Isotopes and average atomic mass worksheet

Determine the weighted average atomic mass of the following elements.

Element	Isotopes	Average Atomic Mass
Iodine (I)	a) 17% ^{126}I b) 80% ^{127}I c) 3% ^{128}I	
Gold (Au)	a) 50% ^{197}Au b) 50% ^{198}Au	
Carbon (C)	a) 98% ^{12}C b) 2% ^{14}C	
Iron (Fe)	a) 15% ^{55}Fe b) 85% ^{56}Fe	
Hydrogen (H)	a) 99% ^{1}H b) 0.8% ^{2}H c) 0.2% ^{3}H	
Nitrogen (N)	a) 95% ^{14}N b) 3% ^{15}N c) 2% ^{16}N	
Sulfur (S)	a) 95% ^{32}S b) 4.22% ^{34}S c) 0.76% ^{33}S d) 0.014% ^{36}S	
Chlorine (Cl)	a) 75.53% ^{35}Cl b) 24.47% ^{37}Cl	

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Answers

Element	Isotopes	Average Atomic Mass
Iodine (I)	a) 17% ^{126}I b) 80% ^{127}I c) 3% ^{128}I	(126 amu × 0.17) + (127 amu × 0.80) + (128 amu × 0.03) = 126.9 u
Gold (Au)	a) 50% ^{197}Au b) 50% ^{198}Au	(197 amu × 0.50) + (198 amu × 0.50) = 197.5 amu
Carbon (C)	a) 98% ^{12}C b) 2% ^{14}C	(12 amu × 0.98) + (14 amu × 0.02) = 12.0 amu
Iron (Fe)	a) 15% ^{55}Fe b) 85% ^{56}Fe	(55 amu × 0.15) + (56 amu × 0.85) = 55.85 amu
Hydrogen (H)	a) 99% ^{1}H b) 0.8% ^{2}H c) 0.2% ^{3}H	(1 amu × 0.99) + (2 amu × 0.008) + (3 amu × 0.002) = 1.01 amu
Nitrogen (N)	a) 95% ^{14}N b) 3% ^{15}N c) 2% ^{16}N	(14 amu × 0.95) + (15 amu × 0.03) + (16 amu × 0.02) = 14.07 amu
Sulfur (S)	a) 95% ^{32}S b) 4.22% ^{34}S c) 0.76% ^{33}S d) 0.014% ^{36}S	(32 amu × 0.95) + (33 amu × 0.0076) + (34 amu × 0.0422) + (36 amu × 0.00014) = 32.09 amu
Chlorine (Cl)	a) 75.53% ^{35}Cl b) 24.47% ^{37}Cl	(35 amu x 0.7573) + (37 amu x 0.2447) = 35.5 amu