Problem

Suppose you are an economist analyzing the economy of AlphaLand, a small country.

Consumption expenditure in AlphaLand for the current year is $40 billion. Foreign direct investment (FDI) in AlphaLand for the current year is $15 billion. Government expenditure for the current year is $20 billion. AlphaLand is a net importer, meaning its imports exceed its exports. The trade deficit for the current year is $9 billion.

There's a:

- 40% chance that consumption will decrease by 60% and a 60% chance it will decrease by 30 billion.
- 30% chance that investment will decrease by 20% and a 70% chance it will remain unchanged.
- 50% chance that government spending will decrease by 40% and a 50% chance it will decrease by 10 billion.
- 60% chance that net exports will decrease by $2 billion and a 40% chance they will remain unchanged.

Determine the expected GDP of AlphaLand for the upcoming year, rounded to the nearest billion, and calculate the fraction: $\frac{GDP}{10}$.

Solution

Next year's expected:

Consumption (C) = 40%*(40-60%*40)+60%*10 = 12.4

Foreign Investment (I) = 30%*(15-20%*15)+70%*15 = 14.1

Government Spending (G) = 50%*(20-40%*20)+50%*10 = 11

Net Exports (NX) = –1 * [60%*(9-2) + 40%*9] = –7.8 (minus because it is a deficit)

$$GDP = C+I+G+NX$$

$$GDP = 12.4+14.1+11-7.8 = 29.7 \approx 30 \text{ billion}$$

$$\frac{GDP}{10} = \frac{30}{10} = \mathbf{3}$$

Answer: 3