

Decimal Code Breakers

Read, write, and expand decimals through thousandths.

GRADE 5 • 5.NBT.A.3a

CCSS.Math.Content.5.NBT.A.3a "Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$."

NAME _____

DATE _____

PLACE VALUE MATTERS

Each digit in a decimal has a value based on its place. Read the decimal point as "and," then name the digits to the right as tenths, hundredths, or thousandths. In expanded form, show the value of each digit by multiplying it by its place value.

WORKED EXAMPLE

Write 186.254 in number name and expanded form.

1. The digits left of the decimal are 186, or one hundred eighty-six.
2. The digits right of the decimal are 254 thousandths.
3. Number name: one hundred eighty-six and two hundred fifty-four thousandths.
4. Expanded form: $1 \times 100 + 8 \times 10 + 6 \times 1 + 2 \times (1/10) + 5 \times (1/100) + 4 \times (1/1000)$.

Answer: one hundred eighty-six and two hundred fifty-four thousandths; $1 \times 100 + 8 \times 10 + 6 \times 1 + 2 \times (1/10) + 5 \times (1/100) + 4 \times (1/1000)$

PRACTICE 6 problems

- 1** Write 52.708 in number name.

ANSWER _____

- 2** Write six hundred three and nineteen thousandths as a base-ten numeral.

ANSWER _____

- 3** Write this expanded form as a base-ten numeral: $4 \times 100 + 2 \times 10 + 5 \times 1 + 6 \times (1/10) + 0 \times (1/100) + 3 \times (1/1000)$.

ANSWER _____

- 4** Write 19.470 in expanded form.

ANSWER _____

- 5** Write 0.905 in number name.

ANSWER _____

- 6** Write seventy and two hundredths as a base-ten numeral and in expanded form.

ANSWER _____

APPLY IT Show your work

- 1** At a swim meet, Jada finished a race in 12.365 seconds. Write her time in number name and expanded form.

WORK SPACE

ANSWER _____

- 2** A game update has a size of three and four hundred six thousandths gigabytes. Write the size as a base-ten numeral and in expanded form.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A decimal has 7 hundreds, 0 tens, 4 ones, 9 tenths, 0 hundredths, and 6 thousandths. Write the decimal in base-ten numeral, number name, and expanded form. Then explain why the two zeros matter.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Write 52.708 in number name.	fifty-two and seven hundred eight thousandths
2	Write six hundred three and nineteen thousandths as a base-ten numeral.	603.019
3	Write this expanded form as a base-ten numeral: $4 \times 100 + 2 \times 10 + 5 \times 1 + 6 \times (1/10) + 0 \times (1/100) + 3 \times (1/1000)$.	425.603
4	Write 19.470 in expanded form.	$1 \times 10 + 9 \times 1 + 4 \times (1/10) + 7 \times (1/100) + 0 \times (1/1000)$
5	Write 0.905 in number name.	nine hundred five thousandths
6	Write seventy and two hundredths as a base-ten numeral and in expanded form.	70.020; $7 \times 10 + 0 \times 1 + 0 \times (1/10) + 2 \times (1/100) + 0 \times (1/1000)$

PART 2 • APPLY IT

- twelve and three hundred sixty-five thousandths; $1 \times 10 + 2 \times 1 + 3 \times (1/10) + 6 \times (1/100) + 5 \times (1/1000)$** Read 12 as twelve and read 365 as thousandths. Match each digit to its place value in expanded form.
- 3.406; $3 \times 1 + 4 \times (1/10) + 0 \times (1/100) + 6 \times (1/1000)$** Write 3 to the left of the decimal point and 406 to the right. Include 0 hundredths to keep the 6 in the thousandths place.

CHALLENGE

704.906; seven hundred four and nine hundred six thousandths; $7 \times 100 + 0 \times 10 + 4 \times 1 + 9 \times (1/10) + 0 \times (1/100) + 6 \times (1/1000)$. The zeros hold the tens and hundredths places so the other digits keep their correct values.

Accept equivalent expanded forms that correctly show each nonzero digit's place value. Accept number names with or without hyphens in compound numbers, as long as the place-value wording is correct.