

Example Calculations

Call sign	Model	First Observation		Second Observation		weight
		Speed (knots)	Time	Speed (mph)	Time	
DL 2828	Boeing 737-800	469	5:56	535	6:02	91,300 lbs

Conversions

Call sign	Model	First Observation	Second Observation	Mass (kg)	Change in time (s)
		Speed (m/s)	Speed (m/s)		
DL 2828	Boeing 737-800	238.7	239.2	41,439	360

1st observation

- Knots to mph = $469 * 1.15 = 539.36$ mph
- Mph to m/s = $\frac{539.36}{1} * \frac{1609.34}{3600} = 238.7$ m/s

Second observation

$$\text{Mph to m/s} = (535 * 1609.34) / 3600 = 239.2 \text{ m/s}$$

Weight to mass

$$\text{Pounds to Newtons} = 91,300 * 4.448 = 406,102.4$$

$$M = 406102.4 / 9.8 = 41,439$$

Change in time

$$6:02 - 5:56 = 6 \text{ min}$$

$$\text{Time in seconds} = 6 * 60 = 360$$

Force

Call sign	Model	Force (N)
		57.55

$$F = m a$$

$$= 41439 ((239.2 - 238.7) / 360)$$

$$= 57.55 \text{ N}$$