

Decimal Building Blocks

Build and break apart decimals through the thousandths place.

GRADE 5 • MA.5.NSO.1.3

MA.5.NSO.1.3 "Compose and decompose multi-digit numbers with decimals to the thousandths in multiple ways using the values of the digits in each place. Demonstrate the compositions or decompositions using objects, drawings and expressions or equations."

NAME _____

DATE _____

VALUE OF EVERY DIGIT

Each digit has a value based on its place. You can decompose a decimal by adding the value of each digit. You can also regroup parts, as long as the total stays the same.

WORKED EXAMPLE

Decompose 48.306 in two ways.

1. Read each digit by its place.
2. Write the digit values: $40 + 8 + 0.3 + 0.006$.
3. Regroup the whole-number part: $48 + 0.306$.

Answer: $48.306 = 40 + 8 + 0.3 + 0.006$;
 $48.306 = 48 + 0.306$

PRACTICE 6 problems

- 1** Write 63.482 as an expanded equation using every nonzero digit value.

ANSWER _____

- 2** Use dots or disks in a place-value chart to show 7 hundreds, 2 ones, 5 tenths, and 9 thousandths. Then write the decimal.

ANSWER _____

- 3** Write two equations that decompose 915.070. First use digit values. Then group the decimal part.

ANSWER _____

- 4** Use a place-value chart or an equation to show the value of each digit in 12.345.

ANSWER _____

- 5** Compose a decimal to the thousandths place using 3 thousands, 6 tens, 4 tenths, and 8 hundredths.

ANSWER _____

- 6** Write two different decompositions of 58.624. One must separate each digit value, and one may group the whole number and decimal.

ANSWER _____

APPLY IT Show your work

- 1** At coding club, Eli programs a robot to travel 14.608 meters. Write two equations that decompose the distance, one using each digit value and one grouping the whole number and decimal.

WORK SPACE

ANSWER _____

- 2** Mina is editing a music track that lasts 3 minutes, 4 tenths of a minute, 7 hundredths of a minute, and 2 thousandths of a minute. What is the total length? Write an expanded equation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A decimal has 4 thousands, 0 hundreds, 7 tens, 2 ones, 5 tenths, 0 hundredths, and 9 thousandths. Write the decimal and two different decomposition equations.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Write 63.482 as an expanded equation using every nonzero digit value.	$63.482 = 60 + 3 + 0.4 + 0.08 + 0.002$
2	Use dots or disks in a place-value chart to show 7 hundreds, 2 ones, 5 tenths, and 9 thousandths. Then write the decimal.	702.509
3	Write two equations that decompose 915.070. First use digit values. Then group the decimal part.	$915.070 = 900 + 10 + 5 + 0.07$; $915.070 = 915 + 0.070$
4	Use a place-value chart or an equation to show the value of each digit in 12.345.	$12.345 = 10 + 2 + 0.3 + 0.04 + 0.005$
5	Compose a decimal to the thousandths place using 3 thousands, 6 tens, 4 tenths, and 8 hundredths.	3,060.480
6	Write two different decompositions of 58.624. One must separate each digit value, and one may group the whole number and decimal.	$58.624 = 50 + 8 + 0.6 + 0.02 + 0.004$; $58.624 = 58 + 0.624$

PART 2 • APPLY IT

- $14.608 = 10 + 4 + 0.6 + 0.008$; $14.608 = 14 + 0.608$** The 6 is worth 0.6, the 0 has no value, and the 8 is worth 0.008. The whole-number part can be grouped as 14.
- 3.472 minutes; $3.472 = 3 + 0.4 + 0.07 + 0.002$** Place each amount in its matching place-value position. Add 3 ones, 4 tenths, 7 hundredths, and 2 thousandths.

CHALLENGE

$4,072.509$; $4,072.509 = 4,000 + 70 + 2 + 0.5 + 0.009$; $4,072.509 = 4,072 + 0.509$

Accept equivalent decompositions that have the same total, including forms that include zero-value places, such as 0.070 or 0.008. Students may use place-value drawings, disks, or charts when a drawing is requested.