

AP WORKSHEET 01B: ANSWERS

1. Five.

$$[\text{O}^{16}\text{-O}^{16}]^+ = 32$$

$$[\text{O}^{16}\text{-O}^{17}]^+ = 33$$

$$[\text{O}^{16}\text{-O}^{18}]^+ = 34 \text{ and } [\text{O}^{17}\text{-O}^{17}]^+ = 34$$

$$[\text{O}^{17}\text{-O}^{18}]^+ = 35$$

$$[\text{O}^{18}\text{-O}^{18}]^+ = 36$$

2. Five.

Two due to atomic Br that would have the same height (same abundance)

$$[\text{Br}^{79}]^+ = 79$$

$$[\text{Br}^{81}]^+ = 81$$

Three due to molecular Br that would have height ratio 1:2:1

$$[\text{Br}^{79}\text{-Br}^{79}]^+ = 158$$

$$[\text{Br}^{79}\text{-Br}^{81}]^+ = 160 \text{ and } [\text{Br}^{81}\text{-Br}^{79}]^+ = 160$$

$$[\text{Br}^{81}\text{-Br}^{81}]^+ = 162$$

3. Three peaks with the peak at m/z 48 being the smallest, since O^{18} is the least abundant of the oxygen isotopes.

$$[\text{C}^{12}\text{O}^{16}\text{O}^{16}]^+ = 44$$

$$[\text{C}^{12}\text{O}^{16}\text{O}^{18}]^+ = 46$$

$$[\text{C}^{12}\text{O}^{18}\text{O}^{18}]^+ = 48$$

$$4. \frac{[(20 \times 112) + (21 \times 0.21) + (22 \times 11.1)]}{[112 + 0.21 + 11.1]}$$

$$= 20.2$$