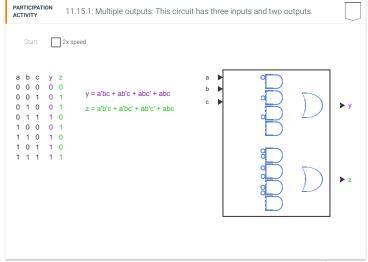
11.15 Multiple outputs

This section has been set as optional by your instructor.

Multiple output circuits

Many combinational circuits have multiple outputs for the same inputs. Each output can be treated as a unique function. For a truth table, each output becomes a new column. For equations, each output is a unique equation.



	RTICIPATION TIVITY	11.15.2: Multiple output circuits.	
Co	nsider the ex	xample above.	
1)	The truth tal	ble has 3 inputs, 8 rows, and ts.	
	O 1		
	O 2		
	O 3		
2)	Output y is 1 combination	1 for how many input ns?	
	O 1		
	O 2		
	O 4		
3)		in 1's in the columns for y, z, ikely considers y, z	
	O togetl	her	
	O separ	ately	
4)	When creati considers y,	ing the equations, a designer .z	
	O togetl	her	
	O separ	rately	
5)	When creati kept the circ	ing the circuit, the designer cuits	
	O intern	·	
	O separ	ate	
5)	outputs w, x	ent truth table with two r, if three 1's exist in w's n 1's exist in x's column.	
	O one		
	O three		
	O an un	known number of	

Example: 7-segment display

A **7-segment display** is a common display device having 7 light segments that can be lit in different patterns to represent numbers 0-9 and some letters too.

PARTICIPATION ACTIVITY 11.15.3: 7-segment display, and use for displaying a 2-bit binary number as a decimal number

	Start	i j 0 0 0 1 1 0	0	1 1	1 0	0 (e f 1 1 1 0 0 0	0 0 1	b = i'j'	+ ij' + ij + i'j + ij' + + i'j + ij	· ij
	RTICIPATION 11.15.4: 7-segment display.										
1)	What is abcdefg to display a 2? Type as: 0000000										
2)	Check Show answer What is abcdefg to display an 8? Type as: 0000000										
	Check Show answer										
3)	If inputs ij are 00, what are outputs abodefg?										
	Check Show answer										
4)	Is b an input or output of the circuit being designed? Type input or output. Check Show answer										
5)	The designer created equation c = i'j' + i'j + ij. That equation can be simplified to c = i'j' +? Type one literal. Hint: i'j + ij = ? Check Show answer										
6)	The designer created equation $b = ij' + ij' + ij$. That equation can be simplified to $b = ?$	j									
	Check Show answer										
7)	A designer decides to display a 3-bit binary number (0-7). The circuit will have three inputs ijk. How many outputs will the circuit have? Check Show answer	i									