

Scientific Notation Worksheets

1. Two of the largest mammals on earth are the blue whale and the African elephant. An adult male blue whale weighs about 170 tonnes or long tons. (1 tonne = 1000 kg)

Show that the weight of an adult blue whale is 1.7×10^5 kg.

2. An adult male African elephant weighs about 9.07×10^3 kg.

Compute how many times heavier an adult male blue whale is than an adult male African elephant (i.e., find the value of the ratio). Round your final answer to the nearest one.

3. There are approximately 7.5×10^{18} grains of sand on Earth. There are approximately 7×10^{27} atoms in an average human body. About how many times more atoms are in a human body compared to grains of sand on Earth?

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Show that the weight of an adult blue whale is 1.7×10^5 kg.

Let x (or any other symbol) represent the number of kilograms an adult blue whale weighs.

$$170 \times 1000 = x$$

$$1.7 \times 10^5 = x$$

2. An adult male African elephant weighs about 9.07×10^3 kg.

Compute how many times heavier an adult male blue whale is than an adult male African elephant (i.e., find the value of the ratio). Round your final answer to the nearest one.

Let r be the value of the ratio.

$$\begin{aligned} r &= \frac{1.7 \times 10^5}{9.07 \times 10^3} \\ &= \frac{1.7}{9.07} \times 10^2 \\ &= 0.18743 \times 10^2 \\ &= 18.743 \\ &\approx 19 \end{aligned}$$

The blue whale is 19 times heavier than the elephant.

3. There are approximately 7.5×10^{18} grains of sand on Earth. There are approximately 7×10^{27} atoms in an average human body. About how many times more atoms are in a human body compared to grains of sand on Earth?

$$\begin{aligned} \frac{7 \times 10^{27}}{7.5 \times 10^{18}} &= \frac{7}{7.5} \times \frac{10^{27}}{10^{18}} \\ &\approx 1 \times 10^{27-18} \\ &\approx 1 \times 10^9 \\ &\approx 10^9 \end{aligned}$$

There are about 1,000,000,000 times more atoms in the human body compared to grains of sand on Earth.

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