



Problem of the Week

Problem B and Solution

Time to Vote

Problem

Every four years, Bigland will vote for a prime minister. In 2022, Bigland had a population of 34 million. Of that number, 72% were eligible to vote, but 60% of the population that was eligible to vote actually voted.

- (a) How many people in Bigland actually voted in 2022? What percentage and fraction of the population of Bigland does this represent?
- (b) For Tinyland, there were two million, seven hundred thirty-six thousand, six hundred twenty-eight people eligible to vote in 2022. If two million, thirty-four thousand, three hundred twenty-eight people actually voted, how does this voter turnout compare to the 60% voter turnout of Bigland?



Solution

- (a) The number of eligible voters in Bigland is 72% of 34 million people, or $0.72 \times 34\,000\,000 = 24\,480\,000$ people.

Of these, the number who actually voted is $0.60 \times 24\,480\,000 = 14\,688\,000$ people.

This represents the fraction $\frac{14\,688\,000}{34\,000\,000} = \frac{14\,688}{34\,000} = \frac{7344}{17\,000} = \frac{54}{125}$, which is equivalent to the decimal 0.432, or 43.2% of the population of Bigland.

Alternatively, 60% of 72% is $0.62 \times 0.7 = 0.432$ or 43.2%, which can be expressed as $\frac{432}{1000} = \frac{54}{125}$.

- (b) In Tinyland, 2 736 628 people were eligible to vote, of which 2 034 328 people actually voted. Thus, as a fraction, the voter turnout was $\frac{2\,034\,328}{2\,736\,628} \approx 0.743$, or 74.3%, significantly higher than the 60% voter turnout in Bigland.