denominator Solutions 2

1. 20
2. 24
3. 12
4. 18
5. 18
6. 48
7. 36
8. 72
9. 9
10. 10

***Keep score of your answers. How many did you get right and wrong?**

What Are Multiples?

Tutorial

The **multiples** of a number are the products that you can make from multiplication.

– They are whole numbers.

Number	Multiples	That's Because
5	5 , 10 , 15 , 20 , 25 , 30 , 35 , 40 , 45 , etc.	$5 \times 1 = 5$ $5 \times 2 = 10$ $5 \times 3 = 15$ $5 \times 4 = 20$ $5 \times 5 = 25$ $5 \times 6 = 30$ $5 \times 7 = 35$ $5 \times 8 = 40$ $5 \times 9 = 45$ Etc.

Multiples Cheat Sheet

Let's review the first ten multiples of numbers 2 through 10.

Number	First Ten Multiples
2	2 , 4 , 6 , 8 , 10 , 12 , 14 , 16 , 18 , 20
3	3 , 6 , 9 , 15 , 18 , 21 , 24 , 27 , 30 , 33
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

Least Common Multiples (LCM)

The **least common multiple (LCM)** is the lowest shared multiple between two numbers.

To find the common denominator, we'll use the LCM.

Least Common Multiple Examples

Number Pairs	Multiples	Least Common Multiple
3	3, 6, 9, 12, 15, 18, etc.	12
4	4, 8, 12, 16, 20, 24, etc.	
3	3, 6, 9, 12, 15, 18, etc.	15
5	5, 10, 15, 20, 25, etc.	
6	6, 12, 18, 24, 30, etc.	24
8	8, 16, 24, 32, 40, etc.	

Least Common Multiple 1 Find the least common multiple of the numerators.

1. $\frac{2}{4}$ $\frac{1}{3}$

2. $\frac{4}{5}$ $\frac{2}{4}$

3. $\frac{7}{9}$ $\frac{4}{7}$

4. $\frac{9}{12}$ $\frac{2}{3}$

5. $\frac{1}{5}$ $\frac{15}{19}$

6. $\frac{2}{6}$ $\frac{6}{8}$

7. $\frac{1}{3}$ $\frac{3}{4}$

8. $\frac{1}{4}$ $\frac{2}{3}$

9. $\frac{2}{3}$ $\frac{1}{2}$

10. $\frac{5}{7}$ $\frac{9}{20}$

Least Common Multiple Solutions 1

(these are the least common multiples of the numerators, not denominators)

1. 2

2. 4

3. 28

4. 6

5. 15

6. 3

7. 3

8. 2

9. 2

10. 45

***Keep score of your answers. How many did you get right and wrong?**