U4Ch1L5_Conditionals Explore

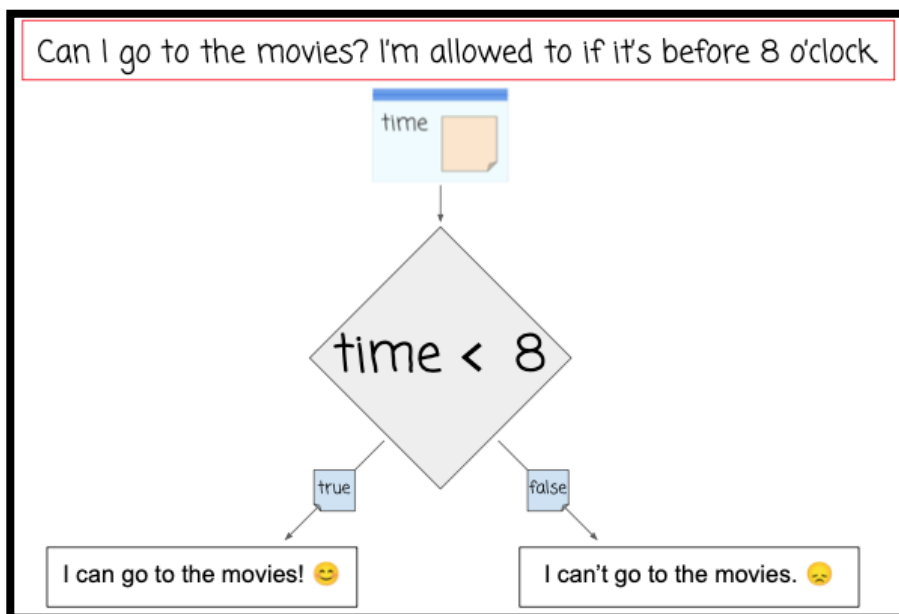**Purpose**: Students learn the basics of conditionals.
Vocabulary: Boolean, Comparison Operators, Logical Operators

- **Boolean Value:** is a data type that is either 'True' or 'False'
- **Comparison Operator:** 6 total: $\leq, \geq, >, <, =, ==$, ('=' get the value. '==' equal to.).
- **Logical Operators:** '&&' (and), '||' (or), '!' (Not – the results are the opposite of the Boolean Value.)

Boolean Values: Always Evaluate the Expression on each side of the Comparison Operator
before Evaluating the Expression for the Boolean Value!

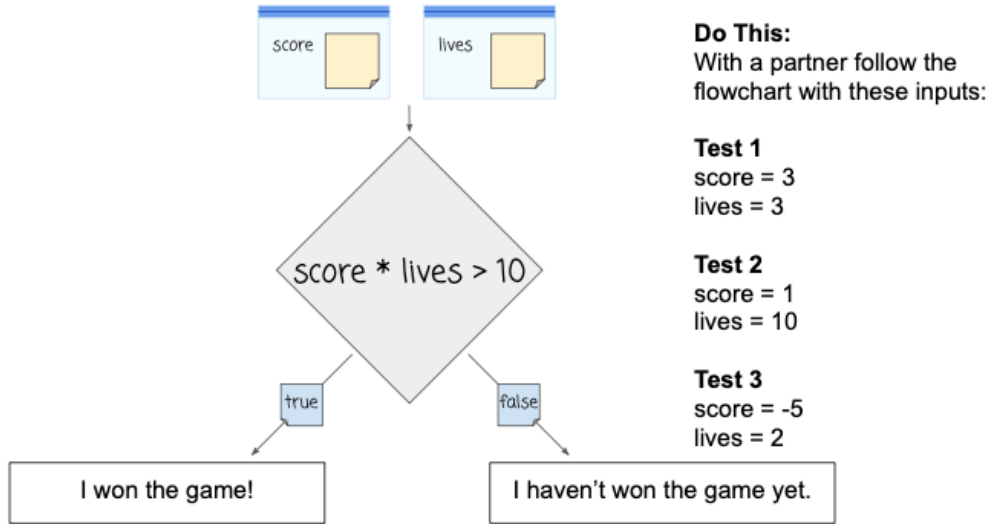| Boolean Expressions with a Comparison Operators			(Circle True or False)
6-3	**<**	**5**	True or False
12/6	**>**	**3**	True or False
(7+5)*3	**<=**	**10**	True or False
9+5	**==**	**14**	True or False

Boolean Values and **Variables:** Any of the values in an expression can be a variable.

Boolean Expressions Variables		(Circle True or False)	
Mom says 7	**var time**	**time < 8**	True or False
Dad says 9	**var time**	**time < 8**	True or False
Friends say 11	**var time**	**time < 8**	True or False

Boolean Values and **Multiple Variables:** Any of the values in an expression can be a variable.

Have I won the game? I have if my score * my lives is greater than 10.

score

lives

score * lives > 10

true

false

I won the game!

I haven't won the game yet.

Do This:
With a partner follow the flowchart with these inputs:

Test 1
score = 3
lives = 3

Test 2
score = 1
lives = 10

Test 3
score = -5
lives = 2

Boolean Expressions with Multiple Variables (Circle True or False)			
I win the game if: my Score * my Lives is greater than 10.			
var score, var lives	score = 3, lives = 3	score * lives $>$ 10	True or False
var score, var lives	score = 1, lives = 10	score * lives $>$ 10	True or False
var score, var lives	score = -5, lives = 2	score * lives $>$ 10	True or False

Challenge!

Based on the flowchart shown above, create a flowchart for the following scenario that requires several steps.
"You can adopt a dog at the SPCA if two conditions are met: 1. "Age" 14 and over, and 2. "Money" is $50.
After you draw the flowchart, then superimpose the following values onto your flow chart and with arrows,
show the path that was followed based upon whether or not the conditions were met. *(When finished, compare
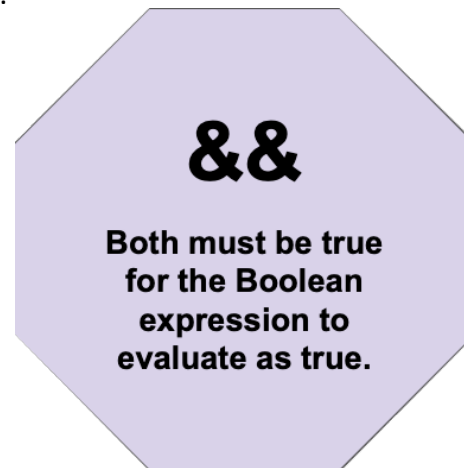your flowchart to the other student's flowcharts – answer on class site..)*

Create a flowchart for a scenario that requires several steps.			Draw Custom Flowchart To Match Scenario
1. "Age" 14 and over, and 2. "Money" is $50.			
var age, var money	age = 17, money = $39	True or False	
var age, var money	age = 12, money = $62	True or False	

Truth Tables – Used in evaluating Boolean Expressions.

Read the rules for '&&' '||' and then attempt to answer the scenarios.
Answers on class site.

&& AND				
True	&&	True	⟶	True or False
True	&&	False	⟶	True or False
False	&&	True	⟶	True or False
False	&&	False	⟶	True or False

&&

Both must be true for the Boolean expression to evaluate as true.

|| OR				
True	||	True	⟶	True or False
True	||	False	⟶	True or False
False	||	True	⟶	True or False
False	||	False	⟶	True or False

||

Either may be true for the Boolean expression to evaluate as true.