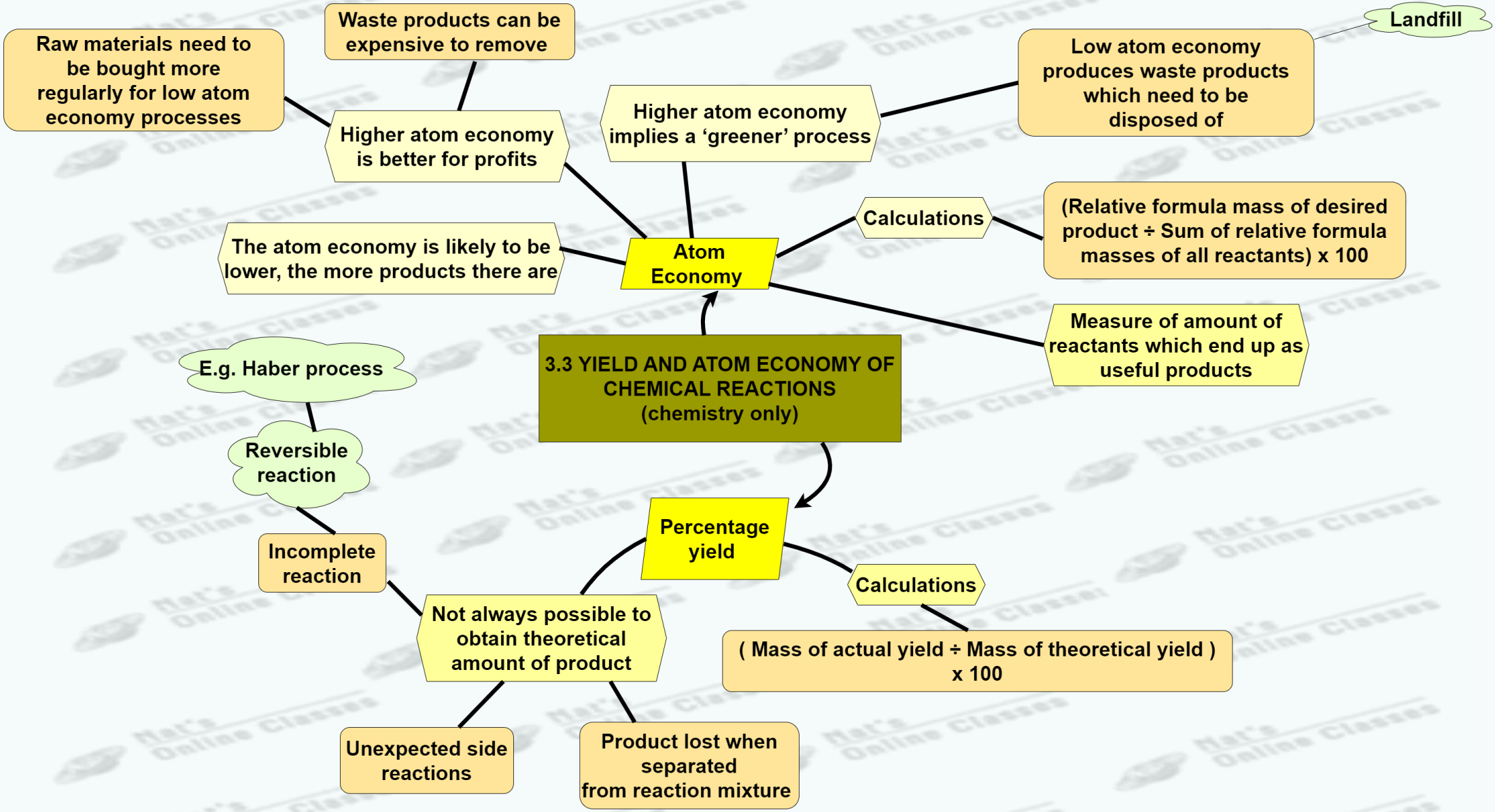
3.3 YIELD AND ATOM ECONOMY OF CHEMICAL REACTIONS (chemistry only)
Atom Economy
Higher atom economy implies a 'greener' process
Low atom economy produces waste products which need to be disposed of
Landfill
Calculations
(Relative formula mass of desired product ÷ Sum of relative formula masses of all reactants) x 100
Measure of amount of reactants which end up as useful products
Higher atom economy is better for profits
Waste products can be expensive to remove
Raw materials need to be bought more regularly for low atom economy processes
The atom economy is likely to be lower, the more products there are
Percentage yield
Calculations
(Mass of actual yield ÷ Mass of theoretical yield) x 100
Not always possible to obtain theoretical amount of product
Incomplete reaction
Reversible reaction
E.g. Haber process
Unexpected side reactions
Product lost when separated from reaction mixture