Assume that you have one of these chips:
https://www.ti.com/lit/ds/symlink/cd74hc283.pdf

a) If A is 0100, B is 1101, and C_{in} is 0, what will be produced at S and C_{out}?

b) If you have a 4-bit unsigned number N (carried on four wires named N_{4-0}) connected to both A and B, for what values of N is the expected result produced, assuming that C_{out} is not included as part of the output number?

c) In the same scenario as in (b), for what values of N is the expected result produced if C_{out} *is* included as part of the output number (forming a 5-bit output)?

d) If you have a 4-bit two's complement number N (carried on four wires named N_{4-0}) connected to both A and B, for what values of N is the expected result produced, assuming that C_{out} is not included as part of the output number?

e) In the same scenario as in (d), for what values of N is the expected result produced if C_{out} *is* included as part of the output number (forming a 5-bit output)?