Dimensionnement cellule de charge

cm couple moteur en MKg
R1 rapport de boite
R2 rapport de pont
n rendement (perte transmission)
R rayon de la roue en m
Couple roue mKg

Effort de traction = (Cm * R1 * R2 *n) /r

couple roue= (Cm * R1 * R2 *n)

	4eme 41/39	pont 74/15		185x55x15		Effort de traction
Cm (en mKg)	R1	R2	n	R (en m)	Couple roue mKg	à la roue en Kg
25	1,05	4,93	0,8	0,31	104	334

dR DIAMETRE rouleaux en m
Cr couple au rouleaux
dC distance capteur en m
cC couple au capteur
fC force au capteur en Kg

Cr=effort traction*(dR/2)

cC=((dR/2)*Cr)/dC
fC=cC/dC

dr (en m)	Cr (en mKg)	dC (en m)	cC (en Mkg)	fC (en Kg)
0,268	44,8	0,324	18,5	57,1

$\mathbf{F}_{drive} = \mathbf{u} * T_{engine} * x_g * x_d * n / R_w$
where
u is a unit vector which reflects the car's orientation,
T_{engine} is the torque of the engine at a given rpm,
x_g is the gear ratio,
x_d is the differential ratio,
n is transmission efficiency and
R_w is wheel radius.

An example:

Engine is running at 2500 rpm, looking this up on the curve gives engine torque of 448 Nm (=330 ft lbs)
Gear ratio (first gear): 2.66
Differential ratio: 3.42
Transmission efficiency: 0.7 (guess)
Wheel radius: 0.34 m (=13.4 inch)
Mass: 1500 kg (= 3300 lbs of weight) including the driver.

This gives us a potential drive force of (448*2.66*3.42*0.7/0.34 =) 8391 N if the driver puts his foot down.