LESSON MAKER PRO

Number Line Detective

Compare real numbers using smart benchmarks.

GRADE 8 · 8.NS.1.c

8.NS.1.c "Use multiple strategies (e.g., benchmarks, number line, equivalency) to compare and order no more than five real numbers expressed as integers, fractions (proper or improper), decimals, mixed numbers, percents..."

NAME _____ DATE _____

COMPARE WITH BENCHMARKS

Rewrite each number as a decimal, fraction, or benchmark you know, then compare their values. A number farther left on a number line is smaller, so a negative number with a larger distance from 0 is less.

WORKED EXAMPLE

Order -sqrt(121), -3.6, and -13/4 from least to greatest.

1. -sqrt(121) = -11.
2. -13/4 = -3.25.
3. Compare -11, -3.6, and -3.25 on a number line.

Answer: -sqrt(121), -3.6, -13/4

PRACTICE 6 problems

1 Order 3/5, 0.58, 1, and 62% from least to greatest.

ANSWER _____

2 Write <, >, or = to make the statement true: -sqrt(49) ___ -6.8

ANSWER _____

3 Order sqrt(2), 1.4, 5/4, and 120% from greatest to least.

ANSWER _____

4 Order -sqrt(16), -3.9, -15/4, and -370% from least to greatest.

ANSWER _____

5 Which number is greatest: pi, 3.14, sqrt(10), or 22/7?

ANSWER _____

6 Order 0.39, 2/5, 41%, and 4.2 x 10^-1 from greatest to least.

ANSWER _____

APPLY IT Show your work

1 At a gaming club, four players record these speedrun times in minutes: Noah, 2.18; Maya, 2 1/5; Jordan, sqrt(5); Lee, 2.3 x 10^0. List the players from fastest to slowest.

WORK SPACE

ANSWER _____

2 A design app offers four scale settings for a poster: 3.05, 310%, pi, and sqrt(10). Order the scale settings from least to greatest.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Order -pi, -sqrt(10), -3.15, -22/7, and -3.1 from least to greatest. Then write two comparison facts that justify your order.

_____

_____

ANSWER KEY

Number Line Detective

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Order 3/5, 0.58, 1, and 62% from least to greatest.	**0.58, 3/5, 62%, 1**
2	Write <, >, or = to make the statement true: -sqrt(49) ___ -6.8	**-sqrt(49) < -6.8**
3	Order sqrt(2), 1.4, 5/4, and 120% from greatest to least.	**sqrt(2), 1.4, 5/4, 120%**
4	Order -sqrt(16), -3.9, -15/4, and -370% from least to greatest.	**-sqrt(16), -3.9, -15/4, -370%**
5	Which number is greatest: pi, 3.14, sqrt(10), or 22/7?	**sqrt(10)**
6	Order 0.39, 2/5, 41%, and 4.2 x 10^-1 from greatest to least.	**4.2 x 10^-1, 41%, 2/5, 0.39**

PART 2 · APPLY IT

1. **Noah, Maya, Jordan, Lee** Rewrite 2 1/5 as 2.2 and 2.3 x 10^0 as 2.3. Since 2.2^2 < 5 < 2.3^2, sqrt(5) is between 2.2 and 2.3.
2. **3.05, 310%, pi, sqrt(10)** Rewrite 310% as 3.10. Use pi about 3.14 and note that sqrt(10) is between 3.16 and 3.17.

CHALLENGE

Ascending: -sqrt(10), -3.15, -22/7, -pi, -3.1. Since 3.16^2 = 9.9856 and 3.17^2 = 10.0489, sqrt(10) is between 3.16 and 3.17. Also, 22/7 is about 3.1429, which is greater than pi, about 3.1416.

Accept equivalent forms, such as 0.6 for 3/5, when the ordering is correct. For written justifications, accept accurate decimal conversions, benchmark comparisons, number-line reasoning, or squared-value comparisons for radicals.