Place Values and Decimals

Key idea

A digit's value depends on its place. The same digit can mean very different amounts in different positions.

Steps

1. Look at the digit you care about.
2. Name its place: ones, tens, tenths, hundredths, and so on.
3. Write its value, not just the digit.
4. Compare left to right.

Place-value reminder

- In 347, the 4 means 40.
- In 5.3, the 3 means 0.3.
- In 2.74, the 7 means 0.7.
- In 2.74, the 4 means 0.04.

Common mistake

Saying the value is just the digit. In 862, the digit is 6, but its value is 60. In 2.74, the digit is 7, but its value is 0.7.

Try these

1. What is the value of the 4 in 347?
2. What is the value of the 5 in 5.3?
3. What is the value of the 4 in 3.48?

Place Values and Decimals

Example 1: value of a digit

Find the value of the 6 in 862.

$$862 = 800 + 60 + 2$$

So the value of the 6 is 60.

Example 2: decimal place value

Find the value of the 7 in 2.74.

$$2.74 = 2 + 0.7 + 0.04$$

So the value of the 7 is 0.7.

Try these

1. Find the value of the 9 in 291.
2. Find the value of the 6 in 4.63.
3. Find the value of the 2 in 8.205.

Place Values and Decimals

Comparing numbers

When two numbers have the same whole-number part, compare the decimal places next.

Example 3: compare decimals

Which is greater: 0.8 or 0.08?

$$0.8 = 8 \text{ tenths}$$

$$0.08 = 8 \text{ hundredths}$$

A tenth is bigger than a hundredth, so $0.8 > 0.08$.

Example 4: order numbers

Order $3.2,\ 2.9,\ 3.02$ from smallest to largest.

$$2.9 < 3.02 < 3.2$$

So the order is $2.9,\ 3.02,\ 3.2$.

Common mistake

Thinking more digits means a bigger decimal. For example, 0.08 is not bigger than 0.8. It is smaller because 8 hundredths is less than 8 tenths.

Place Values and Decimals

Partitioning numbers

Split a number into place-value parts.

Example 5: whole number

Partition 407.

$$407 = 400 + 0 + 7$$

Usually we write this as $407 = 400 + 7$.

Example 6: decimal number

Partition 3.48.

$$3.48 = 3 + 0.4 + 0.08$$

That is 3 ones, 4 tenths, and 8 hundredths.

Try these

1. Which is greater: 45 or 54?
2. Order from smallest to largest: $0.5,\ 0.05,\ 0.15$.
3. Partition 4.7.