

7. A factory that has 6×10^3 workers makes 2.4×10^5 products each day. What is the average amount of products made per worker?

$$\frac{2.4 \times 10^5}{6 \times 10^3} = 0.4 \times 10^2 = 4 \times 10^1$$

4×10^1 Products

8. In the US, the amount of electricity generated by coal in 2008 was 1.8×10^{12} kWh and 9×10^{11} kWh in 2020. What was the decrease over those 12 years?

$$\begin{aligned} 1.8 \times 10^{12} - 9 \times 10^{11} &= 1.8 \times 10^{12} - 0.9 \times 10^{12} \\ &= 0.9 \times 10^{12} = 9 \times 10^{11} \end{aligned}$$

9×10^{11} kWh

9. The volume of Lake Rason is approximately 2.56×10^5 km³. Lake Rushton is 25 times the volume of Lake Rason. What is the volume of Lake Rushton?

$$\begin{aligned} 2.56 \times 10^5 \cdot 25 &= 64 \times 10^5 \\ &= 6.4 \times 10^6 \end{aligned}$$

6.4×10^6 km³

10. The speed of light in cold air is approximately 3×10^8 meters/sec. The speed of sound in cold air is approximately 3×10^2 meters/sec. The speed of light in cold air is how many times the speed of sound in cold air?

$$\frac{\text{Light}}{\text{Sound}} \quad \frac{3 \times 10^8}{3 \times 10^2} = 1 \times 10^6$$

1×10^6 times as fast

11. There are approximately 3.1×10^8 people in the United States. If on average each person has 4.1×10^1 coins lying around on dressers, in pockets, in cars, etc., how many total coins do all the people in the U.S. have?

$$\begin{aligned} 3.1 \times 10^8 \cdot 4.1 \times 10^1 &= 12.71 \times 10^9 \\ &= 1.271 \times 10^{10} \end{aligned}$$

1.271×10^{10} coins

12. The SR-71 "Blackbird" is one of the world's fastest airplanes. It is capable of traveling at a cruising speed of Mach 3, or three times the speed of sound. The speed of sound is approximately 7.67×10^2 miles per hour. What is Mach 3 in miles per hour?

$$\begin{aligned} (3)(7.67 \times 10^2) &= 23.01 \times 10^2 \\ &= 2.301 \times 10^3 \end{aligned}$$

2.301×10^3 mph