

Timestamp	Name	Your responses
		<p>Assumption made: Race car designed has 4 tyres. Race car designed has 2 headlights. Ideally, the ratio of tyres to headlights is 2:1 which is equivalent to 120:60 However, the number of tyres supplied by the vendor is less than 120 Thus, the number of tyres is the "limiting reactant" The number of headlights supplied is given "in excess". $100/4=25$ In total, 25 cars can be produced.</p>
8/16/2011 9:14:40	Tan Tze Hsi Samuel	<ol style="list-style-type: none"> Each car will have 2 headlights. Each car will have 4 tyres. 25 cars Pit stops during the race requires a change of tyres too and therefore additional tyres. If the construction process can be written as a chemical equation, it would be: $2\text{headlights} + 4\text{tyres} \rightarrow 1\text{car}$ ideally, $\text{headlights/tyres} = 2 / 4$ $= 1/2$ currently, $\text{headlights/ tyres} = 60/100$ $= 3/5$ 1 (no. of tyres) < 2 (no. of headlights) tyres are the "limiting reactant"
8/16/2011 9:19:00	Du Han Yang	

Basic Design:

The car should have 4 primary tires, 4 spare tires and 2 headlights each. 4 tires on each car to ensure stability and high performance when performing high speed turns around corners, especially in the tricky circuit in Singapore. Spare tires are factored in to account for mid-way pit-stops. 2 headlights is the minimum and ideal number to prevent overly glaring lights, but at the same time make sure that the car can be seen.

Calculation:

According to the design mentioned above, the number of cars that can be produced using the materials provided by Yokohoho and JoJoHa, is 12. This can be considered an analogy to the concept of reactants and products. Ideally, with 60 headlights, 240 tires would be needed to make 30 cars, to fully utilise the 60 headlights. However, in actual fact, the number of tires supplied by YoKohoho is only 100, therefore only a maximum of 12 cars can be produced, with 4 tires left over. In this analogy, the tires would be considered as the limiting reactant, restricting the amount of product that can be produced.

Assumptions:

These calculations were based on a few assumptions. One assumption is that the car would only change its set of tires once during the whole race, thus only one spare tires is required. Another assumption is that the car would not need to replace headlights, thus no spare headlights were taken into consideration.

One car would have 2 headlights and 4 tyres. Although most F1 cars do not have headlights, as it would add additional weight to the cars, it is used in other racing events with night races. For example, the Le Mans 24 hour race has headlights fitted on the car to provide clearer vision at night. Also, the lighting around the race track may not be sufficient, hence headlights are essential for the race cars.

25 cars

The number of tyres provided is only for the construction of the cars, excluding the tyres needed for the pit stop. Also, accidents during practice or qualifying races is not taken into consideration as it would require more resources to replace the damaged parts.

In this case of constructing F1 cars, I have an excess of 10 headlights, which means that the tyres are the "limiting reactant" in this case. After the construction of cars are complete, there would still be 10 headlights which are not used to construct the cars. Similarly in a chemical reaction, the limiting reactant would be completely reacted, while the other reactant would be left in excess in its unreacted form

Hong Yee Kiat
8/16/2011 9:20:00 Nicholas

8/16/2011 9:25:06 Hia Rui Le Joshua