Molson Indy Math Trail – Car and Fan Consumption
Solutions

Methanol and Tire Costs on Race Day

1. A set of tire costs **$1200.** A full tank of methanol costs **35 gallons (tank size) x $1.50 per gallon (cost of methanol) = $52.50.** The combined cost is **$1200 + $52.50 = $1252.50**
2. On a full tank a car can go: **35 gallons x 2 miles/gallon (car mileage) = 70 miles.** This equates to **70 miles ÷ 1.781 miles (distance of one lap) = 39.30 laps**
   If the car can go 39.3 laps, it should head into the pit at **39 laps.** If it goes any farther it will run out of gas on the 40th lap.
   How many times should the race car head into the pits? **100 laps (amount of laps in race) ÷ 39 laps = 2.6** The car should pit stop **twice**, at lap 39 and again at 39 + 39 = 78 laps. It does not need to pit again since 78 + 39 = 117 laps.
3. Cost of tires is **$1200.**
   Fuel in tank when car enters pits: **39 laps x 1.781 miles = 69.46 miles travelled in 39 laps**
   69.46 miles ÷ 2 miles/gallon = 34.73 gallons of methanol used
   35 gallons – 34.73 gallons = 0.27 gallons left in tank at pit stop
   Cost to fill tank: Need to add **34.73 gallons x $1.5 per gallon = $52.09**
   Total cost at each pit stop: **$1200 (tires) + $52.09 (methanol) = $1252.09**
   Total cost at all pit stops: **2 pits stops in race x $1252.09 = 2504.18**
4. Any methanol left in tank at end of race: **Yes,** after second pit stop, there is
   100 – 78 laps = 22 laps to go.
   22 laps x 1.781 miles = 39.18 miles travelled on last full tank
   39.18 miles ÷ 2 miles/gallon = 19.59 gallons used
   35 gallons – 19.59 gallons = 15.41 gallons left in tank at finish line
5. Total cost of methanol and tires for entire race:
   $1252.50 (initial cost of full tank and tires at start, #1)
   + $2504.18 (total cost of both pit stops, #3)
   - (15.41 gallons fuel left over at finish x $1.5 per gallon)
   = $3733.57

Fan Consumption at the Concessions

1. All possible food and beverage combinations.

Food Item Combo	Total Cost ($)	Total Energy (calories)	Total Fat (grams)
(1) 1 nachos, 1 hot dog, 1 water	10	1100	73
(2) 1 nachos, 1 peanuts, 1 water	9	850	67
(3) 1 hot dog, 1 peanuts, 1 water	8	950	58
(4) 2 hot dogs, 1 water	9	1200	64
(5) 3 peanuts, 1 water	10	1050	78
(6) 1 nachos, 1 peanuts, 1 milk	10	1050	78
(7) 2 hot dogs, 1 milk	10	1400	75
(8) 1 hot dog, 1 peanuts, 1 milk	9	1150	69
(9) 2 peanuts, 1 milk	8	900	63

2. There are **nine** different combinations.
   Three involve nachos, **six** involve peanuts, **five** involve hot dogs, **four** involve milk, and **five** involve water.
3. The least you could spend on a combo is **eight dollars.** The most is **ten dollars.**
   The average cost of a combo is **10 + 9 + 8 + 9 + 10 + 10 + 10 + 9 + 8 = 83**
   83 ÷ 9 = $9.22
   161,000 (fans) x $9.22 = $1,484,420.00 is the money that would be spent on concessions at the Molson Indy!!
   Line of Hot Dogs!!: **161,000 x 6 inches = 966,000 inches**
   966,000 inches ÷ 12 inches/foot = 80,500 feet
   80,500 feet ÷ 5280 feet/mile = 15.246 miles
   15.246 miles ÷ 1.781 miles (one lap of course) = 8.56 laps of Hot Dogs on the course!!!
4. Combo with most calories: **2 hot dogs, 1 milk = 1400 calories**
   Combo with least calories: **1 nachos, 1 peanut, 1 water = 850 calories**
   Combo with most calories per dollar spent: **2 hot dogs, 1 milk**
   1400 calories ÷ $10 = 140 calories per $1 spent
   Combo with least calories per dollar spent: **1 nachos, 1 peanuts, 1 water**
   850 calories ÷ $9 = 94.44 calories per $1 spent
5. Combo with least fat: **1 hot dog, 1 peanuts, 1 water is 58 grams of fat**
   Combo with most fat: **There are two combos with 78 grams of fat,**
   1) 3 peanuts, 1 water, and 2) 1 nachos, 1 peanuts, 1 milk