

## **GOAL:**

**Select an item and add it to cart**

## **OPERATORS:**

- **M** = Mental preparation (1.35 s)
- **K** = Keystroke / Mouse Click (0.28 s)
- **P** = Pointing with Mouse (1.10 s)
- **H** = Homing (Move hand between keyboard and mouse) (0.40 s)

## **METHOD 1: Mouse-Only (Item visible on page)**

### **Steps:**

1. M (Decide item)
2. P (Point to item)
3. K (Click to open item)
4. P (Point to **Add to Cart**)
5. K (Click **Add to Cart**)

### **Total Execution Time:**

$$M + 2P + 2K$$

$$= 1.35 + (2 \times 1.10) + (2 \times 0.28)$$

**= 4.11 seconds**

**KEY HITS (K): 2**

**POINTING (P): 2**

**HOMING (H): 0**

## METHOD 2: Search + Mouse (Item not visible, search needed)

### Steps:

1. M (Decide item name to search)
2. K $\times$ 8 (Type item name)
3. K (Press Enter)
4. H (Move hand to Mouse)
5. P (Point to item in results)
6. K (Click item)
7. P (Point to **Add to Cart**)
8. K (Click **Add to Cart**)

### Total Execution Time:

$$\begin{aligned} & M + (8K) + K + H + 2(P + K) \\ & = 1.35 + (8 \times 0.28) + 0.28 + 0.40 + 2 \times (1.10 + 0.28) \\ & = 7.03 \text{ seconds} \end{aligned}$$

**KEY HITS (K):** 11

**POINTING (P):** 2

**HOMING (H):** 1

### SELECTION RULE:

- If the item is already visible → Use Method 1 (Faster).
- If the item is not visible and must be searched → Use Method 2.

## **GOAL:**

**Delete the mail**

## **OPERATORS:**

- **M** = Mental preparation (1.35 s)
- **K** = Keystroke / Mouse click (0.28 s)
- **P** = Pointing with mouse (1.10 s)
- **H** = Homing (move hand between keyboard & mouse) (0.40 s)

## **METHOD 1: Keyboard-only (navigate + Delete key)**

### **Steps:**

1. M (Decide which mail to delete)
2. K × 3 (Press Arrow Down/Up 3 times to focus target mail) — *assumption: 3 presses*

3. K (Press Delete key)

**Total Execution Time:**

$$M + 4K = 1.35 + (4 \times 0.28) = 2.47 \text{ seconds}$$

**KEY HITS (K):** 4

**HOMING (H):** 0

**POINTING (P):** 0

## **METHOD 2: Mouse-only (point & click)**

**Steps:**

1. M (Decide which mail to delete)
2. P (Point to mail)
3. K (Click to select/open context)
4. P (Point to Delete/Trash icon)
5. K (Click Delete)

**Total Execution Time:**

$$M + 2P + 2K = 1.35 + (2 \times 1.10) + (2 \times 0.28) = 4.11 \text{ seconds}$$

**KEY HITS (K):** 2

**HOMING (H):** 0

**POINTING (P):** 2

## **SELECTION RULE:**

If the mail is reachable in a few keystrokes ( $\approx \leq 3$  arrow presses) use **Method 1 (Keyboard-only)**—faster. If visual selection is required or mouse is already in use, use **Method 2 (Mouse-only)**.

## **GOAL:**

**Close window**

## **OPERATORS:**

- **M** = Mental preparation (1.35 s)
- **K** = Keystroke / Mouse click (0.28 s)
- **P** = Pointing with mouse (1.10 s)
- **H** = Homing (move hand between keyboard & mouse) (0.40 s)

## **METHOD 1: Keyboard shortcut (e.g., Alt+F4 on Windows or Cmd+W on macOS)**

**Steps:**

1. M (Decide to close)
2. K (Press modifier key)
3. K (Press close key)

**Total Execution Time:**

$$M + 2K = 1.35 + (2 \times 0.28) = 1.91 \text{ seconds}$$

**KEY HITS (K):** 2

**HOMING (H):** 0

**POINTING (P):** 0

## **METHOD 2: Mouse-only (click the window close button 'X')**

**Steps:**

1. M (Decide to close)
2. P (Point to window close button)
3. K (Click close button)

**Total Execution Time:**

$$M + P + K = 1.35 + 1.10 + 0.28 = \mathbf{2.73 \text{ seconds}}$$

**KEY HITS (K):** 1

**HOMING (H):** 0 (*if mouse already in hand*)

**POINTING (P):** 1

**SELECTION RULE:**

- If user knows & can use the keyboard shortcut → Method 1 (faster).
- If user prefers or only has a mouse available → Method 2.