

ADDING AND SUBTRACTING WITH SCIENTIFIC NOTATION

Leena needs to add the expressions written in scientific notation shown. Use the example to answer a-c.

a. Write each of the values in standard form and find the sum.

$$\begin{array}{r} 1.5 \times 10^3 \\ + 2.2 \times 10^3 \\ \hline \end{array}$$

b. Write the sum in scientific notation.

c. Using your solution in b, how could Leena have found the sum without writing the expressions in standard notation first?

ADDING AND SUBTRACTING WITH SAME POWERS OF TEN

- If two scientific notation expressions have the same _____ of 10, add or subtract the first part of each expression and keep the power of 10.
- Remember to check that the final solution written in scientific notation is a product of a number between _____ and a power of ten.

In 1-3, find the sum or difference. Write your answers in scientific notation.

1. $(6.2 \times 10^8) + (2.3 \times 10^8)$	2. $(9 \times 10^{-3}) - (4 \times 10^{-3})$	3. $(1.9 \times 10^{-5}) + (5.42 \times 10^{-5})$
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4. Natasha needs to find the sum of 8.65×10^4 and 43,000.

a. Set up the problem by writing both numbers in scientific notation. Then, find the sum.

b. What do you notice about the sum, and how can you make sure it is written correctly in scientific notation?

At times it may be necessary to rewrite one of the expressions so that each has the same power of ten. In each pair of expressions below, practice rewriting one of the expressions to have the same power of ten as the other.

$$7.5 \times 10^3 \text{ and } 2.6 \times 10^4$$

$$1.32 \times 10^{-5} \text{ and } 8 \times 10^{-6}$$

In 5-9, find the sum or difference. Write all answers in scientific notation.

<p>5.</p> $(9 \times 10^5) - (8 \times 10^4)$ <p style="text-align: center;">_____</p>	<p>6.</p> $(4.7 \times 10^7) + (3.4 \times 10^6)$ <p style="text-align: center;">_____</p>	<p>7.</p> $(7.2 \times 10^{-3}) - (6.8 \times 10^{-4})$ <p style="text-align: center;">_____</p>
<p>8.</p> $(6.4 \times 10^5) + 320,000$ <p style="text-align: center;">_____</p>	<p>9.</p> $0.00054 - (3.2 \times 10^{-4})$ <p style="text-align: center;">_____</p>	

Apply your knowledge of adding and subtracting with powers of ten to answer 10-11.

<p>10. Summerville has a population of 430,000 people, while Eagleton has a population of 5.7×10^5 people. What is the difference in population between the two towns?</p> <p style="text-align: right;">Scientific: _____</p> <p style="text-align: right;">Standard: _____</p>	<p>11. Kristin is using paper for an art project that is 0.025 mm thick. If she glues a layer of the paper onto a construction board with a thickness of 7×10^{-2} mm, what will the total thickness of the paper and the construction board be?</p> <p style="text-align: right;">Scientific: _____</p> <p style="text-align: right;">Standard: _____</p>
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