# 2 Making decisions - if and boolean – Part 1

Name: _____ Class: _____ Date: _____

## Vocabulary

*Write each word three times.*

| **English** | **Write it 3 times** (English) |
|---|---|
| boolean | |

## Recall

Programs have to make decisions:

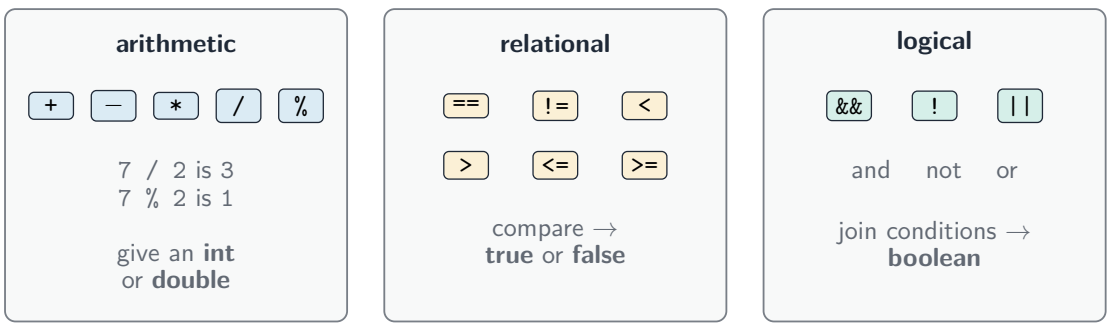
- "If it is raining, take an umbrella."
- A game checks if your score beats the high score.
- A test is either passed or failed – true or false.

This sheet lines up how programs decide. Each idea has a worked example.

## New ideas

### 1 Boolean values

A **boolean** value is either `true` or `false`. Comparisons produce booleans:




`==` (equal), `!=` (not equal), `<`, `>`, `<=`, `>=`.

*Worked example.* `5 > 3` is `true`; `4 == 5` is `false`.



exercises.lol exercises.com.cn

### 2 The if statement

An `if` statement runs code **only when** a condition is true:

```
if (score >= 50) {
    System.out.println("Pass");
}
```

### 3 if / else

Add `else` to do something when the condition is false:

```
if (score >= 50) System.out.println("Pass");
else             System.out.println("Fail");
```

### 4 Combining conditions

- `&&` means **and** (both must be true),
- `||` means **or** (at least one is true),
- `!` means **not** (flips true and false).

**Watch out: `==` compares** two values, but a single `=` **assigns** a value. Writing `if (x = 5)` is a bug – use `if (x == 5)`.

## Practice

Try these in order. The methods are all above.

**2.1** State the two possible values of a boolean. [1]

**2.2** Evaluate `7 > 4` and `3 == 4`. [2]

**2.3** Evaluate `(5 > 3) && (2 > 4)`. [2]

**2.4** A student has `score = 80`. State what `if (score >= 50)` prints given the if/else above. [1]

**2.5** State the difference between `==` and `=`. [2]