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## 1. && (AND Operator)

The && operator means **both conditions must be true** for the code to run.

```
if (weight > 300 && time < 6) {  
  alert("Come to our tryout!");  
} else {  
  alert("Come to our cookout!");  
}
```

### ✓ How it works?

- If the person **weighs more than 300 pounds AND** runs **under 6 seconds**, they qualify for the tryout.
- If **either** condition is false, they get invited to the **cookout instead**.

### ◆ Example: Testing multiple conditions

```
if (weight > 300 && time < 6 && age > 17 && gender === "male") {  
  alert("Come to our tryout!");  
} else {  
  alert("Come to our cookout!");  
}
```

✓ **All four conditions** must be true for the person to get invited to the tryout.

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## 2. || (OR Operator)

The || operator means **at least one condition must be true** for the code to run.

```
if (SAT > avg || GPA > 2.5 || sport === "football") {  
  alert("Welcome to Bubba State!");  
} else {  
  alert("Have you looked into appliance repair?");  
}
```

### ✓ How it works?

- If **any one** of these conditions is true (**SAT > avg**, **GPA > 2.5**, or **plays football**), the student is accepted.

- If **none** of these are true, they get the **appliance repair** suggestion.

### ◆ Example: Testing multiple conditions

```
if (age > 18 || hasID === true) {  
  alert("You can enter the club.");  
} else {  
  alert("Sorry, you are not allowed.");  
}
```

✓ If a person is **older than 18** OR **has an ID**, they can enter.

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## 3. Mixing && and || Together

You can **combine** AND (&&) and OR (||) in a single condition.

```
if (age > 65 || age < 21 && res === "U.S.") {  
  alert("Eligible for special benefits");  
}
```

### ◆ Ambiguity Issue

- Does this mean:  
**(age > 65) OR (age < 21 AND res === "U.S.")?**  
**OR**  
**((age > 65 OR age < 21) AND res === "U.S.")?**

To **avoid confusion**, use **parentheses**.

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## 4. Using Parentheses for Clarity

### ✓ Corrected Version 1

If the person is **over 65** OR **under 21 and a U.S. resident**, they qualify.

```
if ((age > 65 || age < 21) && res === "U.S.") {  
  alert("Eligible for special benefits");  
}
```

✓ **Passes if:**

- Over 65 AND a U.S. resident
  - Under 21 AND a U.S. resident
- 

## ✓ **Corrected Version 2**

If the person is **over 65 and lives anywhere**, OR **is under 21 and a U.S. resident**, they qualify.

```
if (age > 65 || (age < 21 && res === "U.S.")) {  
  alert("Eligible for special benefits");  
}
```

## ✓ **Passes if:**

- Over 65 (doesn't matter where they live)
  - Under 21 AND a U.S. resident
- 

## 5. Summary

- ✓ **&& (AND)** → **All** conditions must be **true**.
- ✓ **|| (OR)** → **At least one** condition must be **true**.
- ✓ Use **parentheses ()** when combining **&&** and **||** to **avoid confusion**.