

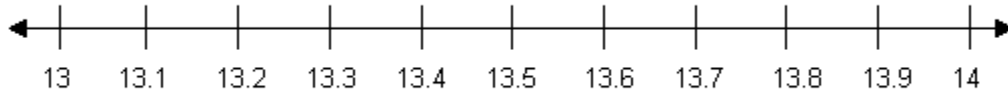


Math Lesson 3
Fractions, Decimals II (Grades 4-6)

Instruction 3-2
Compare and Order Positive and Negative Fractions, Decimals, Mixed Numbers

There is more than one way to compare and order decimals.

Method A: Use a number line to compare 13.6 and 13.4.



13.4 is to the left of 13.6, $13.4 < 13.6$

Method B:

Example 1: Use place-value to compare 3.6 and 3.4.

| Compare the tens. | Compare the ones | Compare the tenths. |
|------------------------|------------------------|------------------------|
| 13.4 Think: 1 = 1 | 13.4 Think: 3 = 3 | 13.4 Think: 4 < 6 |
| 13.6 | 13.6 | 13.6 3.4 < 3.6 |

Example 2: Compare 5.39 and 5.36.

| Compare the ones. | Compare the tenths. | Compare the hundredths. |
|------------------------|------------------------|-------------------------|
| 5.36 Think: 5 = 5 | 5.36 Think: 3 = 3 | 5.36 Think 9 > 6 |
| 5.39 | 5.39 | 5.39 5.39 > 5.36 |

Example 3: Order from least to greatest:

0.234, 0.243, 0.245

| Compare the hundredths. | Compare the thousandths. |
|-------------------------|--------------------------|
| 0.234 | |
| 0.243 | 0.243 |
| 0.245 | 0.245 |

From least to greatest:

0.234, 0.243, 0.245



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Example 4: Order from greatest to least:

0.433, 0.471, and 0.474

0.433

0.471

0.474

0.474

0.471

From greatest to least:

0.474, 0.471, 0.433b

To compare and order fractions and mixed numbers, you must first find the least common denominator of the fractions or mixed numbers that you are comparing. In order to find the lowest common denominator, you must find the least common multiple first.

The **least common multiple** of two or more whole number, the least whole number greater than 0 that is a multiple of each of the numbers.

The **least common denominator** is the least common multiple of the denominators of two or more fractions.

Example 5: Find the least common multiple of 4 and 6.

List multiples of 4 and 6.

4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

Think: $1 \times 4 = 4$; $2 \times 4 = 8$; $3 \times 4 = 12$;

$4 \times 4 = 16$; $4 \times 5 = 20$; $4 \times 6 = 24$

6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Think: $1 \times 6 = 6$; $2 \times 6 = 12$; $3 \times 6 = 18$;

$4 \times 6 = 24$; $5 \times 6 = 30$; $6 \times 6 = 36$

Find the common multiples.

4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

6: 6, 12, 18, 24, 30, 36, 42, 48, 54, 60

Some common multiples of 4 and 6 are 12, 24, and 36. The least common multiple of 4 and 6 is 12.



Example 6: Order the fractions from least to greatest.

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

Find the least common multiple.

2: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20

3: 3, 6, 9, 12, 15, 18, 21, 24, 27, 30

4: 4, 8, 12, 16, 20, 24, 28, 32, 36, 40

Least common multiple is 12.

Rewrite the fractions using the least common denominator.

$$\frac{1}{2} \times \frac{6}{6} = \frac{6}{12}; \quad \frac{1}{3} \times \frac{4}{4} = \frac{4}{12}; \quad \frac{1}{4} \times \frac{3}{3} = \frac{3}{12}$$

Compare and order the fractions by looking at the numerators.

$$\frac{3}{12} < \frac{4}{12} < \frac{6}{12} \quad \text{OR} \quad \frac{1}{4} < \frac{1}{3} < \frac{1}{2}$$

Example 7: Order the mixed number from least to greatest.

$$1\frac{3}{5}; \frac{2}{2}; 2.1$$

Change the decimal into a fraction.

$$2.1 = 2\frac{1}{10}$$

Find the least common multiple.

2: 2, 4, 6, 8, 10, 12

5: 5, 10, 15, 20, 25

10: 10, 20, 30, 40, 50

Least common multiple is 10.

Rewrite the fractions using the least common denominator.

$$1\frac{3}{5} = \frac{8}{5} \times \frac{2}{2} = \frac{16}{10}; \quad \frac{2}{2} \times \frac{5}{5} = \frac{10}{10}; \quad 2\frac{1}{10} = \frac{21}{10}$$



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Compare and order the fractions by looking at the numerators.

$$\frac{10}{10} < \frac{16}{10} < \frac{21}{10} \quad \text{OR} \quad \frac{2}{2} < 1\frac{3}{5} < 2.1$$