Worksheet: Associativity and Commutativity

Recap:
A binary function f is *associative* if f(f(x,y),z) = f(x,f(y,z)).
A binary function f is *commutative* if f(x,y) = f(y,x).

Worksheet problems:
1) Claim: a Finish Accumulator (FA) can only be used with operators that are *associative and commutative.* Why? What can go wrong with accumulators if the operator is non-associative or non-commutative?

2) For each of the following functions, indicate if it is associative and/or commutative.

a) f(x,y) = x+y, for integers x, y

b) g(x,y) = (x+y)/2, for integers x, y

c) h(s1,s2) = concat(s1, s2) for strings s1, s2, e.g., h(“ab”,”cd”) = “abcd”