

Grade 8 · Scientific Notation · Test Answer Key

Common Core 8.EE.A.3, 8.EE.A.4 · mathovore.fr

Use this answer key to score the scientific notation test. Each solution is worked out, and a scoring note explains how to award the points. Give partial credit when the method is right and only an arithmetic slip is wrong. The total is 20 points.

Grade 8 Common Core: 8.EE.A.3 · 8.EE.A.4

Question 1: Large numbers (2 points)

- a. The point moves 7 places left: 9.3×10^7 .
- b. The point moves 5 places left: 4.5×10^5 .

Scoring: 1 point for each; award 0 if the coefficient is not between 1 and 10.

Question 2: Small numbers (2 points)

- a. The point moves 6 places right: 6.2×10^{-6} .
- b. The point moves 2 places right: 7.05×10^{-2} .

Scoring: 1 point for each; the sign of the exponent must be correct.

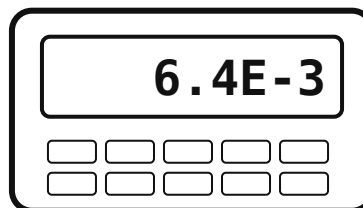
Question 3: Standard form (2 points)

- a. Move the point 6 places right: 4,700,000.
- b. Move the point 4 places left: 0.000309.

Scoring: 1 point for each correct number.

Question 4: Calculator display (2 points)

- a. $6.4\text{E}-3$ means 6.4×10^{-3} .
- b. Move the point 3 places left: 0.0064.



The display means 0.0064.

Scoring: 1 point for each part.

Question 5: How many times as large (2 points)

- a. $\frac{8 \times 10^6}{4 \times 10^2} = \frac{8}{4} \times 10^{6-2} = 2 \times 10^4$, so the first is 20,000 times as large.

Scoring: 1 point for the quotient setup or coefficient 2, 1 point for the exponent 4 and the answer in scientific notation.

Question 6: Multiply and divide (2 points)

- a. $6 \cdot 3 = 18$ and $4 + (-7) = -3$, so $18 \times 10^{-3} = 1.8 \times 10^{-2}$.
b. $9.6 \div 1.2 = 8$ and $8 - 3 = 5$, so 8×10^5 .

Scoring: 1 point for each; in part (a) the coefficient must be fixed to 1.8.

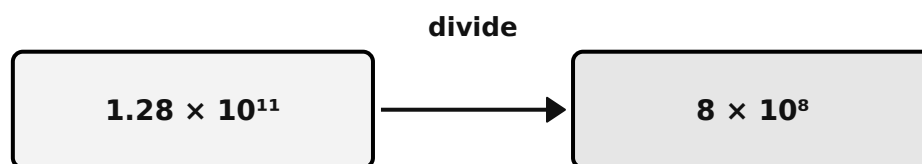
Question 7: Order and add (2 points)

- a. The exponents are -4 , -3 , -5 . Order: 8.9×10^{-5} , 3.2×10^{-4} , 1.5×10^{-3} .
b. $2.6 + 7.4 = 10$, so the sum is $10 \times 10^5 = 1 \times 10^6$.

Scoring: 1 point for the correct order; 1 point for the sum written with coefficient 1.

Question 8: Phone storage (3 points)

- a. Divide storage by video size: $\frac{1.28 \times 10^{11}}{8 \times 10^8}$.
b. $1.28 \div 8 = 0.16$ and $11 - 8 = 3$, so $0.16 \times 10^3 = 1.6 \times 10^2$.
c. 1.6×10^2 is 160 videos.

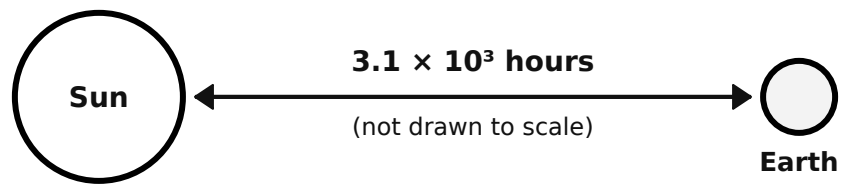


Divide to find 160 videos.

Scoring: 1 point for each part.

Question 9: Trip to the Sun (3 points)

- a. $\frac{9.3 \times 10^7}{3 \times 10^4} = 3.1 \times 10^3$ hours.
b. $3,100 \text{ hours} \div 24 \approx 129.2$, so about 129 days.
c. $9.3 \times 10^7 \cdot 5280 = 49.104 \times 10^{10}$, which is 4.9104×10^{11} feet.



About 129 days of travel.

Scoring: 1 point for each part; in part (c) the coefficient must be fixed to 4.9104.

Total
20 points