# Bag A or Bag B?

Brenda Gunderson

# Bag A or Bag B?

**BAG A**

| Face Value | Frequency |
|---|---|
| - 1,000 | 1 |
| 10 | 7 |
| 20 | 6 |
| 30 | 2 |
| 40 | 2 |
| 50 | 1 |
| 60 | 1 |

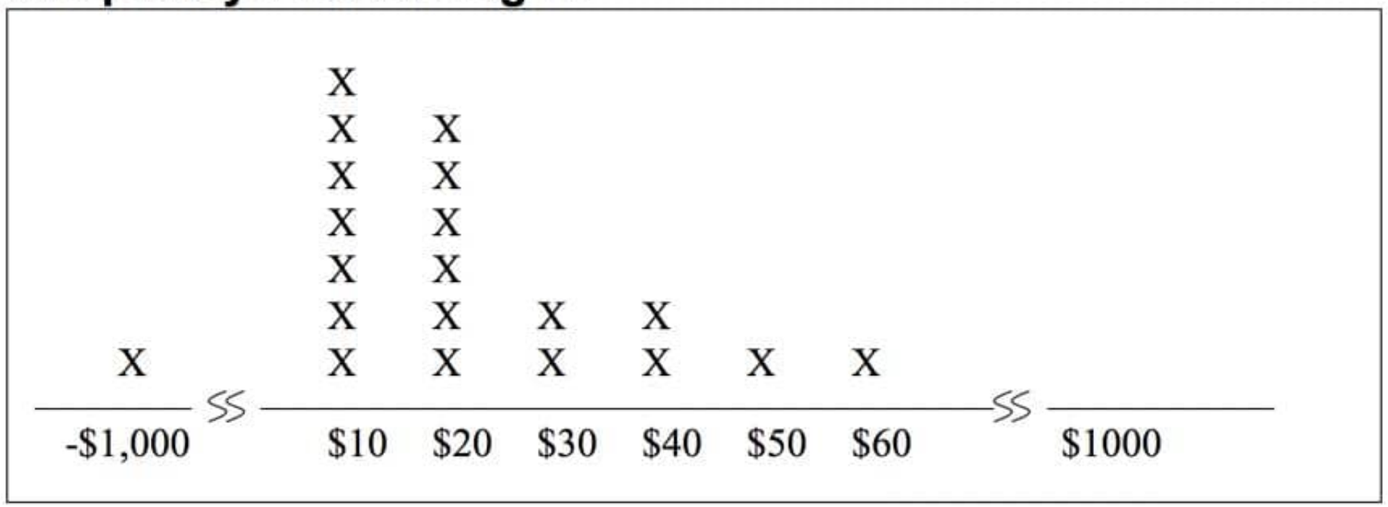
**BAG B**

| Face Value | Frequency |
|---|---|
| 10 | 1 |
| 20 | 1 |
| 30 | 2 |
| 40 | 2 |
| 50 | 6 |
| 60 | 7 |
| 1,000 | 1 |

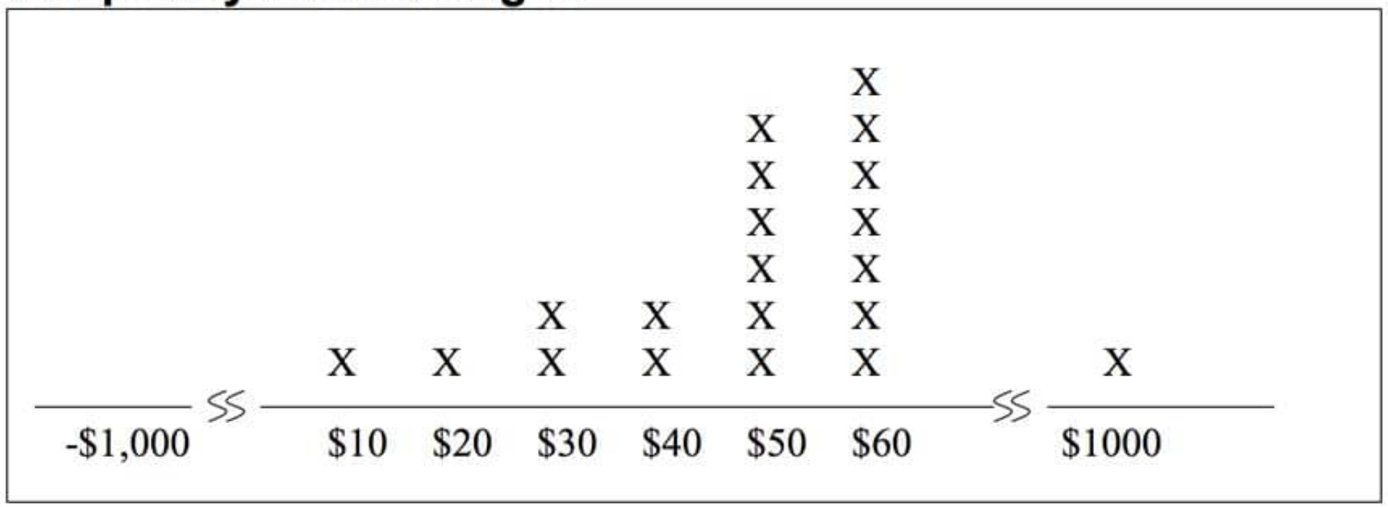
Total Value: -$560

Total Value: -$1890

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**

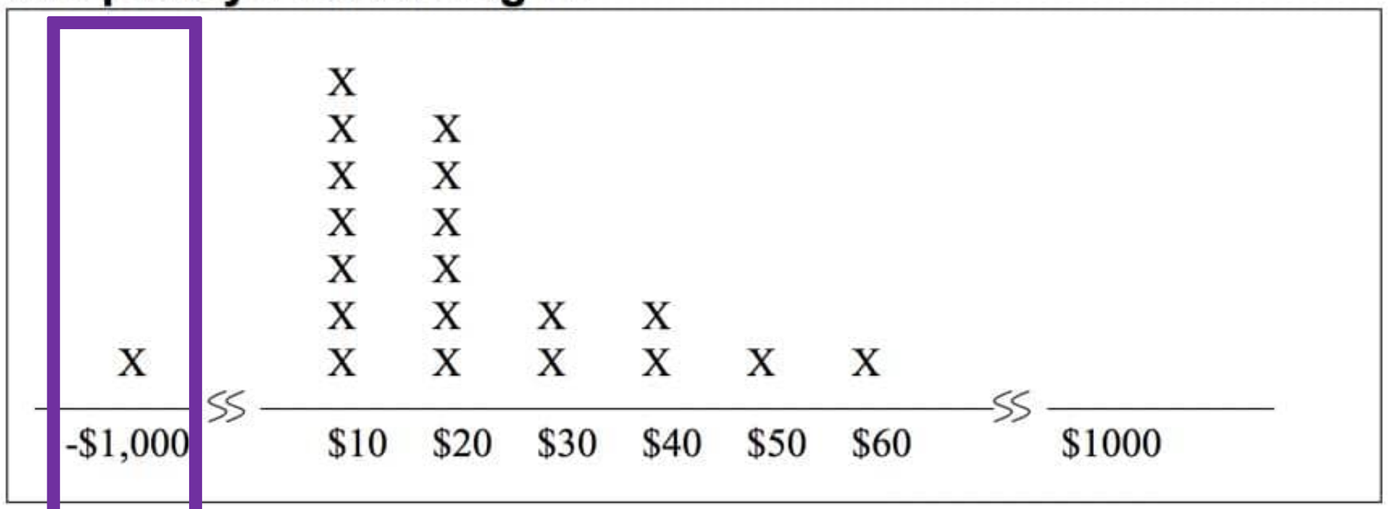



Select one voucher at random from shown bag and decide between two competing theories

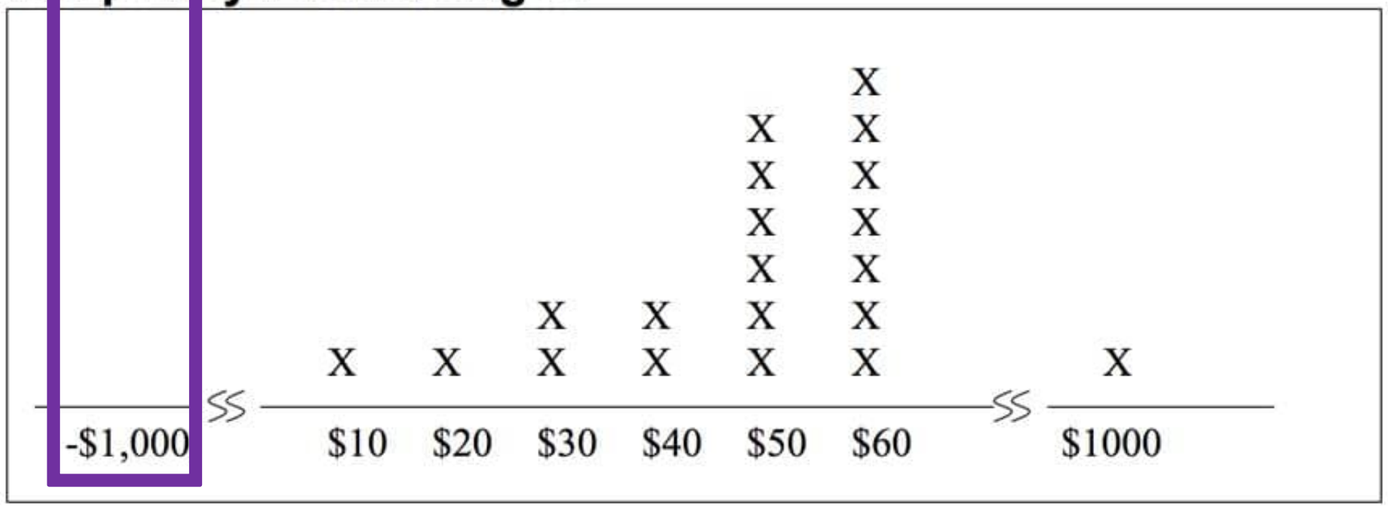
**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**

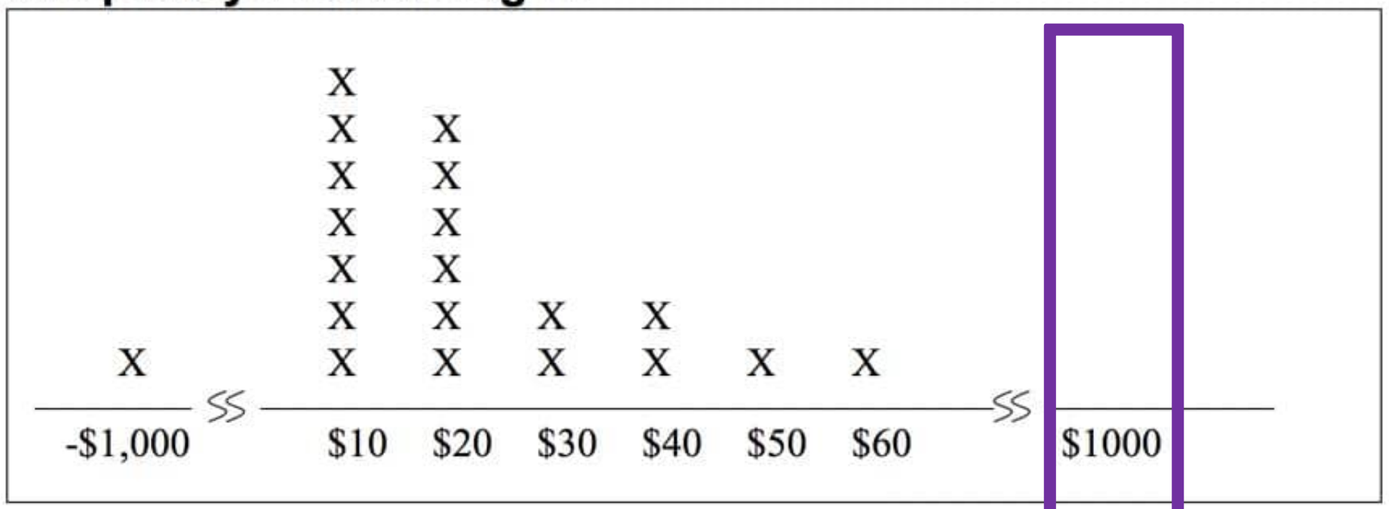



**Null**:
Shown bag is **Bag A**

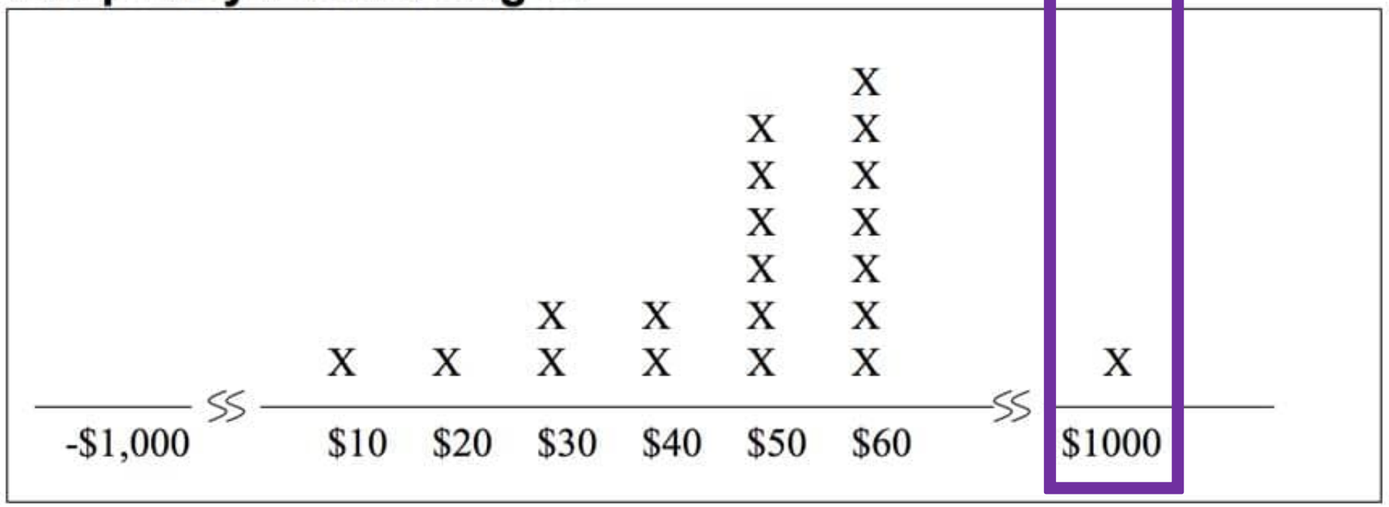
**Alternative**:
Shown bag is **Bag B**

**What if select -$1000?**

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**

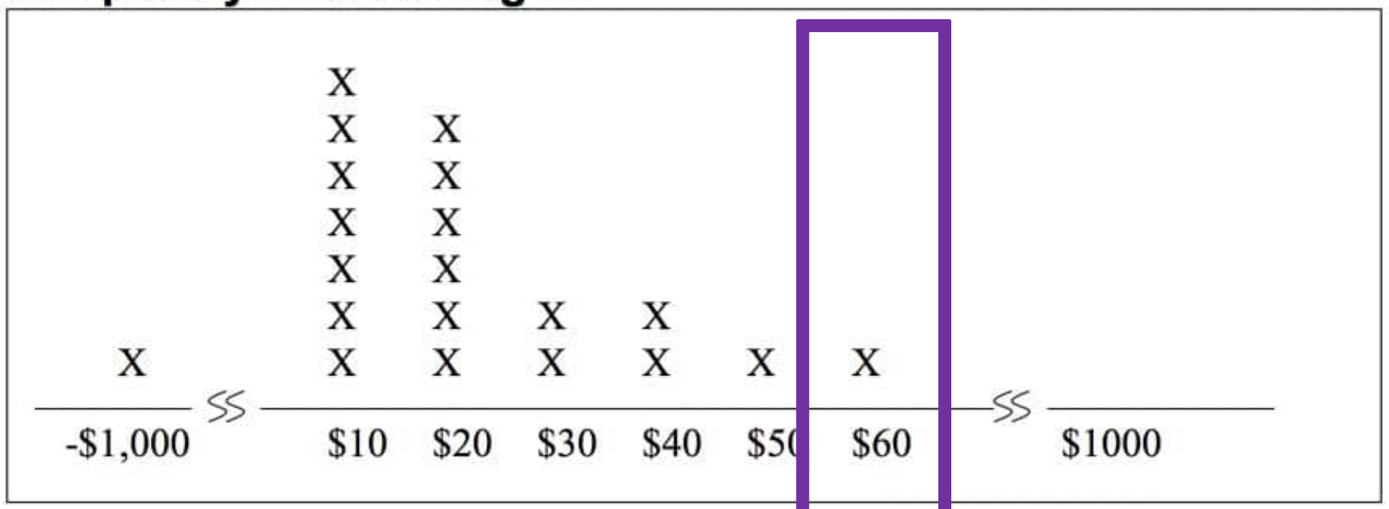



**Null**:
Shown bag is **Bag A**

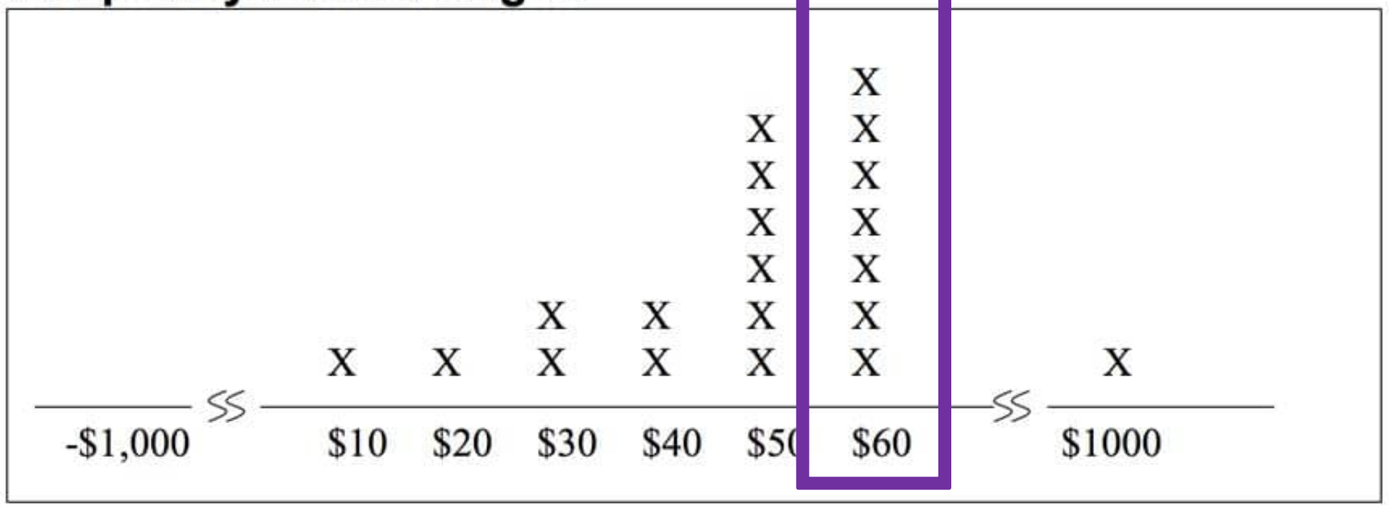
**Alternative**:
Shown bag is **Bag B**

**What if select $1000?**

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**

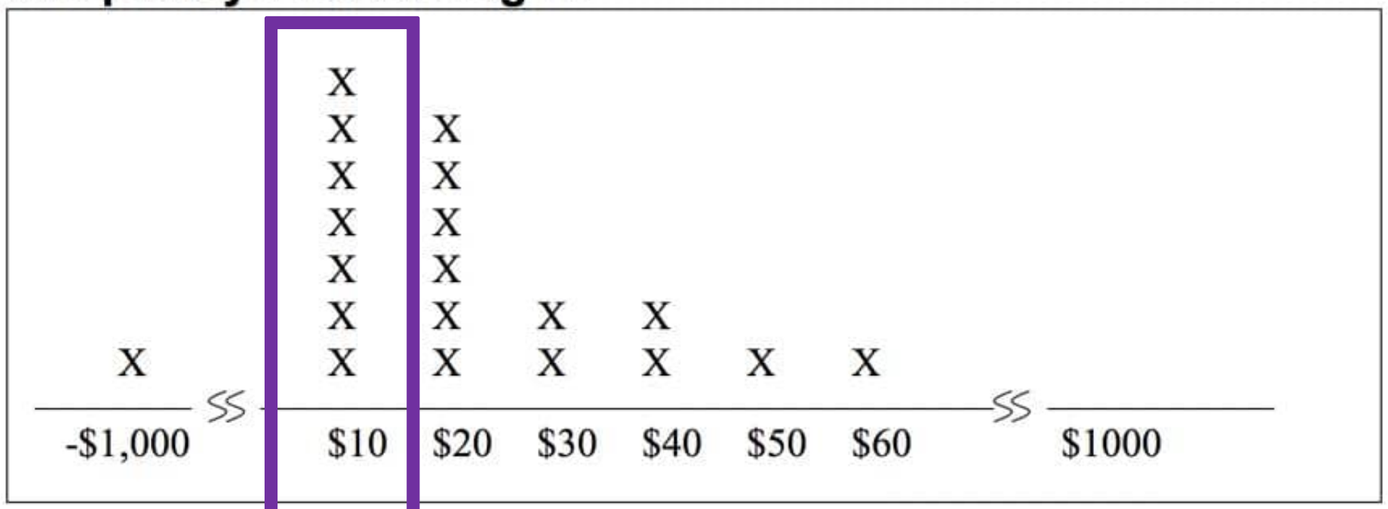



**Null**:
Shown bag is **Bag A**

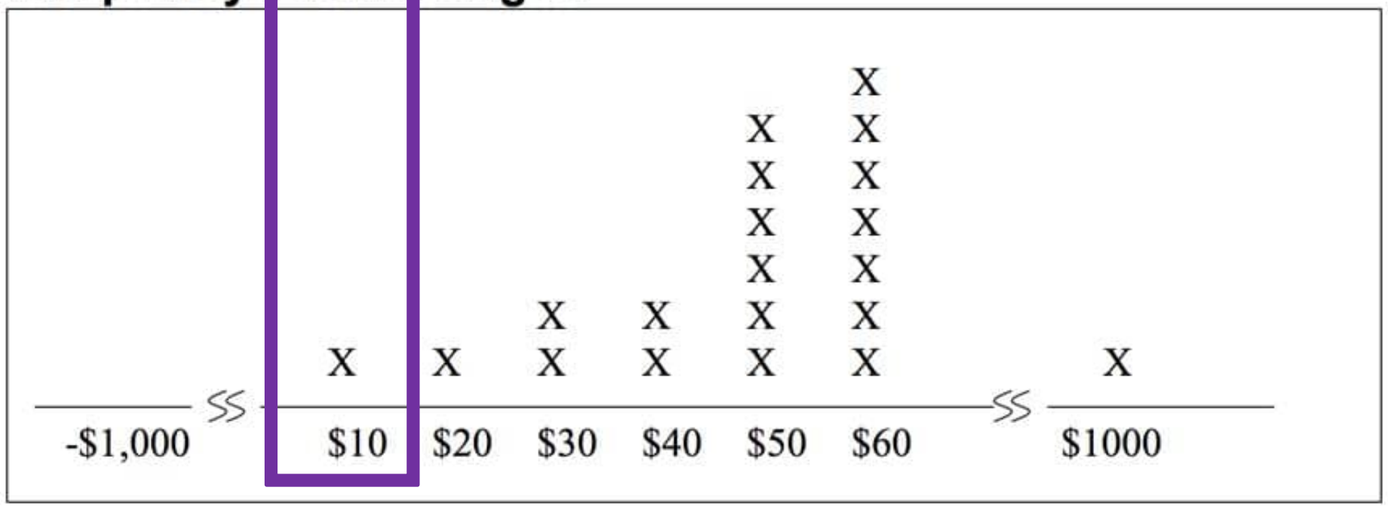
**Alternative**:
Shown bag is **Bag B**

**What if select $60?**

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**



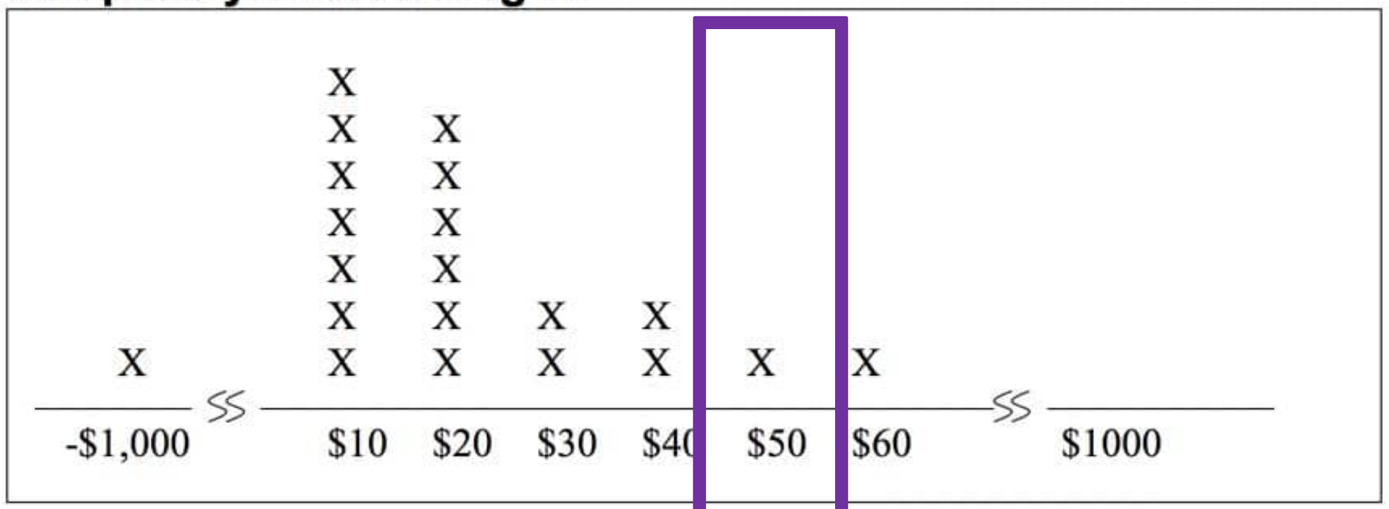

**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

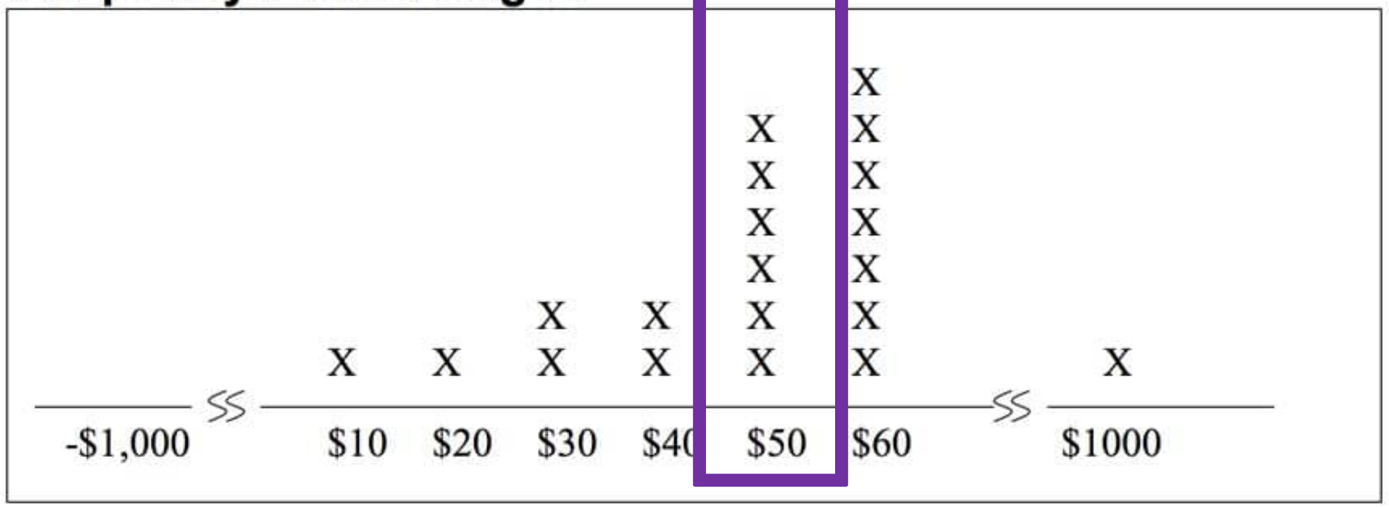
**What if select $10?**

Starting for form a **decision rule**

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**

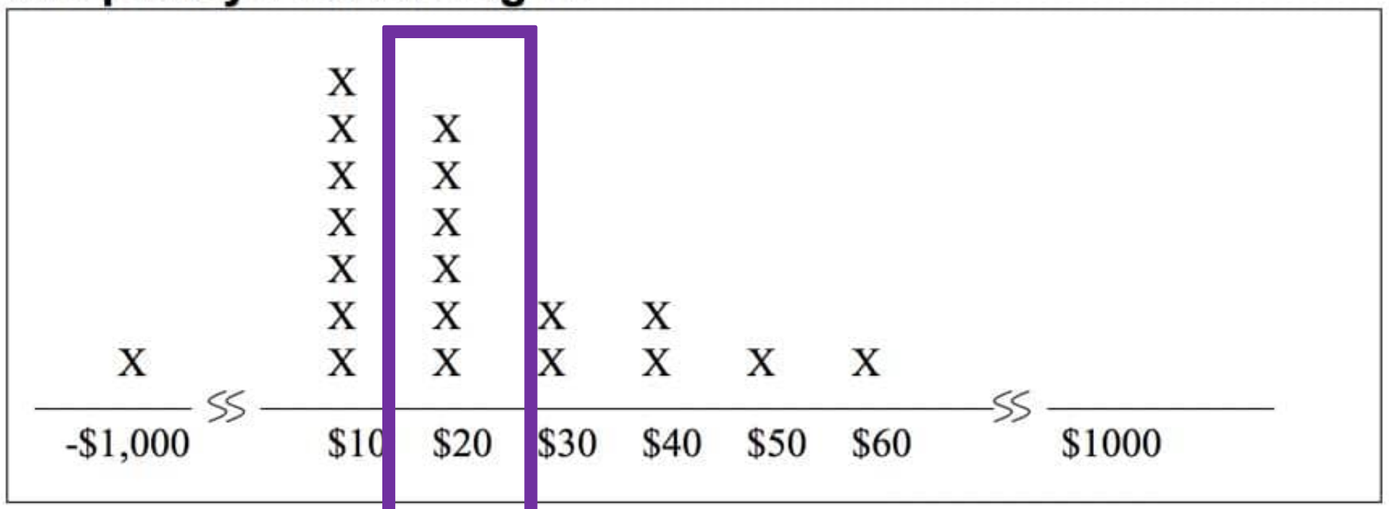



**Null**:
Shown bag is **Bag A**

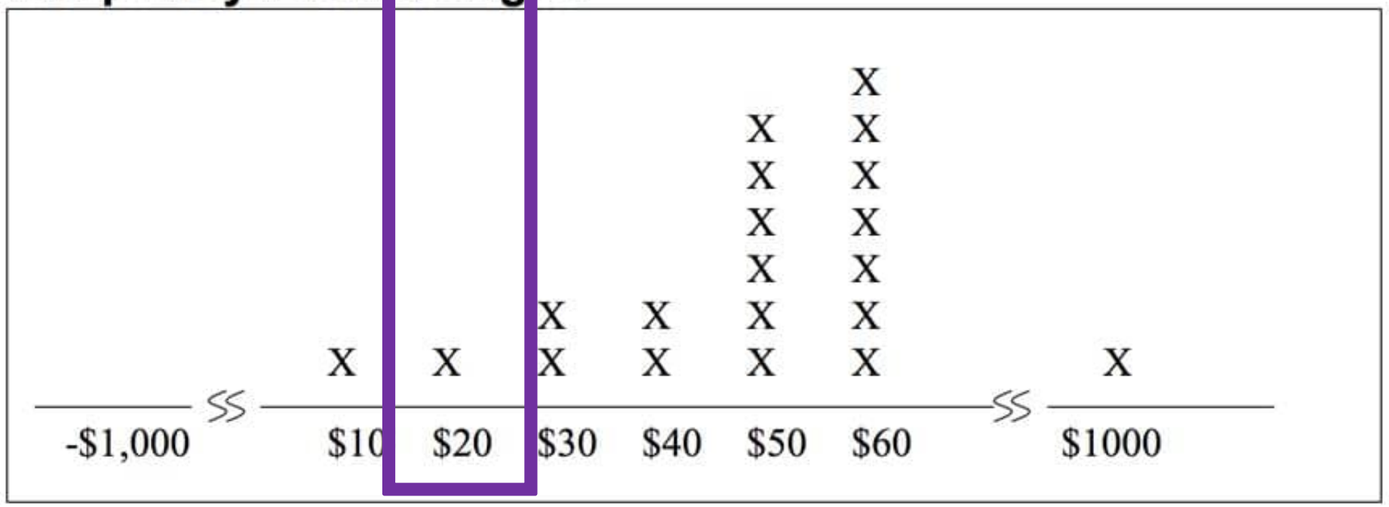
**Alternative**:
Shown bag is **Bag B**

**What if select $50?**

**Frequency Plot for Bag A:**




**Frequency Plot for Bag B:**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**What if select $20?**

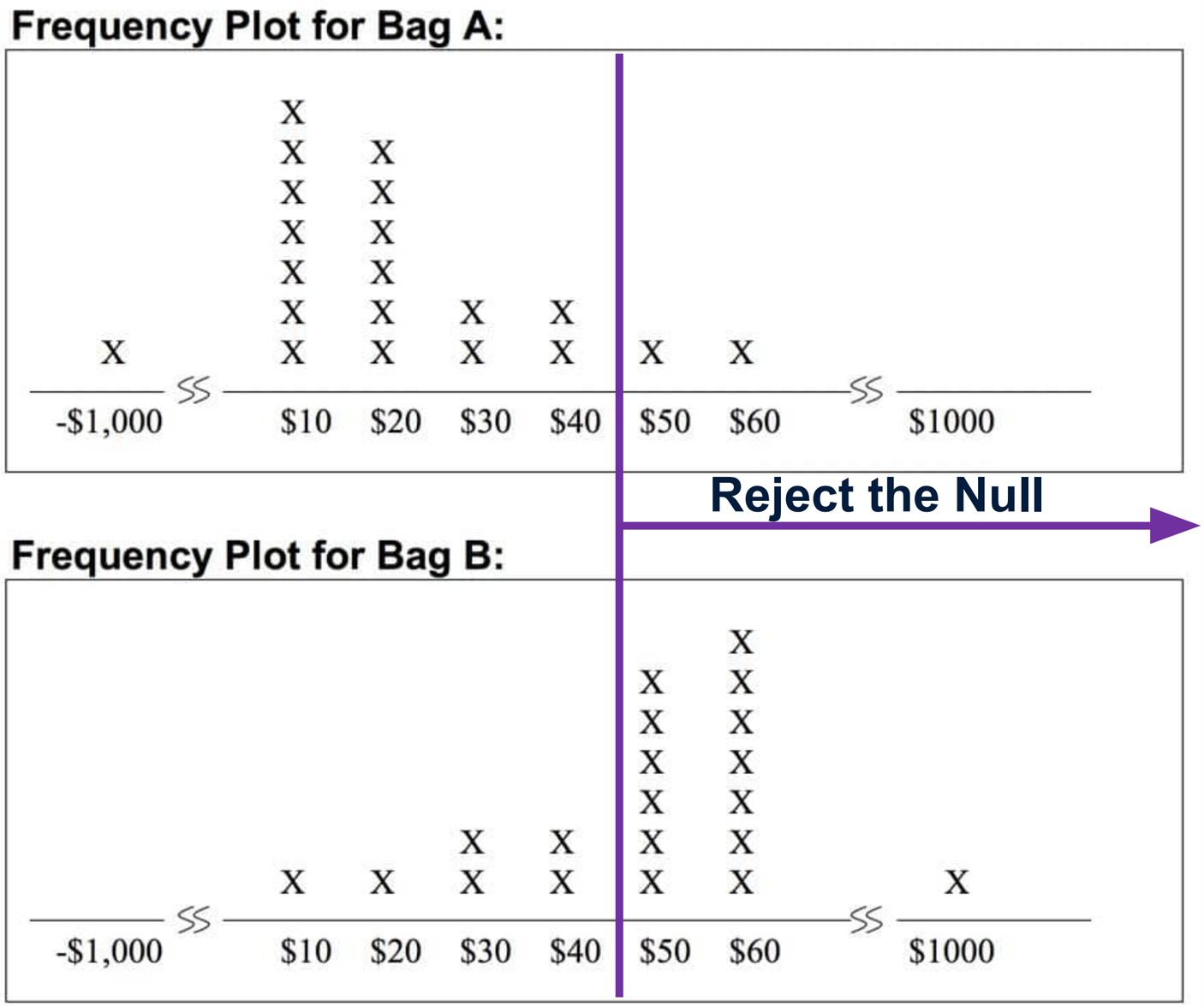
**Frequency Plot for Bag A:**


**Frequency Plot for Bag B:**


**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

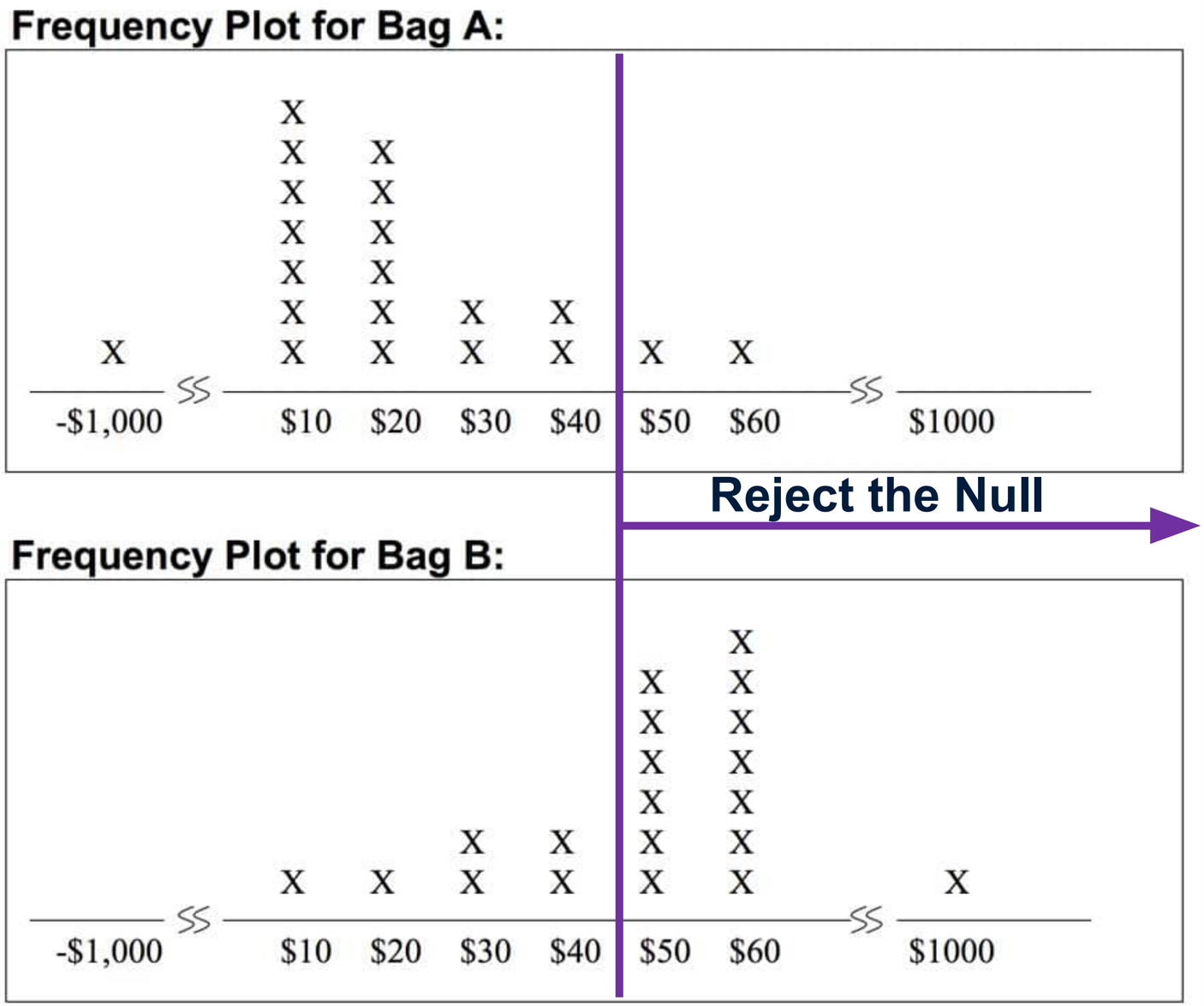
**What if select $40 or $30?**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if voucher is $50 or higher**

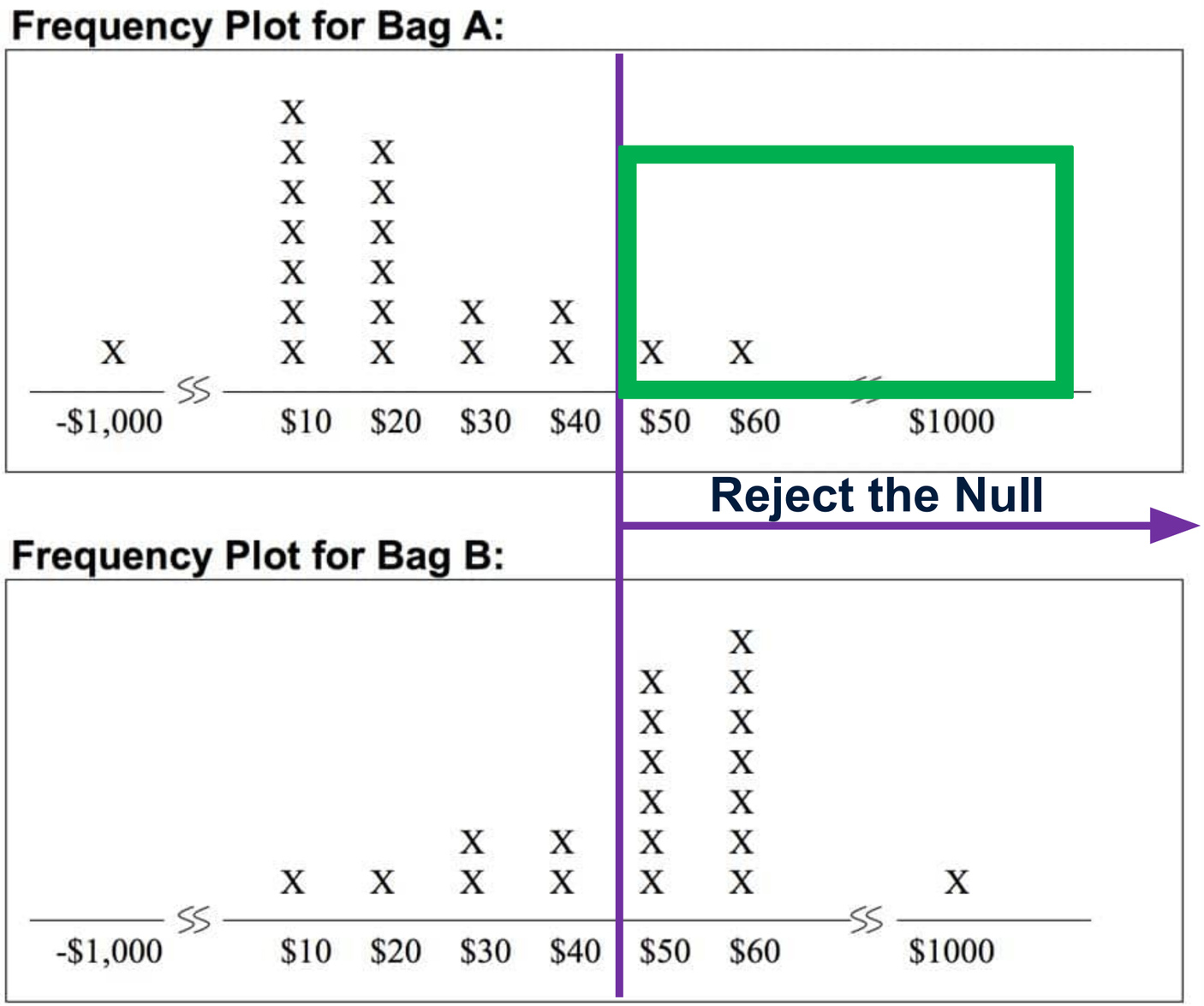



**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if voucher is $50 or higher**

**Error: Reject Null when Null True**

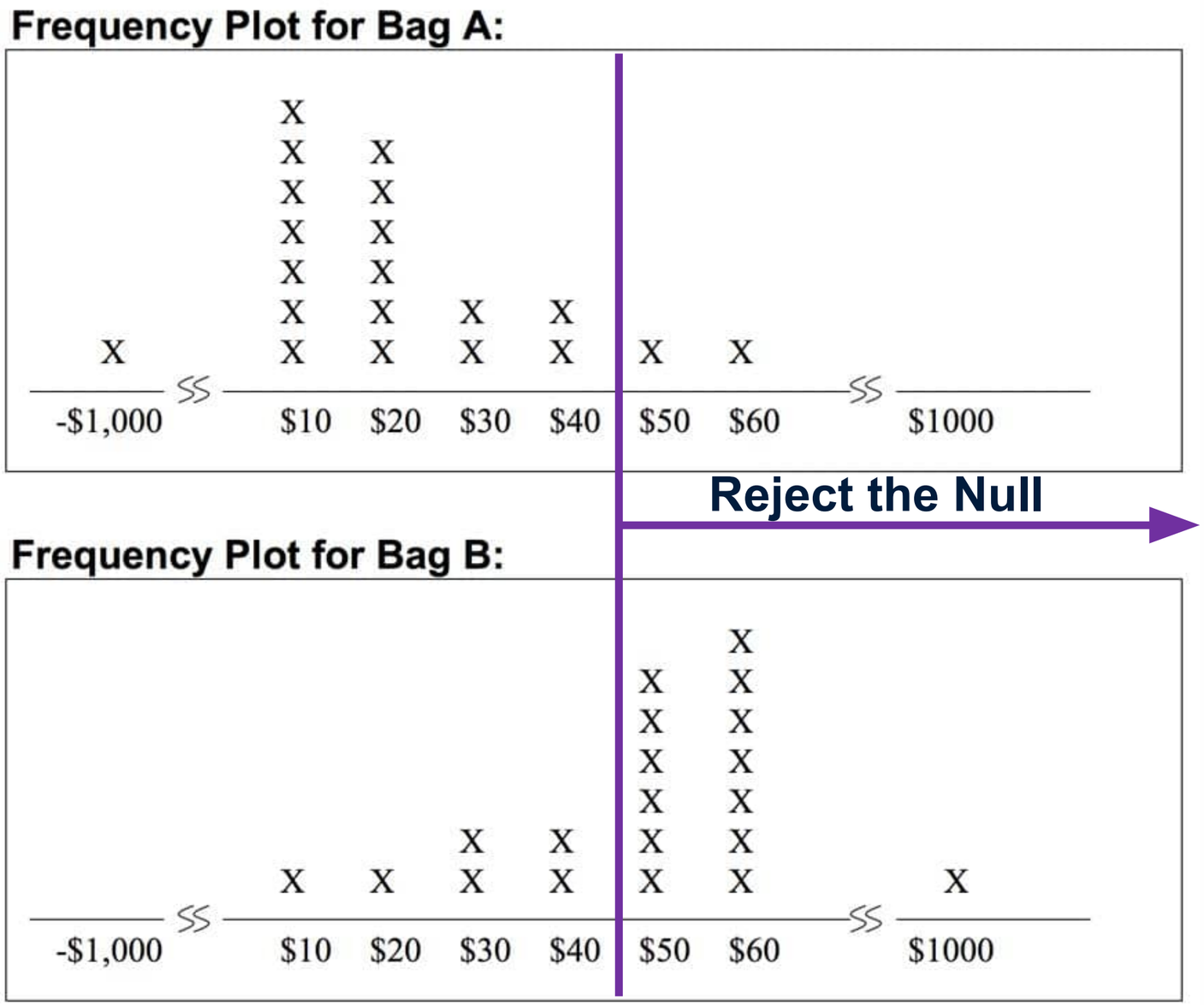



**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if voucher is $50 or higher**

**Error: Reject Null when Null True**

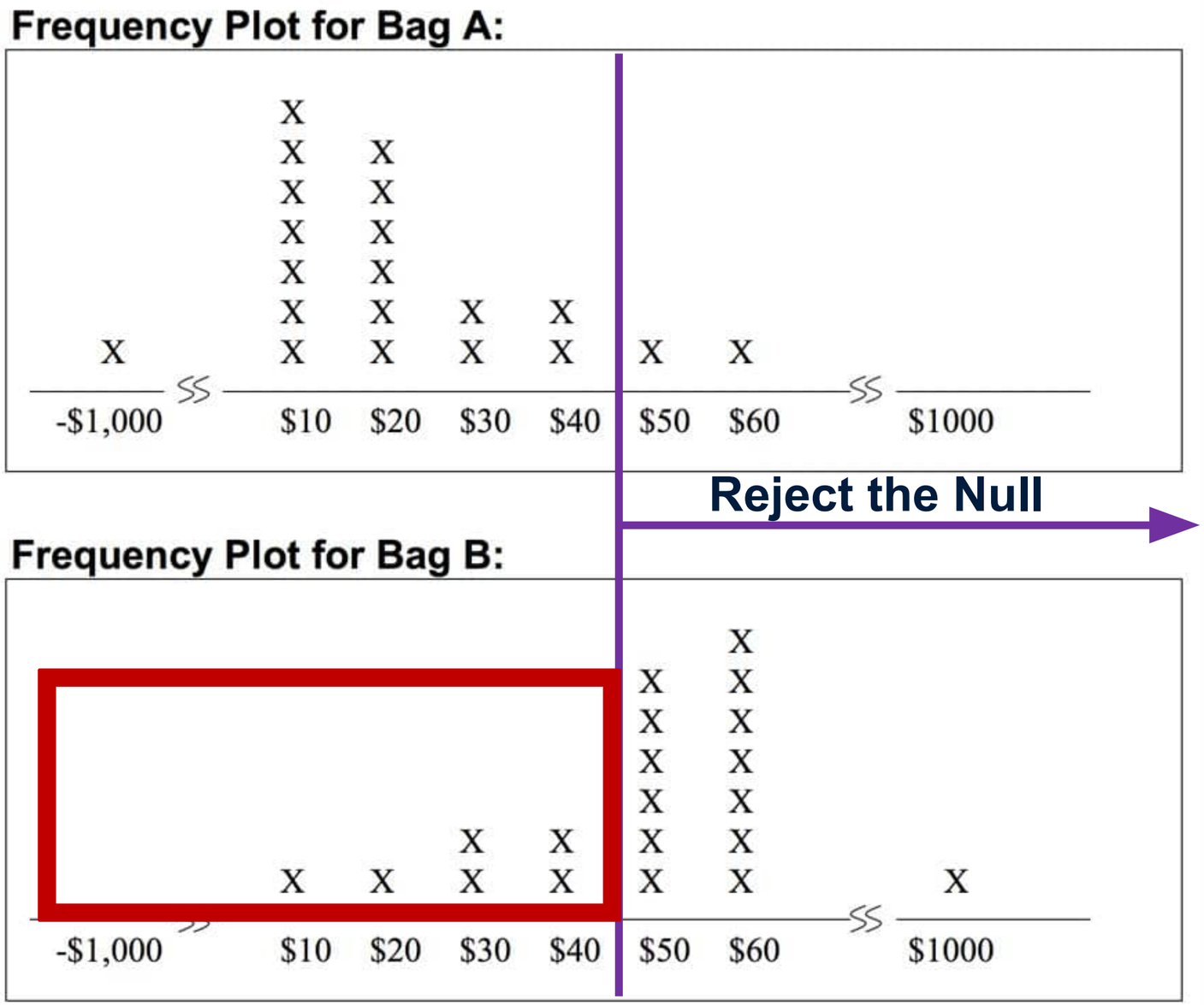



**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if voucher is $50 or higher**

**Other Error: Do not Reject Null when Alternative True**

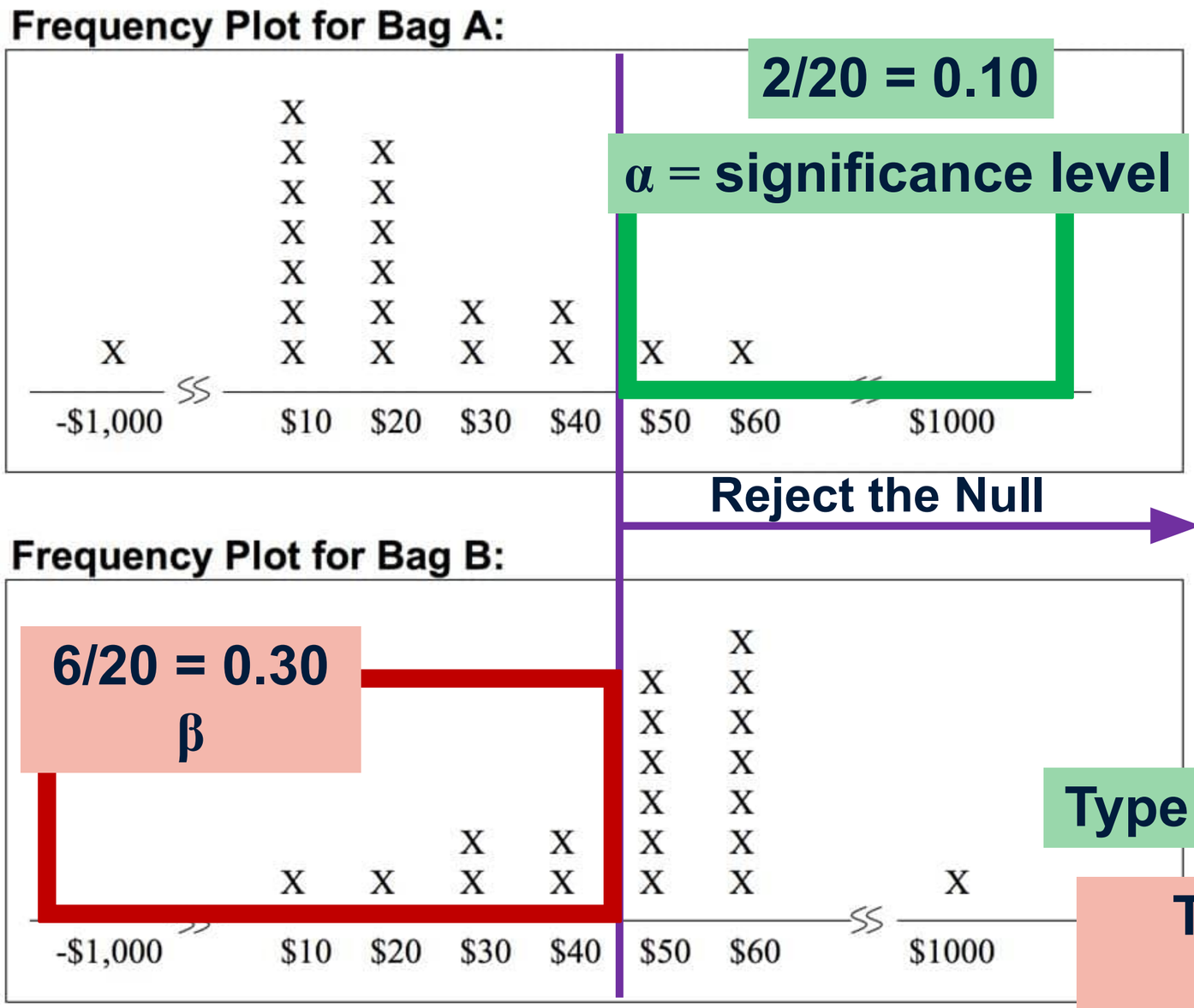



**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if voucher is $50 or higher**

**Other Error: Do not Reject Null when Alternative True**



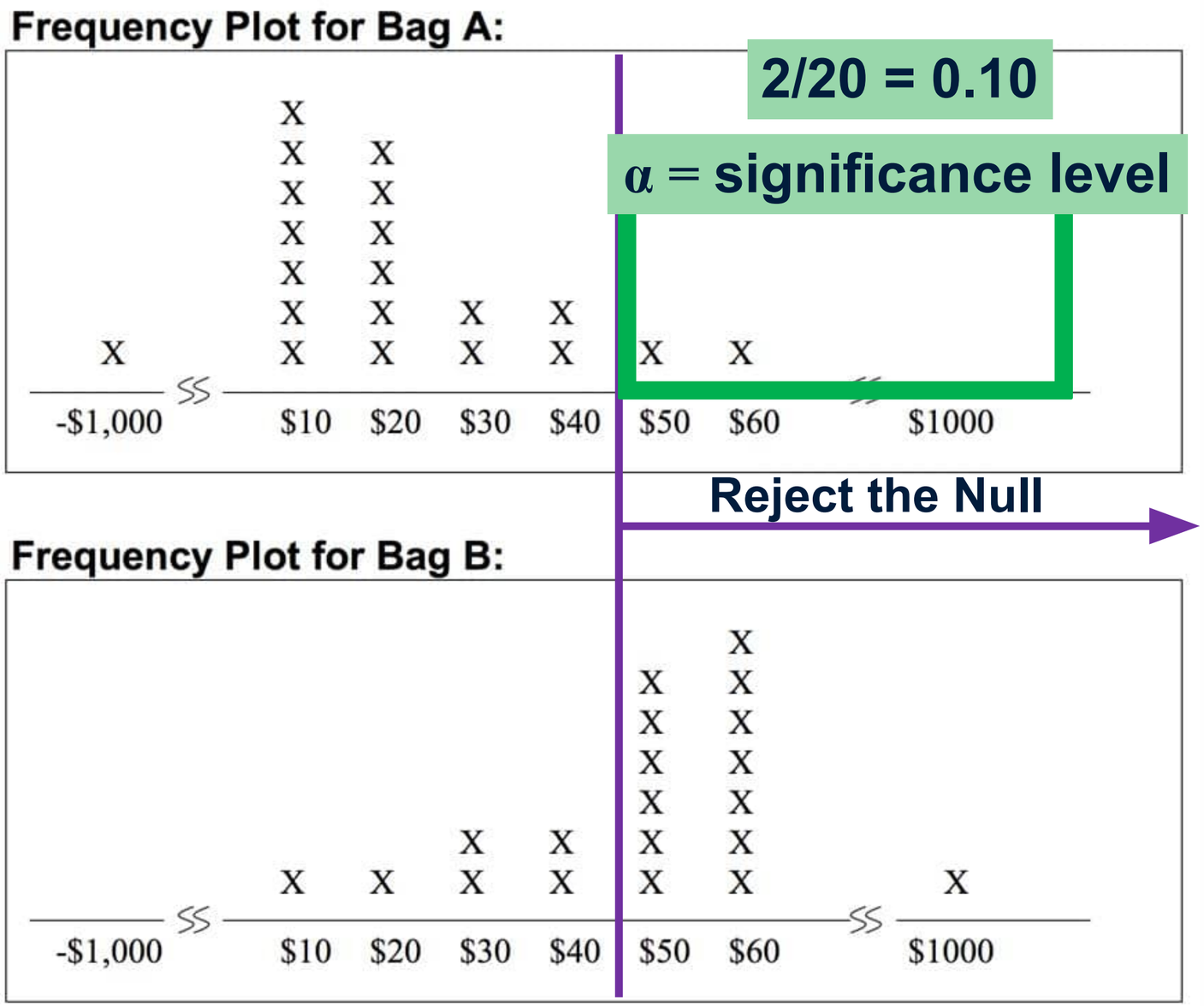

**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if voucher is $50 or higher**

**Type 1 Error: Reject Null when Null True**

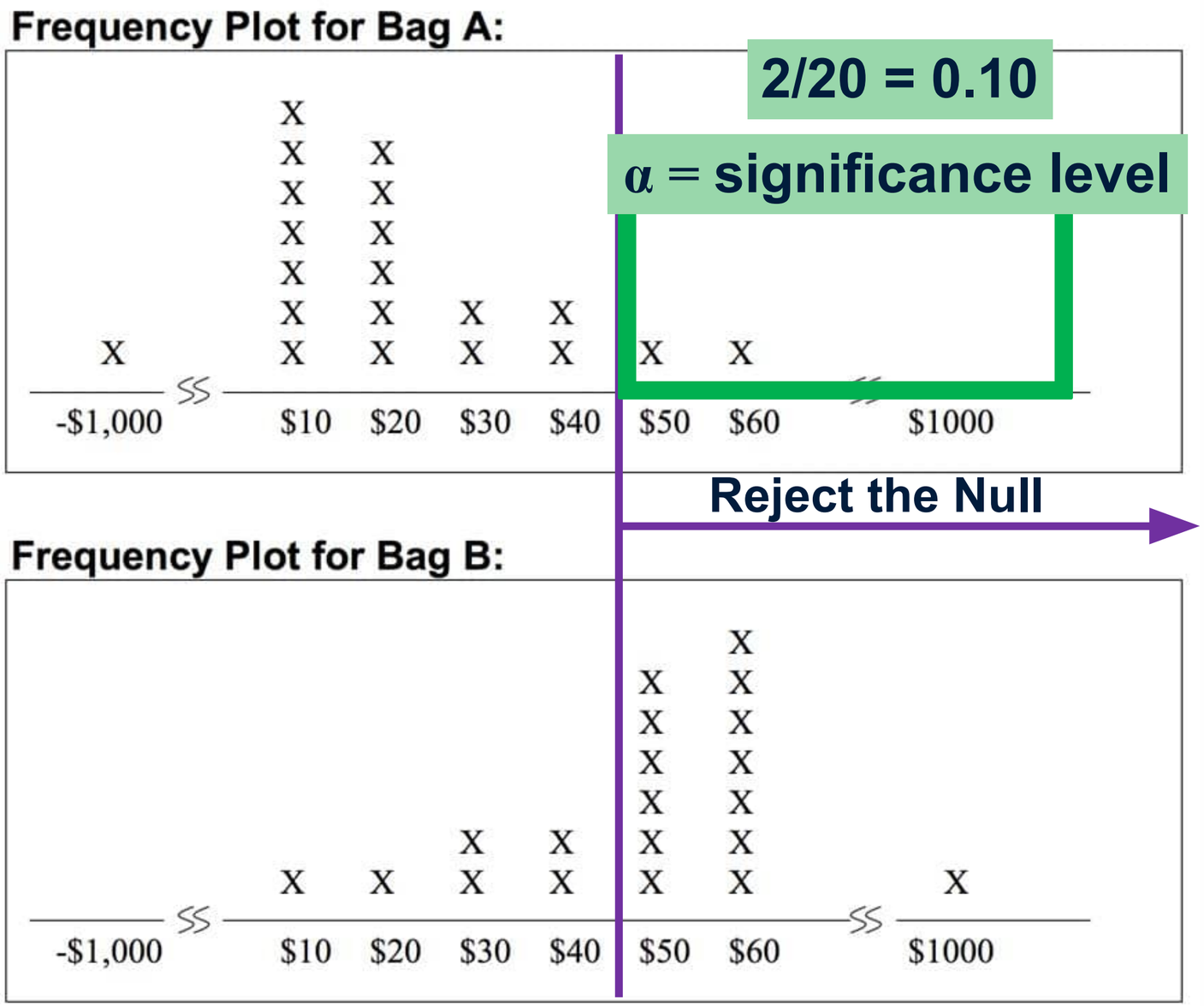
**Type 2 Error: Do not Reject Null when Alternative True**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

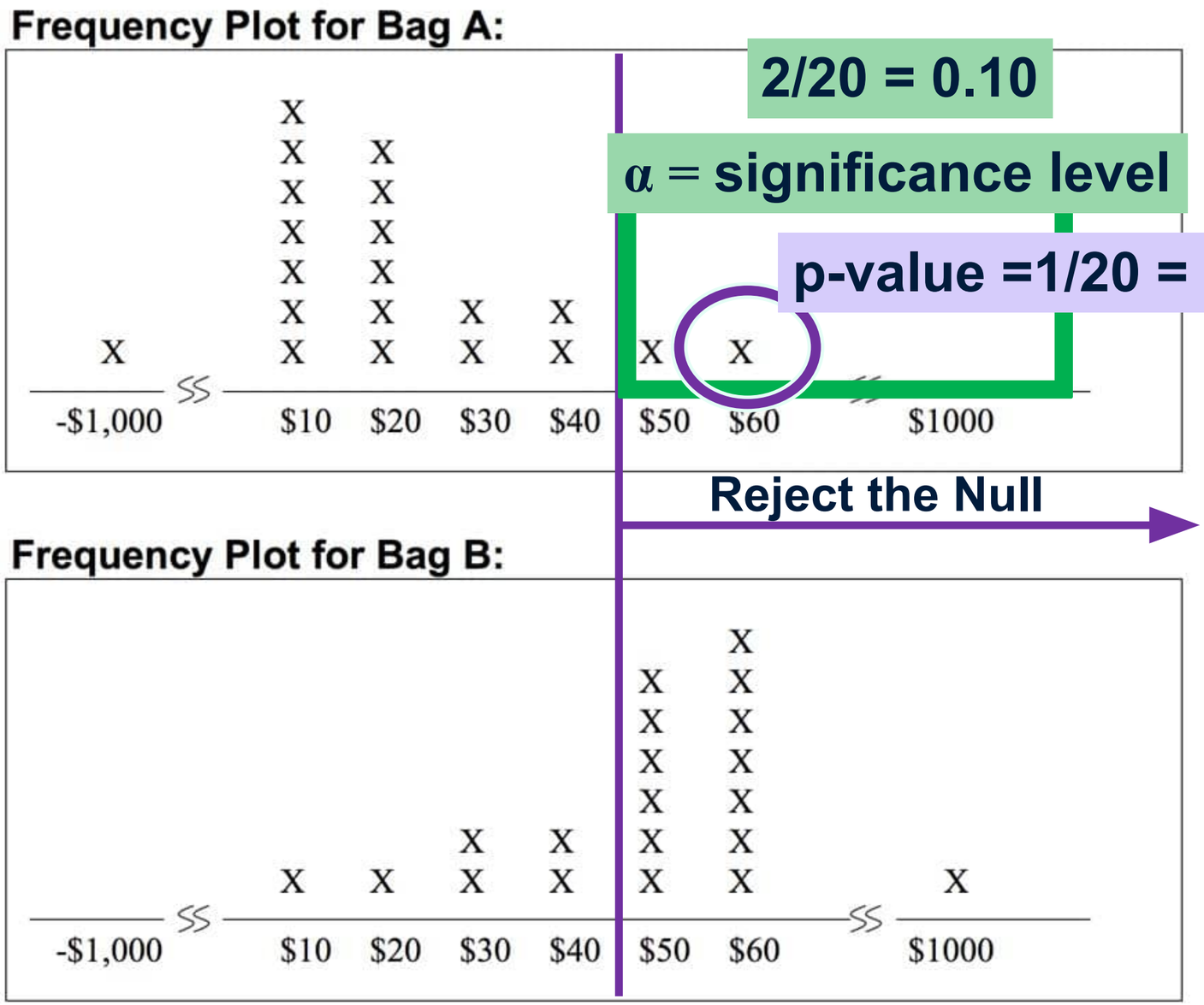
**Decision Rule:**
**Reject the Null if voucher is $50 or higher**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

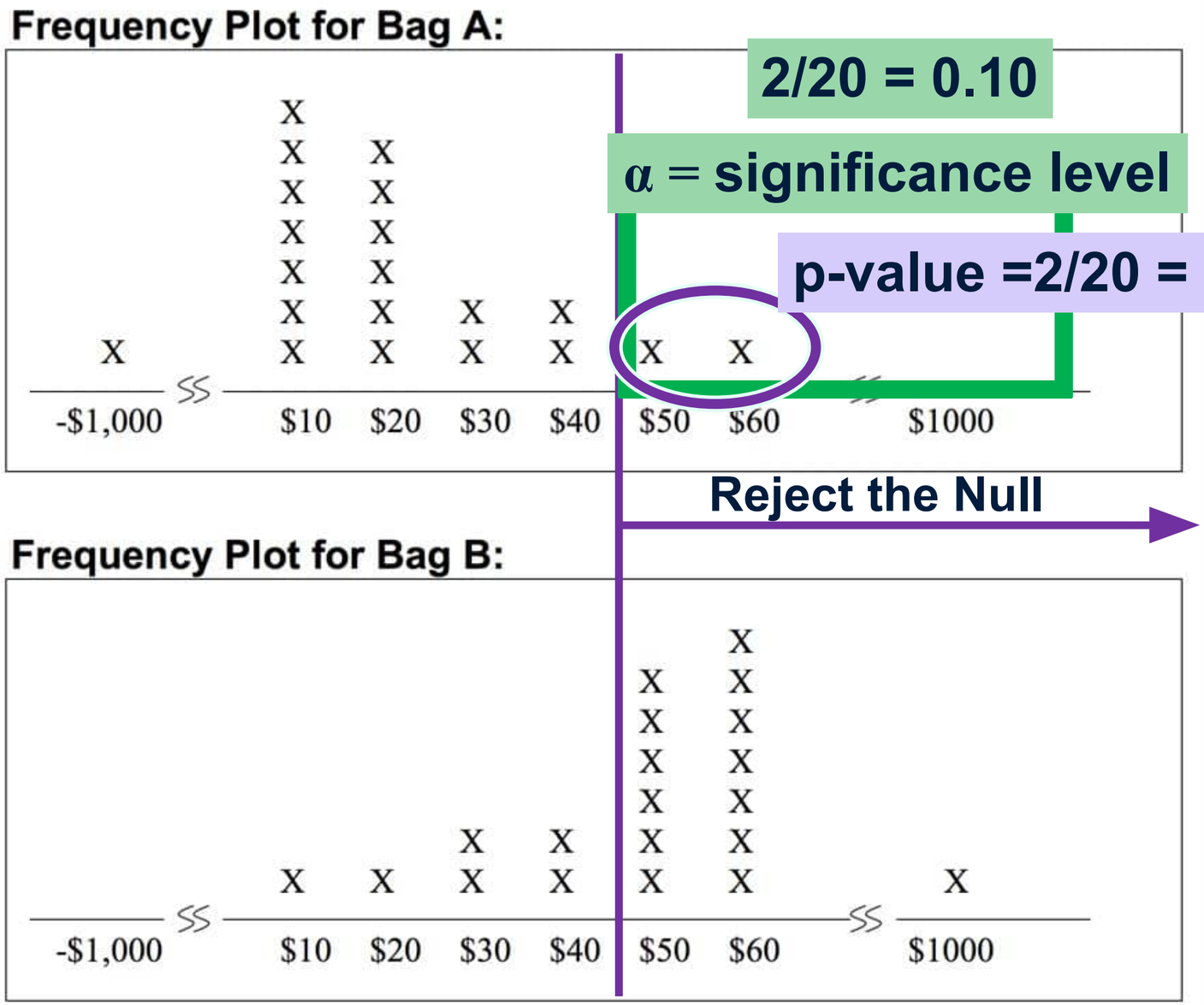
**Decision Rule:**
**Reject the Null if p-value is $\leq \alpha$**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

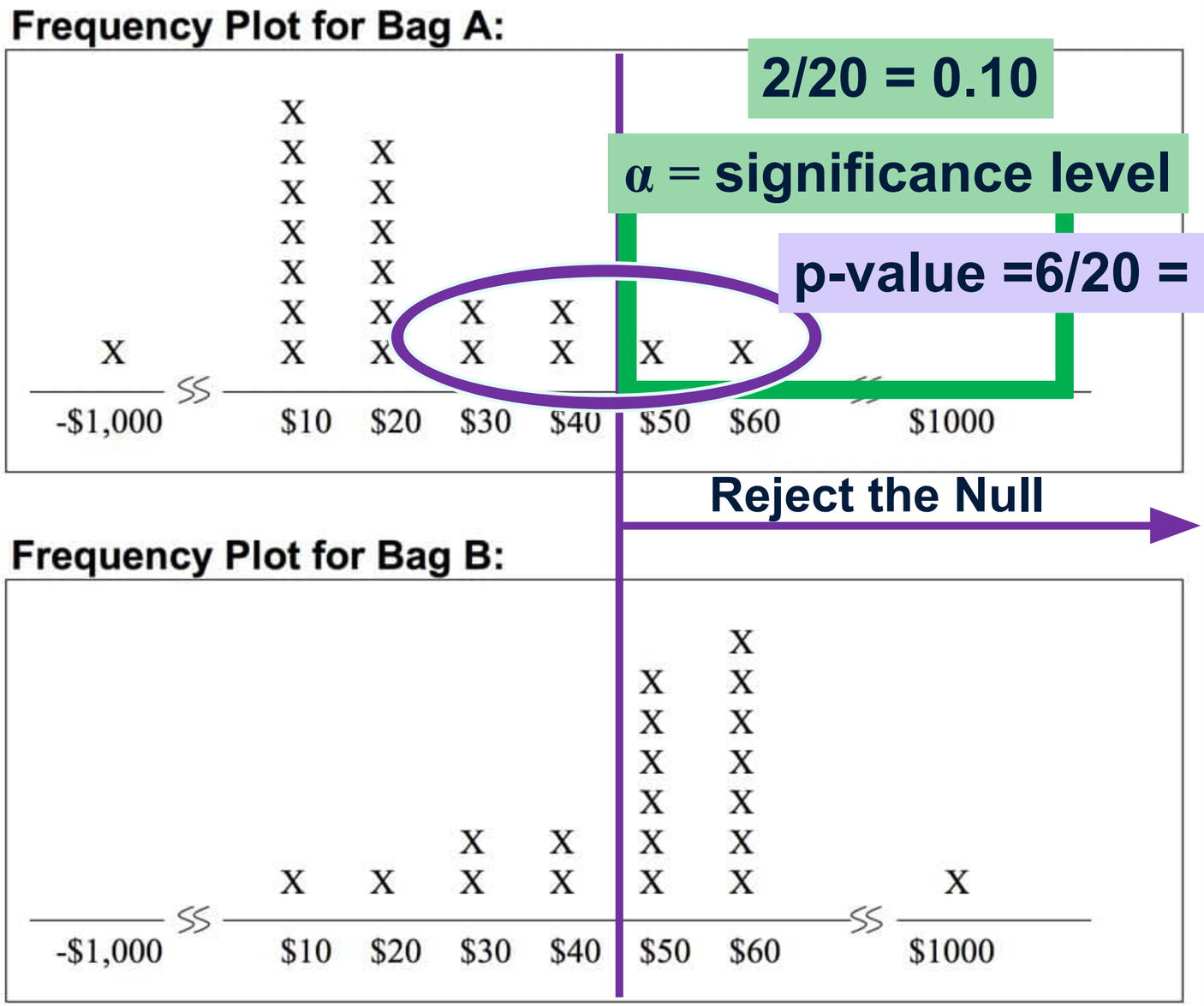
**Decision Rule:**
**Reject the Null if p-value is $\leq \alpha$**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if p-value is $\leq \alpha$**




**Null**:
Shown bag is **Bag A**

**Alternative**:
Shown bag is **Bag B**

**Decision Rule:**
**Reject the Null if p-value is $\leq \alpha$**

# Hypothesis Testing

- Stating Hypotheses
- Selecting a Significance Level
- Using data to make our decision (via p-value)

More details about making inferences ahead!