

MEASURING A B and h

An accurate bathroom scale, a measuring tape and a calculator are needed.

Measure the horizontal distance between the axles.

Drop a weighted line from each axle and measure the distance on the floor.- A

Weigh the bike/rider. -Wt

Prop up the rear wheel so that the bike is level with the front wheel on the scale.

Weigh the front wheel with the rider on the bike -Nf

$$B = A Nf/Wt$$

Raise the scale a small distance D

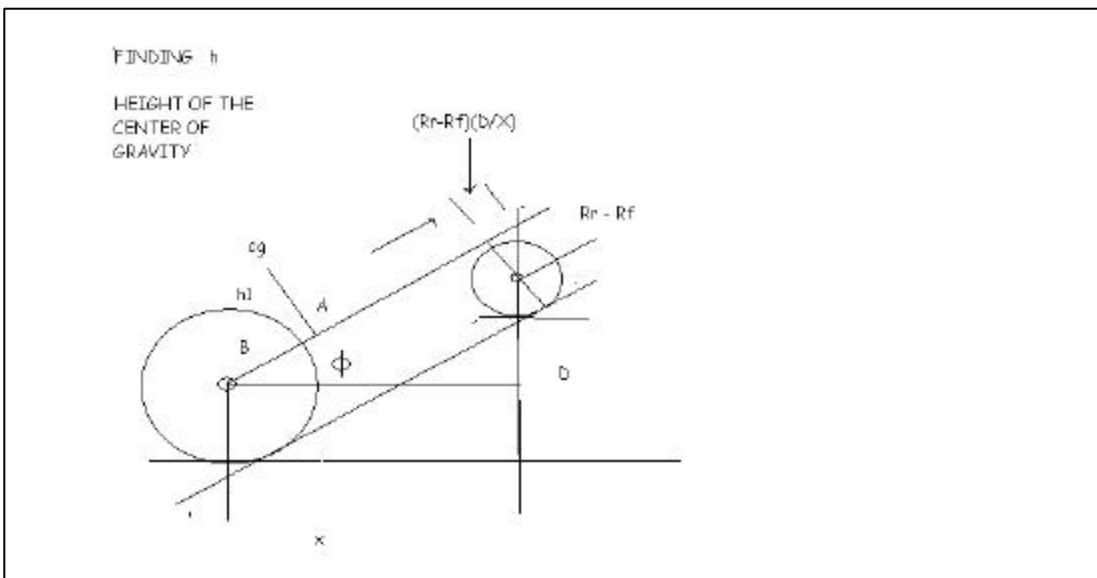
Measure the horizontal distance between the axles, just as done for (A). X

The bike/rider is now tilted upward at an angle:

$$\tan(\phi) = (D/X)$$

We now have a right triangle with the angle ϕ at the rear axle. The horizontal side X, the vertical side D with a hypotenuse of A, if the wheels are of equal size or:

$$\text{Hyp} = A + (Rr - Rf)\tan(\phi) \quad \text{or} \quad A + (Rr - Rf)(D/X)$$



weigh the front wheel with the rider on the bike. -Nf

$$h1 = [B - \text{Hyp}(Nf/Wt)] / (D/X)$$

D should be changed and h1 found several times and averaged. Errors will be reduced over the average. The height h1 is the distance of the cg above the rear axle.

$$\text{Now } h = h1 + Rr$$

Rr is the radius of the rear wheel and Rf is the radius of the front wheel.

You have now found 3 very important geometric values of your bike, A, B, and h.