LESSON MAKER PRO

Power of Ten Paths

Track zeros and decimal points with powers of 10.

GRADE 5 · 5.NBT.A.2

CCSS.Math.Content.5.NBT.A.2 "Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10..."

NAME _____ DATE _____

THE BIG IDEA

When you multiply a whole number by 10^n, the product has n more zeros at the end. When you multiply a decimal by 10^n, move the decimal point n places right. When you divide by 10^n, move the decimal point n places left.

WORKED EXAMPLE

Find 0.36×10^4.

1. $10^4 = 10{,}000$.
2. Move the decimal point 4 places right: 0.36 -> 3600.
3. $0.36 \times 10^4 = 3{,}600$.

Answer: 3,600

PRACTICE 6 problems

1 Find 34×10^3.

ANSWER _____

2 Find 0.58×10^2.

ANSWER _____

3 Find $9.204 / 10^3$.

ANSWER _____

4 Find 7×10^6.

ANSWER _____

5 Find $65.1 / 10^2$.

ANSWER _____

6 Write 1,000,000 as a power of 10.

ANSWER _____

APPLY IT Show your work

1 A student records 0.032 gigabytes of audio for each short sound effect in a game. The student makes 10^3 sound effects. How many gigabytes of audio are recorded?

WORK SPACE

ANSWER _____

2 At a robotics contest, a robot travels 63.5 meters in a test. Since 1 kilometer = 10^3 meters, how many kilometers does the robot travel?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Ava says that $8.09 \times 10^2 = 8.0900$ because multiplying by 10 adds zeros. Is Ava correct? Explain your reasoning and give the correct product.

WORK SPACE AND ANSWER

ANSWER KEY

Power of Ten Paths

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find 34×10^3.	**34,000**
2	Find 0.58×10^2.	**58**
3	Find $9.204 / 10^3$.	**0.009204**
4	Find 7×10^6.	**7,000,000**
5	Find $65.1 / 10^2$.	**0.651**
6	Write 1,000,000 as a power of 10.	**10^6**

PART 2 · APPLY IT

1. **32 gigabytes** Compute 0.032×10^3 by moving the decimal point 3 places right. The product is 32.
2. **0.0635 kilometer** Convert meters to kilometers by dividing 63.5 by 10^3. Move the decimal point 3 places left.

CHALLENGE

No. $8.09 \times 10^2 = 809$ because the decimal point moves 2 places right.

Accept equivalent forms with extra zeros after a decimal, such as 0.6510 for 0.651. For the challenge, accept explanations that state the decimal point moves right when multiplying by a power of 10.