

## Problem 1

(I) The age of the universe is thought to be about 14 billion years. Assuming two significant figures, write this in powers of ten in (a) years, (b) seconds.

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### Solution

#### Part (a)

14 billion years is

$$14 \times 10^9 \text{ years} = 1.4 \times 10^{10} \text{ years.}$$

#### Part (b)

And

$$1.4 \times 10^{10} \text{ years} = 1.4 \times 10^{10} \text{ years} \times \frac{365 \text{ days}}{1 \text{ year}} \times \frac{24 \text{ hr}}{1 \text{ day}} \times \frac{60 \text{ min}}{1 \text{ hr}} \times \frac{60 \text{ s}}{1 \text{ min}} \approx 4.4 \times 10^{17} \text{ s.}$$