SCIENTIFIC NOTATION
is used to write very large or very small numbers.

Change whole numbers to scientific notation
(1) Place the decimal after the first number.
(2) Multiply.
(3) The second number or base is always 10.
(4) Count the places from the decimal to the end of the number.
The exponent is the number of places from the decimal.

whole number to scientific notation

EXAMPLE: $2567 = 2.567 \times 10^3$

1. Which of the following expresses 374,274 in scientific notation?

① ② ③ ④ ⑤

(1) 3.74274×10^5
(2) 3.74274×10^6
(3) 37.4274×10^6
(4) 374.274×10^5
(5) 3742.74×10^3

2. Which of the following expresses 67,500,000 in scientific notation?

① ② ③ ④ ⑤

(1) 6.75×10^{-7}
(2) 6.75×10^6
(3) 6.75×10^7
(4) 6.00×10^{-6}
(5) 6.57×10^{-7}

3. Some scientists predict that the population of the world in the year 2014 will be 7,240,000,000.

Which of the following represents this number in scientific notation?

① ② ③ ④ ⑤

(1) 7.24×10^6
(2) 7.24×10^9
(3) 7.24×10^{10}
(4) 724×10
(5) 724×10^3

4. Which of the following expresses 25,689 in scientific notation?

① ② ③ ④ ⑤

(1) 25.689×10^5
(2) 2.5689×10^4
(3) 2.5689×10^5
(4) 2.5689×10^6
(5) 25689×10^5

5. Which of the following expresses 48,300,000 in scientific notation?

① ② ③ ④ ⑤

(1) 483×10^{-7}
(2) 4.83×10^6
(3) 4.83×10^7
(4) 4.83×10^{-6}
(5) 4.83×10^{-7}

6. Some scientists predict that the population of the world in the year 2020 will be 12,356,000,000.

Which of the following represents this number in scientific notation?

① ② ③ ④ ⑤

(1) 12.356×10^6
(2) 1.2356×10^9
(3) 1.2356×10^{10}
(4) 12356×10^{10}
(5) 12.356×10^{10}

SCIENTIFIC NOTATION
is used to write very large or very small numbers.

Change numbers in scientific notation to whole numbers.

(1) Move the decimal to the right the number of places indicated in the exponent.
The exponent is positive, so move the decimal to the right.

scientific notation to whole number

EXAMPLE: $9.864 \times 10^6 = 9{,}864{,}000$

7. 3.74274×10^5 is written in scientific notation.
Express it as a normal number.

① ② ③ ④ ⑤

(1) 3,742
(2) 37,427
(3) 374,274
(4) 3,742,740
(5) 37,427,400

8. 6.75×10^6 is written in scientific notation.
Express it as a normal number.

① ② ③ ④ ⑤

(1) 675
(2) 6,750
(3) 67,500
(4) 675,000
(5) 6,750,000

9. 7.24×10^9 is written in scientific notation.
Express it as a normal number.

① ② ③ ④ ⑤

(1) 7, 240
(2) 72,400,000
(3) 724,000,000
(4) 7,240,000,000
(5) 72,400,000,000

10. 2.5689×10^5 is written in scientific notation.
Express it as a normal number.

① ② ③ ④ ⑤

(1) 25,689
(2) 256,890
(3) 2,568,900
(4) 256,890,000
(5) 2,568,900,000

11. 4.83×10^3 is written in scientific notation.
Express it as a normal number.

① ② ③ ④ ⑤

(1) 483
(2) 4,830
(3) 48,300
(4) 480,000
(5) 4.800,000

12. Scientists predict that in the year 2020, the population of the world will be 1.2356×10^{10}. This is expressed in scientific notation.
Express it as a normal number.

① ② ③ ④ ⑤

(1) 12,356
(2) 123,560
(3) 1,235,600
(4) 12,356,000
(5) 12,356,000,000

SCIENTIFIC NOTATION
is used to write very large or very small numbers.

Change decimals to scientific notation.

(1) Move the decimal **before the last number**.
(2) Multiply.
(3) The second number or base is always 10.
(4) Because the number is a decimal, the exponent will be a negative number.
(5) Give the exponent the number of places from the decimal.

EXAMPLE

decimal to scientific notation

$.8365 = 836.5 \times 10^{-3}$

13. Express .785 in scientific notation.

① ② ③ ④ ⑤

(1) 785×10^{-2}
(2) 7.85×10^{-2}
(3) 78.5×10^{-2}
(4) 785×10^{2}
(5) $.785 \times 10^{-2}$

14. Express .00987 in scientific notation.

① ② ③ ④ ⑤

(1) 9.87×10^{-4}
(2) 98.7×10^{-4}
(3) 987×10^{-4}
(4) 987×10^{4}
(5) $.987 \times 10^{-4}$

Change scientific notations with decimals to regular decimal numbers.

(1) Move the decimal point **to the left** the number of places indicated in the negative exponent.
The exponent is negative, so move the decimal to the left.

EXAMPLE

scientific notation to decimal

$4.67 \times 10^{-2} = .0467$

15. 7.25×10^{-3} is written in scientific notation.
Express it as a decimal.

① ② ③ ④ ⑤

(1) .00000725
(2) .0000725
(3) .000725
(4) .00725
(5) .0725

16. 9.985×10^{-2} is written in scientific notation.
Express it as a decimal.

① ② ③ ④ ⑤

(1) .0009985
(2) .009985
(3) .09985
(4) .9985
(5) 9.985