



Place value and powers of ten

GRADE 5 MATH

Name _____

Date _____

For every question, say which way and how many places the digits move. Do not add or remove zeros.

WORKED EXAMPLE

Digits move; the point stays. One place left is ten times as much, one place right is one tenth. The exponent of 10 says how many places.

1. Work out 3.4×10

FLUENCY

Show your thinking

Answer

2. Work out 3.4×100

FLUENCY

Show your thinking

Answer

3. Work out 3.4×1000

FLUENCY

Show your thinking

Answer

4. Work out $62 \div 10$

FLUENCY

Show your thinking

Answer

5. Work out $62 \div 100$

FLUENCY

Show your thinking

Answer

6. Work out $62 \div 1000$

FLUENCY

Show your thinking

Answer

7. Write 10^1 , 10^2 , 10^3 and 10^4 as ordinary numbers. How does the exponent relate to the zeros?

FLUENCY

Show your thinking

Answer

8. Ben says $10^3 = 30$. What has he done, and what is 10^3 ? What would his method give for 10^0 ?

REASONING

Show your thinking

Answer

9. Write 450, 45, 4.5 and 0.45 in a column. What is the same about all four, and what is different?

REASONING

Show your thinking

Answer

- 10.** The 8 in one number is worth 800. In another it is worth 0.8. How many places apart are they, and how many times bigger is the first?

APPLICATION

Show your thinking

Answer

- 11.** Work out 2.7×1000 , and then divide your answer by 1000. Explain why you get back to where you started.

APPLICATION

Show your thinking

Answer

- 12.** Explain why the decimal point cannot be the thing that moves.

REASONING

Show your thinking

Answer

- 13.** Why did “multiplying by 10 adds a zero” work for two whole years before it failed?

REASONING

Show your thinking

Answer