**Assignment 0**

1. **True or False**
   - Statement A: \( \frac{1}{2} \) is a rational number. **True**
   - Statement B: Every real number is a rational number. **False**

2. **True or False**
   - Statement A: \( \sqrt{2} \) is a rational number. **False**
   - Statement B: \( \sqrt{2} \) is an irrational number. **True**

3. **True or False**
   - Statement A: \( \sqrt{5} \) is a rational number. **False**
   - Statement B: \( \sqrt{5} \) is an irrational number. **True**

4. **True or False**
   - Statement A: \( \sqrt{2} \) is a rational number. **False**
   - Statement B: \( \sqrt{2} \) is an irrational number. **True**

5. **True or False**
   - Statement A: Every real number is a rational number. **False**
   - Statement B: Every real number is a rational number. **False**

6. **True or False**
   - Statement A: \( \sqrt{2} \) is a rational number. **False**
   - Statement B: \( \sqrt{2} \) is an irrational number. **True**

7. **True or False**
   - Statement A: \( \sqrt{2} \) is a rational number. **False**
   - Statement B: \( \sqrt{2} \) is an irrational number. **True**

8. **True or False**
   - Statement A: \( \sqrt{2} \) is a rational number. **False**
   - Statement B: \( \sqrt{2} \) is an irrational number. **True**

9. **True or False**
   - Statement A: \( \sqrt{2} \) is a rational number. **False**
   - Statement B: \( \sqrt{2} \) is an irrational number. **True**

10. **True or False**
    - Statement A: \( \sqrt{2} \) is a rational number. **False**
    - Statement B: \( \sqrt{2} \) is an irrational number. **True**

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**Question 1**

There are 10 black and 5 white balls. Assume the draws are made with replacement. Is it possible to have more white balls than black balls without any replacement? What is the probability of that occurring? Answer: Yes, it is possible. Probability of getting more white balls than black balls.

**Question 2**

If all the balls are mixed together, what is the probability of getting 3 black and 1 white ball?

**Question 3**

What is the probability of getting 3 black and 1 white ball?

**Question 4**

What is the possible outcome of the distribution?

**Question 5**

Given that a normal distribution is characterized by the mean and variance. Which of the following parameters is correct?

- \( \mu = 0 \), \( \sigma = 1 \)
- \( \mu = 1 \), \( \sigma = 0 \)
- \( \mu = 1 \), \( \sigma = 1 \)
- \( \mu = 0 \), \( \sigma = 0 \)

**Question 6**

Which of the following equations is correct?

- \( \mu = 0 \), \( \sigma = 1 \)
- \( \mu = 1 \), \( \sigma = 0 \)
- \( \mu = 1 \), \( \sigma = 1 \)
- \( \mu = 0 \), \( \sigma = 0 \)

**Question 7**

What is the value of \( \mu \)?

**Question 8**

Given that \( \mu = 0 \), \( \sigma = 1 \), what is the possible value of \( \mu \)?

- \( \mu = 0 \)
- \( \mu = 1 \)
- \( \mu = -1 \)
- \( \mu = 2 \)

**Question 9**

What is the value of \( \sigma \)?

**Question 10**

What is the value of \( \sigma \)?

**Question 11**

What is the value of \( \sigma \)?

**Question 12**

What is the value of \( \sigma \)?

**Question 13**

What is the value of \( \sigma \)?

**Question 14**

What is the value of \( \sigma \)?

**Question 15**

What is the value of \( \sigma \)?

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**Diagram**

Histogram of distribution with bars representing the frequency of different values.