

Warm-Up

Choose the letter for the best answer.

1. A square picture frame measures 36 inches on each side. The actual wood trim is 2 inches wide. The photograph in the frame is surrounded by a bronze mat that measures 5 inches. What is the maximum area of the photograph?
A 841 sq. inches
B 900 sq. inches
C 1156 sq. inches
D 484 sq. inches
2. A can of paint claims that one can will cover 400 square feet. If you painted a square with the can of paint, how long would it be on each side?
A 200 feet
B 65 feet
C 25 feet
D 20 feet
3. To create a square patchwork quilt wall hanging, square pieces of material are sewn together to form a larger square. Which number of smaller squares can be used to create a square patchwork quilt wall hanging?
A 35 squares
B 64 squares
C 84 squares
D 125 squares
4. A box of tile contains 12 square tiles. If you tile the largest possible square area using whole tiles, how many tiles will you have left from the box?
A 9
B 6
C 3
D 0

SCIENTIFIC NOTATION



An ordinary quarter has about
97,700,000,000,000,000,000,000
atoms.



The average size of an atom is
about 0.000000003 centimeter across.

*Scientific Notation allows
for a shorthand way of
writing really BIG or really
small numbers.*

$$\underline{\hspace{10em}} \times 10^{\underline{\hspace{10em}}}$$

An ordinary quarter has about
97,700,000,000,000,000,000,000
atoms.

The average size of an atom is
about 0.000000003
centimeter across.

Sort the given values.

$$2.35 \times 10^5$$

$$2.1203 \times 10^{-16}$$

$$5 \times 10^{-9}$$

$$45.9 \times 10^{-6}$$

$$3.214 \times 10^1$$

$$12 \times 10^0$$

$$10.3 \times 10^9$$

$$6.09 \times 10^7$$

$$1.9 \times 10^{-22}$$

Written in proper
scientific notation



NOT written in proper
scientific notation

Scientific notation is used to write really big numbers.

decimal notation  *scientific notation*

123,000,000,000★

45,000,000★

67,800,000,000,000★

9,000★

move the star to count the
number of decimal places

the amount of moves will
give you the exponent
value

Scientific notation is used to write really big numbers.

scientific notation



decimal notation

$$7.82 \times 10^3$$

A blue star is positioned below the decimal point in 7.82.

$$3.04 \times 10^8$$

A blue star is positioned below the decimal point in 3.04.

$$5 \times 10^4$$

A blue star is positioned below the number 5.

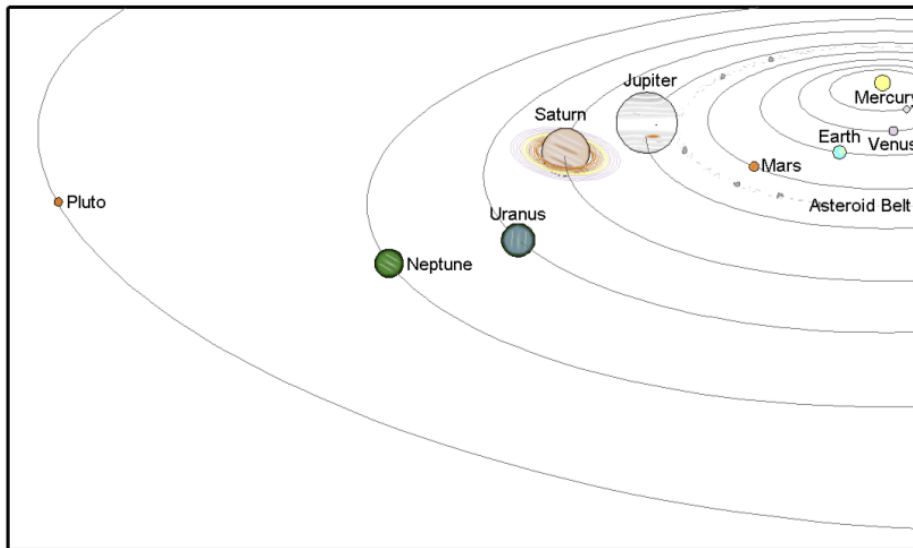
$$6.2103 \times 10^{10}$$

A blue star is positioned below the decimal point in 6.2103.

the exponent tells you
how many decimal
places you need to move

*An example of a really big number.
Please write it in scientific notation.*

As the planets orbit the sun, the closest Pluto gets to Earth is approximately 2,700,000,000 miles. ★



Scientific notation is used to write really small numbers.

decimal notation  *scientific notation*

0.000000034
★

0.0000000005609
★

0.0000000000064
★

0.007
★

move the star to count the
number of decimal places

the amount of moves will
give you the exponent
value

Scientific notation is used to write really small numbers.

scientific notation



decimal notation

$$4.8 \times 10^{-6}$$

★

$$1.2 \times 10^{-12}$$

★

$$9 \times 10^{-2}$$

★

$$7.1034 \times 10^{-5}$$

★

the exponent tells you
how many decimal
places you need to move

*An example of a really small number.
Please write it in scientific notation.*

Human fingernails grow at a rate of about 0.00286 inches per day.



A monarch butterfly has an average mass of **0.5 g**. In one roosting colony of Mexico, it was estimated that there were **10 million** monarch butterflies. Write the total mass in scientific notation.



In November 2010, the population of China was **1,339,724,852**.
Which number is closest to this population?

A. 1×10^7

B. 1×10^8

C. 1×10^9

D. 1×10^{10}



Whale Shark 4×10^4 lbs

Dolphin 2×10^2 lbs



How many times greater is the whale shark than the dolphin?

$2/20/200/2000$



4×10^8 is how many times larger than 2×10^5 ?

Circle the correct answer.

17. 8×10^5 is **2/20/200/2,000** times as great as 4×10^2 .

18. 9×10^{10} is **30 / 300 / 3,000 / 30,000** times as great as 3×10^7 .

19. 4×10^{-5} is **0.02/0.2/2/20** times as great as 2×10^{-4} .

20. 4×10^{-12} is **0.00001 / 0.0001 / 10 / 1000** times as great as 4×10^{-8} .

21. The mass of a proton is about 1.7×10^{-24} g. The mass of a neutron is about the same as a proton. The nucleus of an atom of carbon has 6 protons and 6 neutrons. The mass of the nucleus is about 2×10^{-26} units. Circle the best choice for the units this measurement is given in: **g/kg/tons**

22. The air distance between Los Angeles, California, and New York City, New York, is about 3.9×10^3 units. Circle the best choice for the units this measurement is given in: **cm / m / km**

$$(0.00002)(3 \times 10^8)$$

$$\frac{(6.4 \times 10^9)}{320}$$

$$\frac{(4.2 \times 10^8)}{(1.4 \times 10^2)}$$

$$(2.5 \times 10^{-2})(6 \times 10^3)$$

23. The all-time top grossing U.S. movie, *Titanic*, made $\$6.008 \times 10^8$. In 2008, *Dark Knight* was the top grossing movie at $\$5.309 \times 10^8$. How much did *Titanic* and *Dark Knight* gross in all?

- A $\$1.13 \times 10^9$
- B $\$3.19 \times 10^8$
- C $\$6.99 \times 10^8$
- D $\$8.84 \times 10^9$

24. Gary measures a paramecium and an ant. The paramecium is 4.2×10^{-4} meter long, and the ant is 3.8×10^{-3} meter long. How much longer, in meters, is the ant than the paramecium?

- A 4.00×10^{-2}
- B 3.38×10^{-3}
- C 3.82×10^{-3}
- D 4.22×10^{-3}

25. A large department store chain employs 1.8×10^6 people. The average annual wage for the employees is $\$2.1 \times 10^4$. How much does the chain pay in employee wages each year?

- F $\$3.00 \times 10^2$
- G $\$3.78 \times 10^{10}$
- H $\$3.90 \times 10^{24}$
- J $\$8.57 \times 10^{10}$

26. The average radius of Jupiter is 4.34×10^4 miles. The average radius of the Sun is 4.32×10^5 . How many times greater is the average radius of the sun?

- F 1.00×10^1
- G 2.00×10^3
- H 4.75×10^1
- J 9.95×10^0

The weights of various sea creatures are shown in the table. You can write the weights in scientific notation.

Sea Creature	Blue Whale	Whale Shark	Eel	Minnow
Weight (lb)	250,000	41,200	133.25	0.95

Write each number in scientific notation.

1. 58,927

3. 0.000487

5. 0.000059

7. 13,300

2. 1,304,000,000

4. 0.000028

6. 6,730,000

8. 0.0417

Write each number in standard notation.

9. 4×10^5

11. 8.3×10^{-4}

13. 2.97×10^{-2}

15. 8.456×10^7

10. 1.8499×10^9

12. 3.582×10^{-6}

14. 6.41×10^3

16. 9.06×10^{-5}

Attachments

scientific-notation-graphic-organizer-10-11.pdf