

Scientific Notation Detectives

Grade 8 | 48 tasks

Develop both calculation and explanation when working with positive values in scientific notation. Learners convert in both directions, compare values and repair a notation rule.

12 tasks each: write, convert, compare, repair

Starter and Stretch questions with answer keys

4 answer-code checks using existing answers

Model a positive and a negative exponent. Select a few questions for a warm-up, guided practice or an independent check. Use the answer-code mini-checks after learners have solved the linked tasks.

The following pages are actual excerpts from the resource.

A4 + US Letter | Version 1.3

Printable PDF with teacher support

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Year-round edition | Student practice | A4

P09-01**Starter**

Write the positive number in normalized scientific notation.

0.005

Answer / explanation:

P09-02**Starter**

Write the positive number in normalized scientific notation.

0.083

Answer / explanation:

P09-03**Starter**

Write the positive number in normalized scientific notation.

0.65

Answer / explanation:

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P09-13

Starter

Write the scientific-notation number in ordinary decimal notation.

$$2.9 \times 10^{-3}$$

Answer / explanation:

P09-14

Starter

Write the scientific-notation number in ordinary decimal notation.

$$8.1 \times 10^{-2}$$

Answer / explanation:

P09-15

Starter

Write the scientific-notation number in ordinary decimal notation.

$$6.9 \times 10^{-1}$$

Answer / explanation:

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P09-25 | Starter

Compare the positive numbers. Write $<$, $=$ or $>$ and explain.

$$5.1 \times 10^{-2} \quad ? \quad 4.9 \times 10^{-2}$$

Answer / explanation:

P09-26 | Starter

Compare the positive numbers. Write $<$, $=$ or $>$ and explain.

$$2.1 \times 10^{-2} \quad ? \quad 2.10 \times 10^{-2}$$

Answer / explanation:

P09-27 | Starter

Compare the positive numbers. Write $<$, $=$ or $>$ and explain.

$$5.7 \times 10^{-3} \quad ? \quad 5.7 \times 10^{-2}$$

Answer / explanation:

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Year-round edition | Student practice | A4

P09-43**Stretch**

The proposed scientific notation has one defect. Name the broken rule and repair the notation.

Given: 0.00000011 Proposed: 11×10^{-8}

Answer / explanation:

P09-44**Stretch**

The proposed scientific notation has one defect. Name the broken rule and repair the notation.

Given: 0.0000056 Proposed: 0.56×10^{-5}

Answer / explanation:

P09-45**Stretch**

The proposed scientific notation has one defect. Name the broken rule and repair the notation.

Given: 0.00033 Proposed: 3.3×10^{-5}

Answer / explanation:

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P09-43

Stretch

Answer: 1.1×10^{-7}

The coefficient must be less than 10. Correct: 1.1×10^{-7} . Its value is 0.00000011.

P09-44

Stretch

Answer: 5.6×10^{-6}

The coefficient must be at least 1. Correct: 5.6×10^{-6} . Its value is 0.0000056.

P09-45

Stretch

Answer: 3.3×10^{-4}

The printed exponent does not preserve the given ordinary value. Correct: 3.3×10^{-4} . Its value is 0.00033.

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Use your answers to P09-25 through P09-28. Choose the matching sign in each row and copy its digit. Keep all four digits.

Mini-check 3

P09-25

$< \rightarrow 6$

$= \rightarrow 8$

$> \rightarrow 0$

P09-26

$> \rightarrow 9$

$= \rightarrow 2$

$< \rightarrow 1$

P09-27

$= \rightarrow 3$

$> \rightarrow 5$

$< \rightarrow 7$

P09-28

$< \rightarrow 1$

$= \rightarrow 4$

$> \rightarrow 6$

Code: _____

Scientific Notation Detectives

Year-round edition | Teacher answer key | A4

P09-25 | Starter

Answer: >

$$5.1 \times 10^{-2} = 0.051$$

$$4.9 \times 10^{-2} = 0.049$$

Compare the exact values. Trailing decimal zeros do not change a value.

P09-26 | Starter

Answer: =

$$2.1 \times 10^{-2} = 0.021$$

$$2.10 \times 10^{-2} = 0.0210$$

Compare the exact values. Trailing decimal zeros do not change a value.

P09-27 | Starter

Answer: <

$$5.7 \times 10^{-3} = 0.0057$$

$$5.7 \times 10^{-2} = 0.057$$

Compare the exact values. Trailing decimal zeros do not change a value.