**1. In this histogram of a sampling distribution of human heights (n = 30 sample means), how many people have heights less than 169.5?** (Source: modified from anlayzemath.com)

Chart, histogram

Description automatically generated

(A) 7 (B) 6 (C) 9 (D) 22 (E) 0

Answer: (D)

**2. In this histogram of a sampling distribution of human heights (n = 30 sample means), what is the probability of the sample mean being between 169.5 and 179.5?** (Source: modified from anlayzemath.com)

Chart, histogram

Description automatically generated

(A) 5 (B) 0.167 (C) 0 (D) 3 (E) 0.5

Answer: (B)

**3. In the following sampling distribution based on 500 fish sampled from a simulated population where the true mean was 0.5 mg/kg, what would the p-value be for finding a sample mean of 0.6 mg/kg?**

Chart, histogram

Description automatically generated

(A) 0.13 (B) 0.08 (C) 0.87 (D) 0.5

Answer: (A)

**4. Refer to the p-value you determined in the problem 3. If α = 0.05, does this p-value support favoring the null hypothesis or the alternative hypothesis? Remember: H0:  μ = 0.5 H1:  μ > 0.5**

(A) because p-value is ≥ α, the null hypothesis should be rejected in favor of supporting the alternative hypothesis

(B) because p-value is ≤ α, the null hypothesis should be rejected in favor of supporting the alternative hypothesis

(C) because p-value is ≥ α, the null hypothesis should be accepted

(D) because p-value ≤ α, the null hypothesis should be accepted

Answer: (C)

**5. Suppose a study is conducted on 25 fish and the mean mercury content was found to be 0.54 with a sample standard deviation of 0.3. Assume that the value of µ is 0.5. What would the value of t be? Use the formula**

A picture containing schematic

Description automatically generated

(A) 0.625 (B) 0.654 (C) 0.469 (D) 0.667

ANSWER: (D)

**6. The maximum concentration of mercury in fish that was deemed safe for consumption in Canada was 0.5 ppm. This means that there would be how many mg of mercury in a 1 kg portion?**

(A) 1,000,000 mg (B) 5,000,000 mg (C) 0.5 mg (D) 0.1 mg

Answer: (C)

7. **A sample statistic, such as a sample mean, is a representation of a true population parameter, such as the population mean μ. A sample is comprised of**

(A) more individuals than the actual population

(B) fewer individuals than the actual population

(C) individuals from a different population

Answer: (B)

**8. Which of the following would be an example of a stochastic problem?**

(A) With x = 5, m = .1, b = 5, the same equation of a line will always result from the equation y = mx + b.

(B) A simulated population growth model with constant input for r each generation is always predicted by the formula dN/dt = rN.

(C) The Hardy-Weinberg equilibrium prediction for starting and ending allele frequencies after reproduction in a population where genetic drift is possible.

(D) Conversion between one unit and another unit always yields the same answer.

Answer: (C)

9. **A t-test was conducted on mercury concentration for a sample of 22 fish. In Excel, a T.DIST.RT(4.690, 21) entry produces a a resulting p-value of 0.00006. For the hypotheses, H0:  μ = 0.5 H1:  μ > 0.5, what would you conclude?**

(A) Reject the null hypothesis.

(B) Accept (fail to reject) the null hypothesis.

Answer: (A)

**10. For the conclusion you made in problem 9, what should you decide about eating the fish?**

(A) It is OK to eat it.

(B) It is not OK to eat it.

Answer: (B)