

Question 3

a) ~~Polymers~~ ^{Composites} Metals and composites

^{Composites} ~~Polymers~~ because they have a very good stiffness / Density ratio, for example materials such as carbon fibre is used in many racing application to bring the weight of the car down to minimum required while keeping the structural strength.

Metals are always a viable option although not as effective as some composites in judging by the stiffness / weight ratio ^{steel} they are much cheaper to ~~produce~~ work with and more widely available.

b) Foams, elastomers, polymers and natural materials are out of the selection as they are too weak although their weight is also very low, it wouldn't be practical as the parts would have to be bigger (larger final volume) to even be ~~stronger~~ strong but it wouldn't come ~~even~~ even close to metals and composites

c) When building a racing car, you building it to be better than the competition, without compromises therefore cars used better and stronger parts made from ~~cost~~ more expensive materials to gain as much performance as possible

Carbon fibre allows the racing team cut the weight of the car while retaining the same strength and stiffness.