Comparing and Ordering Decimals

Comparing and Ordering Decimals: Apply, Compare, and Design

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

Compare the same places from left to right. Zeros on the right do not change a decimal: $0.6 = 0.600 > 0.594$, because 6 tenths exceed 5 tenths. To order several decimals, align their points and compare each place.

Worked example

Order $2.501, 2.51, 2.5$ from least to greatest using aligned place values.

1. Pad without changing value: $2.501, 2.510, 2.500$.

2. Thousandth counts in increasing order are $2500, 2501, 2510$, so $2.5 < 2.501 < 2.51$.

Answer: $2.5 < 2.501 < 2.51$.

Practice Problems

Show your thinking.

1. Lengths are $1.275, 1.3, 1.295$ m. Put the lengths in order, then find the gap between longest and shortest.

2. Lengths are $0.705, 0.75, 0.715$ m. Put the lengths in order, then find the gap between longest and shortest.

3. Choose the middle value among $8.4, 8.04, 8.404$ and show it lies between the others.

4. A student orders these by the number of decimal digits: $3.909, 3.99, 3.9$. Write the correct least-to-greatest order.

5. A machine accepts masses at least 0.245 kg but less than 0.250 kg. Do 0.245, 0.249, and 0.25 kg each qualify?

6. Design three different measurements in thousandths strictly between 0.61 m and 0.62 m. List them in order.

7. A 3.5 m board must be longer than a 3.495 m space. Does it qualify, and by how much?

8. Two runners record 12.08 s and 12.008 s. Lower time wins. Name the winning time and its advantage.

Answer Key

1. $1.275 < 1.295 < 1.3$. Gap: 0.025 m.
2. $0.705 < 0.715 < 0.75$. Gap: 0.045 m.
3. $8.04 < 8.4 < 8.404$.
4. $3.9 < 3.909 < 3.99$.
5. 0.245 and 0.249 qualify; 0.25 does not.
6. For example, $0.611, 0.612, 0.613$ m.
7. Yes; by 0.005 m.
8. 12.008 s wins by 0.072 s.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. Pad without changing value: $1.275, 1.300, 1.295$.
2. Thousandth counts in increasing order are $1275, 1295, 1300$, so $1.275 < 1.295 < 1.3$.
3. $1.3 - 1.275 = 0.025$ m.

Problem 2

1. Pad without changing value: $0.705, 0.750, 0.715$.
2. Thousandth counts in increasing order are $705, 715, 750$, so $0.705 < 0.715 < 0.75$.
3. $0.75 - 0.705 = 0.045$ m.

Problem 3

1. Pad without changing value: $8.400, 8.040, 8.404$.
2. Thousandth counts in increasing order are $8040, 8400, 8404$, so $8.04 < 8.4 < 8.404$.

Problem 4

1. Pad without changing value: $3.909, 3.990, 3.900$.
2. Thousandth counts in increasing order are $3900, 3909, 3990$, so $3.9 < 3.909 < 3.99$.

Problem 5

1. The test is $0.245 \le m < 0.250$.
2. 0.245 equals the included lower limit; $0.249 < 0.250$; $0.25 = 0.250$ reaches the excluded upper limit.

Problem 6

1. The bounds are 0.610 m and 0.620 m.
2. $610 < 611 < 612 < 613 < 620$ thousandths verifies the three measurements.

Problem 7

1. $3.5 = 3.500 > 3.495$.
2. $3.500 - 3.495 = 0.005$ m, so it is longer.

Problem 8

1. $12.008 < 12.080$, so 12.008 s is faster.
2. $12.080 - 12.008 = 0.072$ s.

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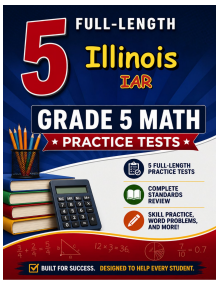

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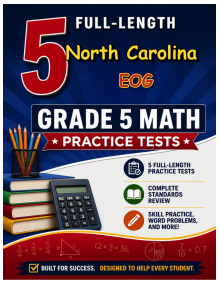

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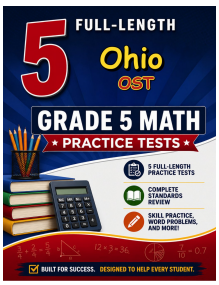

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