

And back to straight using no grip.

## 2 Load Sensitivity in Tyres.

- Why Doubling vertical load doesn't double grip?
  - ↪ Increasing vertical load
    1. Contact patch gets larger
    2. Pressure inside increases.
    3. Pressure distribution becomes uneven.

So the patches reach saturation earlier.

Additional load - Diminishing result.

- ↪ Grip comes from rubber deforming ~~in~~ ~~around~~ ~~the~~ rough surface.

↳ Higher load results:

1. Harder compresses on rubber
2. Increased internal decomposition
3. Shear stress doesn't scale linearly.  
At a point rubber can't produce force proportional.

→ Why total grip reduces with load transfer?

↳ Equally split weight, won't affect grip as the grip can be scaled linear.

↳ Imbalanced weight split, each tyre relieves different force hence:

1. Heavy loaded tyre - less efficient
2. Lightly loaded tyre - under-utilised.

↳ Balanced distribution - keeps tyres operating in efficient load range - independent wear/wear.

Minimum load sensitivity

maximum total ~~total~~ axle grip.

### 3 Load Transfer:

→ What is weight transfer?

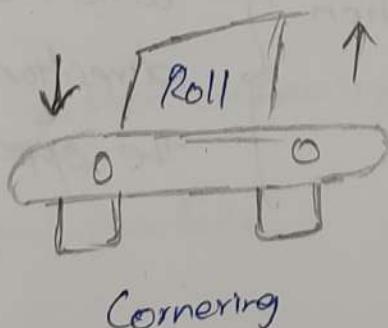
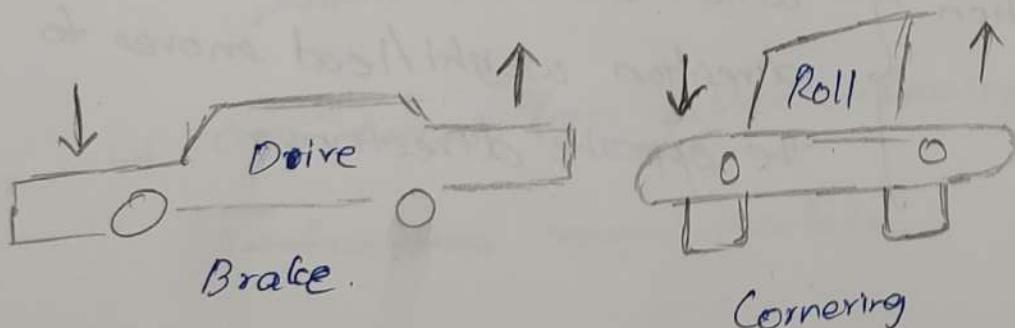
↳ Acceleration }  
Brake            } when car moves in one of the  
Left            } direction weight/load moves to  
Right           } the opposite direction.

- ↳ Only thing that holds car to road is the vertical load
- ↳ Total weight of the car is not changing, but the distribution is.
- ↳ Cars around the circuit does the lot below 3:
  1. Drive
  2. Roll
  3. Squat

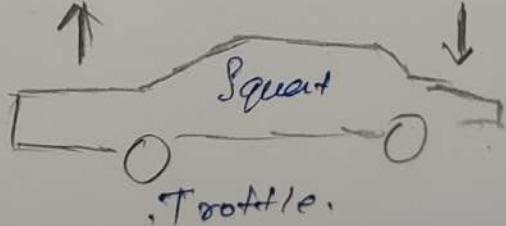
**Drive** - The front of the car goes down or front suspension compresses - ~~it~~ happens when braking.

**Roll** - As the car turns the corner, weight moves from front ~~to rear~~ and to the ~~one~~ outside tyre. - As it approaches the apex the weight b/w front and rear is equally distributed on one side.

**Squat** - As the car gets off the corner and the weight moves from outside to the rear - the rear sits down.



Cornering



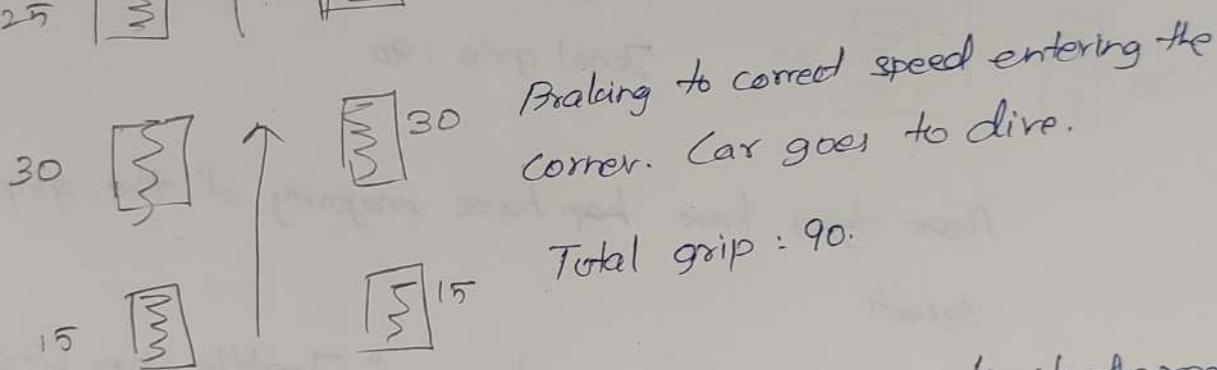
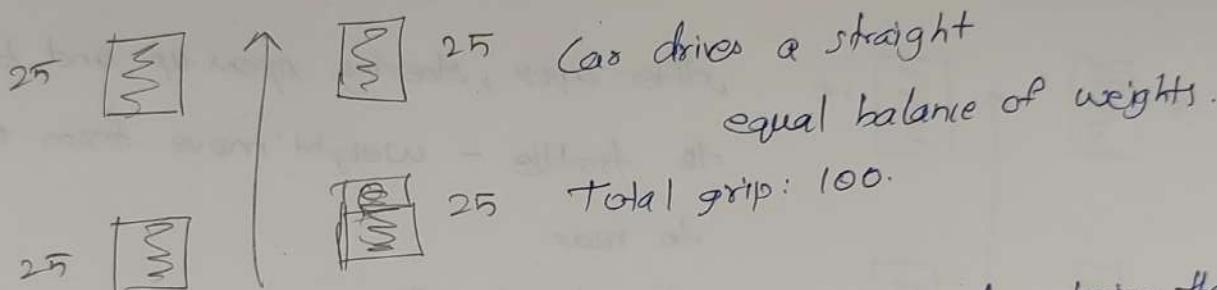
Trottle.

→ How weight transfer affects grip?

↳ More weight that the car has over one area, ~~of the~~ as it dives, rolls or squats more grip the region has.

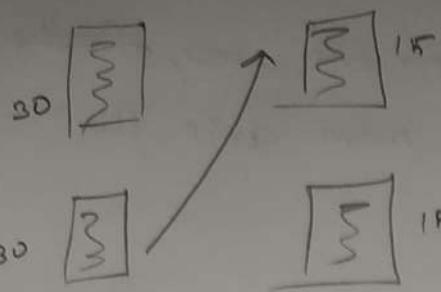
↳ Transfer of grip to one area takes away the grip of the opposite area.

↳ Example execution of weight transfer at play.



Entering the corner in such a way limits the rear grip. Rear traction breaks before front - limiting speed to take into corner.

- Smooth technique is to release brakes shifting weight to balance again - more units of grip on rear - faster corner entry.

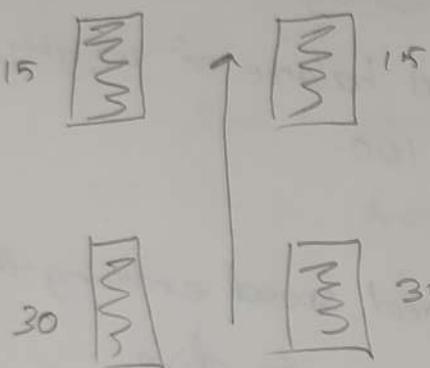


Car coming into apex - even weights in front and rear, rolled over to the outside.

Total grip: 90.

Inside has much less grip, this is why running over curbs is possible to get away.

- Outside tyres does the work to turn.



After apex, steering opens up and back to throttle - weight move from outside to rear.

Total grip: 90

Rear tyres here has have majority of the grip. Car squats.

- A problem occurs here "Throttle-on Understeer" front tyre slides as you exit the corner.
- No driving technique based handling for this type of understeer. Only option is with set-up change.

## → Maintaining Balance.

- ↳ Whenever there is a ~~wee~~ load transfer the grip level reduces.
- ↳ Making the inputs (turning, acceleration, ~~breaking~~ braking) smooth than sharp transfers less weight maintaining high grip levels all the time.