WORKSHEET

Math Skills

Writing Scientific Notation

A single railroad engine pulled 250 freight cars on the Erie Railroad from May 1914 until 1929. The mass pulled by the engine was 15,545, 000 kg. Express this value for mass in scientific notation.

1. List the given and unknown values.

*Given:* mass = 15 545 000 kg *Unknown:* mass =? X 10? kg

2. Write the form for scientific notation.

mass = ?x 10?kg

3. Convert the known values into the form for scientific notation.

Move the decimal point to the left until only one digit remains to the left of the decimal point. Count the number of places the decimal point was moved. To change 15, 545, 000 to 1.554 5000, the decimal point is moved seven places to the left. The number of places the deci­mal point is moved is the correct power of 10. The zeros at the end of the number can be dropped from the answer.

mass = 1.5545 X 107 kg

Practice

1. Scientists have estimated that the area of Earth covered by water is
70.98 percent, or 362, 031, 100 km2. Express this value in scientific
notation.
2. The brightest comet on record, the Great Comet of 1843, had a tail
that trailed for 205, 000, 000 mi. Express this distance in scientific
notation.
3. Mount Everest, an eastern Himalayan peak on the Tibet-Nepal border,
was discovered to be the world's highest mountain in March 1856. The
Survey Department of the Government of India computed its height to
be 29 002 ft. Express this height in scientific notation.
4. The Great Barrier Reef, off Queensland, northeastern Australia, is
actually not a single reef but consists of thousands of separate reefs.
Together, they stretch for a length of 2, 027, 773 m. Express this dis-
tance in scientific notation.
5. The material cost of World War II has been estimated at $1.5 trillion.
In May 1959, the total cost to the Soviet Union was estimated at

2 ,500,000,000,000 rubles. Express this monetary value in scientific notation.

6. The speed of light in outer space is about 300,000,000 m/s. Express

this speed in scientific notation.

4 HOLT SCIENCE SPECTRUM