

Aircraft Specifications

Fuel Burn

Aircraft Type	Engines	Average Take-off Mass with Fuel (kg)	Fuel Burn Rate (gal/h)	Weight of Gallon of Fuel (kg)	Mass of Fuel Burned (kg/h)	Hour 1 Mass of Plane (kg)	Hour 2 Mass of Plane (kg)	Hour 3 Mass of Plane (kg)
Boeing 747-100	4	340,190	3,638	2.7215				
Boeing DC-10-3	3	259,450	3,130	2.7215				
Concorde	4	185,062	6,771	2.7215				
Airbus 300-600	2	161,022	1,678	2.7215				
Boeing 727-200	3	95,026	1,844	2.7215				
Boeing 737-4	2	64,636	792	2.7215				
BAE 146-2	4	40,993	817	2.7215				

Sources:

Table 3-8 Air Carrier Capacity and Utilization Factors
www.api.faa.gov/economic/742SECT3.pdf

Impact of Weight Changes on Aircraft Fuel Consumption
www.api.faa.gov/economic/742SECT7.pdf

Concorde Specifications
www.gizmohighway.com/history/concorde_specs.htm

Fuel Burned per Hour

Fuel Burn Rate (gal/h) x Weight of Gallon of Fuel (kg) = Mass of Fuel Burned (kg/h)

Change in Mass

Average Take-off Mass with Fuel (kg)
- Mass of Fuel Burned (kg/hr)
= Hour 1 Mass of Plane (kg)

Hour 1 Mass of Plane (kg)
- Mass of Fuel Burned (kg/hr)
= Hour 2 Mass of Plane (kg)

Hour 2 Mass of Plane (kg)
- Mass of Fuel Burned (kg/hr)
= Hour 3 Mass of Plane (kg)

Mass of Fuel Burned

Mass of Fuel Burned (kg/h)
x 3 = Mass of Fuel Burned after 3 Hours (kg)

Percent Mass Change

Mass of Fuel Burned after 3 Hours (kg) ÷ Average Take-off Mass with Fuel (kg) x 100
= Percent Mass Change

Passenger Count

Aircraft Type	Fuel Burn Rate (gal/h)	Average Airborne Speed (km/h)	Amount of Fuel Burned (gal/km)	Passengers and Crew	Distance per Passenger per Gallon (km/gal)	Distance Traveled (km)	Gallons per Passenger (London to New York)
Boeing 747-100	3,638	825.6	423	5,547			
Boeing DC-10-3	3,130	828.8	283	5,547			
Concorde	6,771	2,160.0	109	5,547			
Airbus 300-600	1,678	740.3	274	5,547			
Boeing 727-200	1,844	703.3	157	5,547			
Boeing 737-4	792	664.7	150	5,547			
BAE 146-2	817	463.5	92	5,547			

Fuel Use Per Passenger

Calculate your results to one decimal place (increase the first decimal place number by one if the second decimal number is 5 or above).

Fuel Burn Rate (gal/h)
÷ Average Airborne Speed (km/h)
= Amount of Fuel Burned (gal/km)

Passengers and Crew
÷ Amount of Fuel Burned (gal/km)
= Distance per Passenger per Gallon (km/gal)

Distance Traveled (5,547 km)
÷ by Distance per Passenger per Gallon (km/gal) = Gallons per Passenger from London to New York