



Astronomers rely on scientific notation in order to work with 'big' things in the universe. The rules for using this notation are pretty straightforward, and are commonly taught in most 7th-grade math classes as part of the National Education Standards for Mathematics.

The following problems involve the addition and subtraction of numbers expressed in Scientific Notation. For example:

$$\begin{aligned} 1.34 \times 10^8 + 4.5 \times 10^6 &= 134.0 \times 10^6 + 4.5 \times 10^6 \\ &= (134.0 + 4.5) \times 10^6 \\ &= 138.5 \times 10^6 \\ &= 1.385 \times 10^8 \end{aligned}$$

1) $1.34 \times 10^{14} + 1.3 \times 10^{12} =$

2) $9.7821 \times 10^{-17} + 3.14 \times 10^{-18} =$

3) $4.29754 \times 10^3 + 1.34 \times 10^2 =$

4) $7.523 \times 10^{25} - 6.32 \times 10^{22} + 1.34 \times 10^{24} =$

5) $6.5 \times 10^{-67} - 3.1 \times 10^{-65} =$

6) $3.872 \times 10^{11} - 2.874 \times 10^{13} =$

7) $8.713 \times 10^{-15} + 8.713 \times 10^{-17} =$

8) $1.245 \times 10^2 - 5.1 \times 10^{-1} =$

9) $3.64567 \times 10^{137} - 4.305 \times 10^{135} + 1.856 \times 10^{136} =$

10) $1.765 \times 10^4 - 3.492 \times 10^2 + 3.159 \times 10^{-1} =$

Answer Key:

$$1) \quad 1.34 \times 10^{14} + 1.3 \times 10^{12} = (134 + 1.3) \times 10^{12} = \mathbf{1.353 \times 10^{14}}$$

$$2) \quad 9.7821 \times 10^{-17} + 3.14 \times 10^{-18} = (97.821 + 3.14) \times 10^{-18} = \mathbf{1.00961 \times 10^{-16}}$$

$$3) \quad 4.29754 \times 10^3 + 1.34 \times 10^2 = (42.9754 + 1.34) \times 10^2 = \mathbf{4.43154 \times 10^3}$$

$$4) \quad 7.523 \times 10^{25} - 6.32 \times 10^{22} + 1.34 \times 10^{24} = (7523 - 6.32 + 134) \times 10^{22} = \mathbf{7.65068 \times 10^{25}}$$

$$5) \quad 6.5 \times 10^{-67} - 3.1 \times 10^{-65} = (6.5 - 310) \times 10^{-67} = \mathbf{-3.035 \times 10^{-65}}$$

$$6) \quad 3.872 \times 10^{11} - 2.874 \times 10^{13} = (3.872 - 287.4) \times 10^{11} = \mathbf{2.83528 \times 10^{13}}$$

$$7) \quad 8.713 \times 10^{-15} + 8.713 \times 10^{-17} = (871.3 + 8.713) \times 10^{-17} = \mathbf{8.80013 \times 10^{-15}}$$

$$8) \quad 1.245 \times 10^2 - 5.1 \times 10^{-1} = (1245.0 - 5.1) \times 10^{-1} = \mathbf{1.2399 \times 10^2}$$

$$9) \quad 3.64567 \times 10^{137} - 4.305 \times 10^{135} + 1.856 \times 10^{136} = (364.567 - 4.305 + 18.56) \times 10^{135} = \mathbf{3.78822 \times 10^{137}}$$

$$10) \quad 1.765 \times 10^4 - 3.492 \times 10^2 + 3.159 \times 10^{-1} = (17650.0 - 3492 + 3.159) \times 10^{-1} = \mathbf{1.4161159 \times 10^4}$$