LESSON MAKER PRO

Tiny Power Moves

Write negative powers of 10 in fraction and decimal form.

GRADE 7 · 7.NS.1.b

7.NS.1.b "Represent a power of 10 with a negative exponent in fraction and decimal form."

NAME _____ DATE _____

NEGATIVE POWERS OF 10

For 10 raised to a negative exponent, write 1 over a power of 10. The exponent tells how many places to move the decimal point left from 1.

WORKED EXAMPLE

Write 10^-6 as a fraction and a decimal.

1. 10^-6 = 1/10^6.
2. 10^6 = 1,000,000.
3. So 10^-6 = 1/1,000,000 = 0.000001.

Answer: 1/1,000,000 and 0.000001

PRACTICE 6 problems

1 Write 10^-1 as a fraction and a decimal.

ANSWER _____

2 Write 10^-2 as a fraction and a decimal.

ANSWER _____

3 Write 10^-3 as a fraction and a decimal.

ANSWER _____

4 Write 10^-4 as a fraction and a decimal.

ANSWER _____

5 Write 10^-5 as a fraction and a decimal.

ANSWER _____

6 Write 10^-7 as a fraction and a decimal.

ANSWER _____

APPLY IT Show your work

1 In a coding game, the chance of finding a rare item is 10^-8. Write this chance as a fraction and a decimal.

WORK SPACE

ANSWER _____

2 A music app measures a tiny sound level as 10^-9 of a reference level. Write 10^-9 as a fraction and a decimal.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Write 10^-12 as a fraction and a decimal. Then explain how the exponent helped you place the decimal point.

_____

_____

ANSWER KEY

Tiny Power Moves

GRADE 7 · 7.NS.1.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 10^-1 as a fraction and a decimal.	**1/10 and 0.1**
2	Write 10^-2 as a fraction and a decimal.	**1/100 and 0.01**
3	Write 10^-3 as a fraction and a decimal.	**1/1,000 and 0.001**
4	Write 10^-4 as a fraction and a decimal.	**1/10,000 and 0.0001**
5	Write 10^-5 as a fraction and a decimal.	**1/100,000 and 0.00001**
6	Write 10^-7 as a fraction and a decimal.	**1/10,000,000 and 0.0000001**

PART 2 · APPLY IT

1. **1/100,000,000 and 0.00000001** Use 10^-8 = 1/10^8. Since 10^8 is 100,000,000, the decimal has seven zeros between the decimal point and the 1.
2. **1/1,000,000,000 and 0.000000001** Write the negative power as 1/10^9. Then write 1 divided by 1,000,000,000 in decimal form.

CHALLENGE

1/1,000,000,000,000 and 0.000000000001. The exponent 12 means the denominator is 10^12, so the decimal places the 1 twelve places to the right of the decimal point.

Accept equivalent fraction forms with a denominator of 10, 100, 1,000, and so on. Decimal answers must have the correct number of zeros before the 1.