

Grade 8 - Scientific Notation - Answer Key

Common Core 8.EE.A.3, 8.EE.A.4 · maths-pdf.fr/en/

This answer key gives a full worked solution for each of the 20 problems on the scientific notation worksheet (Common Core 8.EE.A.3 and 8.EE.A.4). Compare each step with your own work, not only the final answer, and note any step where your method differed.

Grade 8 · Common Core State Standards: **8.EE.A.3, 8.EE.A.4**

Exercise 1 - Large number



Move the decimal point 3 places

$$4,500 = 4.5 \times 10^3$$

Move the decimal point 3 places left to get 4.5.

$$4.5 \times 10^3$$

Exercise 2 - Small number

Move the decimal point 4 places right to get 3.2. Moving right makes the exponent negative.

$$3.2 \times 10^{-4}$$

Exercise 3 - Standard form 1

Move the decimal point 5 places right: 620,000.

$$620,000$$

Exercise 4 - Standard form 2

Move the decimal point 3 places left: 0.0071.

0.0071

Exercise 5 - Distance to the Sun

Move the decimal point 7 places left: 9.3.

9.3×10^7 miles

Exercise 6 - Tiny length

Move the decimal point 8 places right: 2.5.

2.5×10^{-8} meter

Exercise 7 - Which is larger

Compare exponents first: 5 is greater than 4.

Standard form: 320,000 and 41,000.

3.2×10^5 is greater

Exercise 8 - How many times

$$\frac{8 \times 10^9}{4 \times 10^6} = 2 \times 10^3.$$

2,000 times as massive

Exercise 9 - Multiply

$$5 \cdot 1.2 = 6 \text{ and } 10^3 \cdot 10^2 = 10^5.$$

$$6 \times 10^5$$

Exercise 10 - Multiply and adjust

$$4 \cdot 5 = 20 \text{ and } 10^5 \cdot 10^3 = 10^8, \text{ so } 20 \times 10^8.$$

20 is too large, so write 2×10^9 .

$$2 \times 10^9$$

Exercise 11 - Divide

$$8.4 \div 2.1 = 4 \text{ and } 10^6 \div 10^2 = 10^4.$$

$$4 \times 10^4$$

Exercise 12 - Add

$$4.2 \times 10^3 = 0.42 \times 10^4.$$

$$3.5 + 0.42 = 3.92.$$

$$3.92 \times 10^4$$

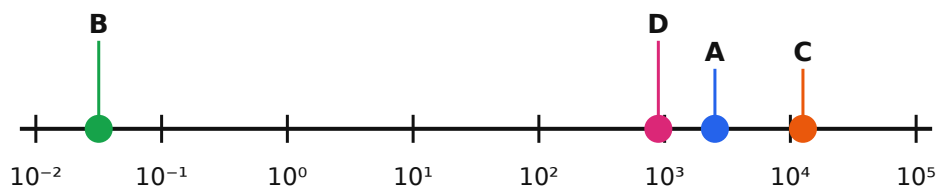
Exercise 13 - Subtract

The powers match, so subtract the front numbers: $5.6 - 2.1 = 3.5$.

$$3.5 \times 10^{-3}$$

Exercise 14 - Order

Compare exponents: B has -2, D has 2, A has 3, C has 4.



B, D, A, C: 3×10^{-2} , 9×10^2 , 2.5×10^3 , 1.2×10^4

Exercise 15 - Population comparison

$$\frac{3.3 \times 10^8}{5.8 \times 10^5} = 0.569 \times 10^3 = 5.69 \times 10^2.$$

about 5.7×10^2 times, or 570 times

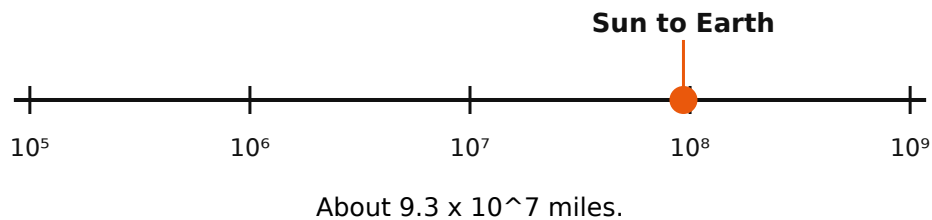
Exercise 16 - Red blood cells

$$\frac{1 \times 10^{-3}}{7 \times 10^{-6}} = 0.1428... \times 10^3 \approx 1.4 \times 10^2.$$

about 143 cells

Exercise 17 - Light from the Sun

$$\text{Distance} = (1.86 \times 10^5)(5 \times 10^2) = 9.3 \times 10^7.$$



9.3×10^7 miles

Exercise 18 - Movie downloads

$$\frac{64 \times 10^{10}}{24 \times 10^9} = 2.666... \times 10^1 \approx 26.7.$$

26 movies

Exercise 19 - Earth and Moon

$$\frac{5.97 \times 10^{24}}{7.35 \times 10^{22}} = 0.812... \times 10^2 \approx 81.$$

about 81 times

Exercise 20 - Find the error

The front number must be at least 1 and less than 10; 45 is too large. $45 = 4.5 \times 10^1$, so $45 \times 10^3 = 4.5 \times 10^4$.

$$4.5 \times 10^4$$