

Weight (mass) distribution formula

Source: <http://sci.tech-archive.net/Archive/sci.physics/2008-04/msg00707.html>

- *From:* "Yanick Poirier" <yvoirier@xxxxxxxxxxxxx>
 - *Date:* Tue, 8 Apr 2008 00:00:56 -0400
-

Hi everyone,

I'm not sure if I'm posting in the right newsgroup, but it's my best guess.

Here's my problem: I'm writing a software program to calculate the load distribution of a cargo on a truck or truck/trailer combination. The main requirement is the program must be able to calculate the total weight on each and every axle of the vehicle no matter where the load is placed on the vehicle. US and Canada have different regulation regarding the maximum gross weight as well as per axle load weight. For example, in US the standard is 80000lbs gross for a regular 18-wheeler where maximums for the steering, drive and trailer axles are, respectively 12000lbs, 34000lbs and 34000lbs.

Now, let say that the truck and trailer have a total empty weight of 35000lbs (also called the tare weight) and the payload is 1 big piece of rock that weight 30000lbs. So now your gross weight is 65000lbs which is perfectly legal, unless the rock is misplaced on the trailer. If the rock is place all the way to the front of the trailer, chances are that the total weight on the drive axles will exceed the 34000lbs limit; which makes it an illegal load.

So all this to lead to the following question:

Can anyone give a lead to where (Internet, books, etc) I can find some information on how to make such calculation. I know for instance that the following information are needed for such calculation: truck length, trailer length, position of the king-pin, position of the fifth-wheel, axle spacing and the position of the fuel tanks. Yes it does matter: 300 gallons of diesel weight over 2000lbs!

Any help or hint would be greatly appreciated as I'm scratching my head for a coupling week now with no success at all.

Yanick.

.