Scientific Notation Worksheets

1. The speed of light is 3×10^8 meters per second. The sun is approximately 230,000,000,000 meters from Mars. How many seconds does it take for sunlight to reach Mars?

2. If the sun is approximately 1.5×10^{11} meters from Earth, what is the approximate distance from Earth to Mars?

3. The sun produces 3.8×10^{27} joules of energy per second. How much energy is produced in a year? (Note: a year is approximately 31,000,000 seconds).

Scientific Notation Worksheets

1. The speed of light is 3×10^8 meters per second. The sun is approximately 230,000,000,000 meters from Mars. How many seconds does it take for sunlight to reach Mars?

$$230\,000\,000\,000 = 2.3 \times 10^{11}$$
$$\frac{2.3 \times 10^{11}}{3 \times 10^8} = \frac{2.3}{3} \times \frac{10^{11}}{10^8}$$
$$= 0.7666\ldots \times 10^3$$
$$\approx 0.77 \times 10 \times 10^2$$
$$\approx 7.7 \times 10^2$$

It takes approximately 770 seconds for sunlight to reach Mars.

2. If the sun is approximately 1.5×10^{11} meters from Earth, what is the approximate distance from Earth to Mars?

$$(2.3 \times 10^{11}) - (1.5 \times 10^{11})$$
$$= (2.3 - 1.5) \times 10^{11} = 0.8 \times 10^{11}$$
$$= 0.8 \times 10 \times 10^{10}$$
$$= 8 \times 10^{10}$$

The distance from Earth to Mars is 8×10^{10} meters.

3. The sun produces 3.8×10^{27} joules of energy per second. How much energy is produced in a year? (Note: a year is approximately 31,000,000 seconds).

$$31\,000\,000 = 3.1 \times 10^7$$
$$(3.8 \times 10^{27})(3.1 \times 10^7)$$
$$= (3.8 \times 3.1)(10^{27} \times 10^7)$$
$$= 11.78 \times 10^{34}$$
$$= 1.178 \times 10 \times 10^{34}$$
$$= 1.178 \times 10^{35}$$

The sun produces 1.178×10^{35} joules of energy in a year.

Go to onlinemathlearning.com for more free math resources