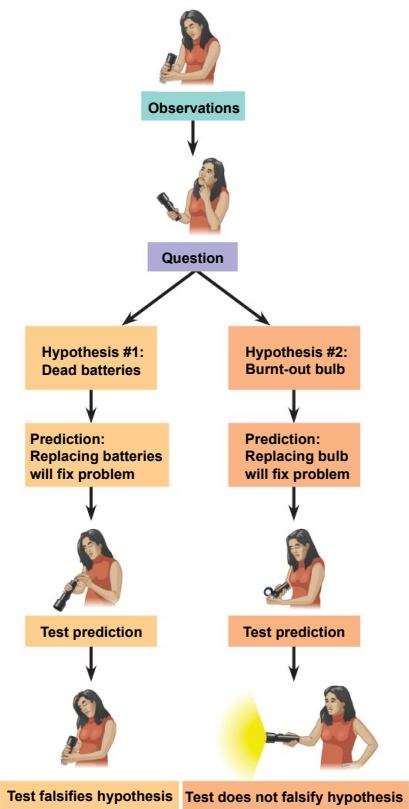


The Scientific Method

- Observations
- Questions
- Hypotheses
- Predictions
- Tests
- Outcomes

1



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2

Fundamental Quantities

- Distance
- Time
- Mass
- Temperature
- Amount of substance

3

Metric Prefixes

- Giga- one billion ($1,000,000,000 = 10^9$) G
- Mega- one million ($1,000,000 = 10^6$) M
- Kilo- one thousand ($1,000 = 10^3$) k
- Hecto- one hundred ($100 = 10^2$) h
- Deca- ten ($10 = 10^1$) da
- (no prefix) one ($1 = 10^0$)
- Deci- one-tenth ($0.1 = 10^{-1}$) d
- Centi- one-hundredth ($0.01 = 10^{-2}$) c
- Milli- one-thousandth ($0.001 = 10^{-3}$) m
- Micro- one-millionth ($0.000001 = 10^{-6}$) μ
- Nano- one-billionth ($0.000000001 = 10^{-9}$) n

4

How many millimeters are in 150 miles?

Use dimensional analysis to find out.

These are conversion factors.

$$\left(\frac{150mi}{1}\right) \left(\frac{1760yd}{1mi}\right) \left(\frac{3ft}{1yd}\right) \left(\frac{12in}{1ft}\right) \left(\frac{2.54cm}{1in}\right) \left(\frac{1m}{100cm}\right) \left(\frac{1000mm}{1m}\right) = 241,401,600mm$$

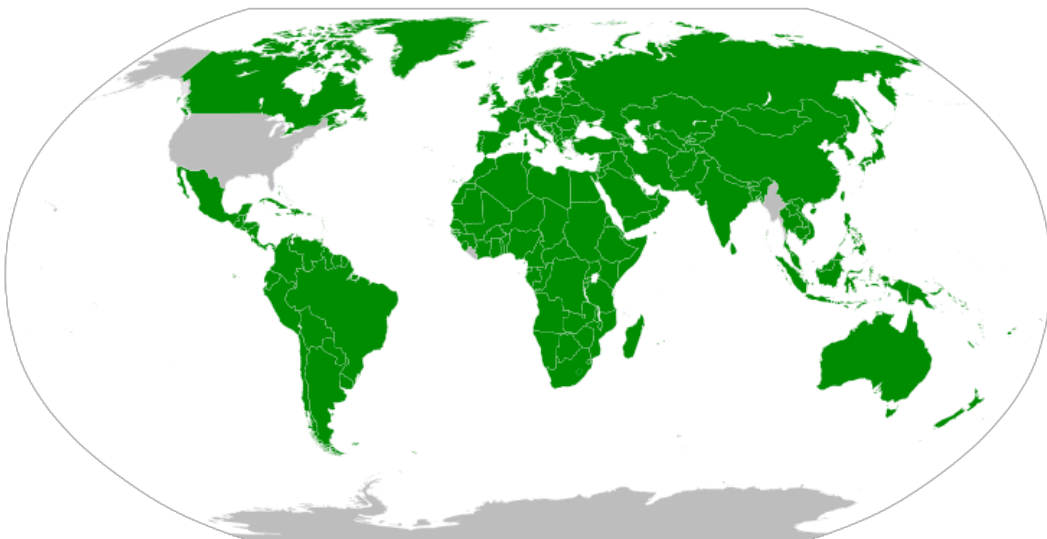
This is given in the problem.

All units cancel except the ones that should be in the answer.

To three significant figures, the answer is 241 million millimeters, or 2.41×10^8 mm.

5

Metric System Nations



6