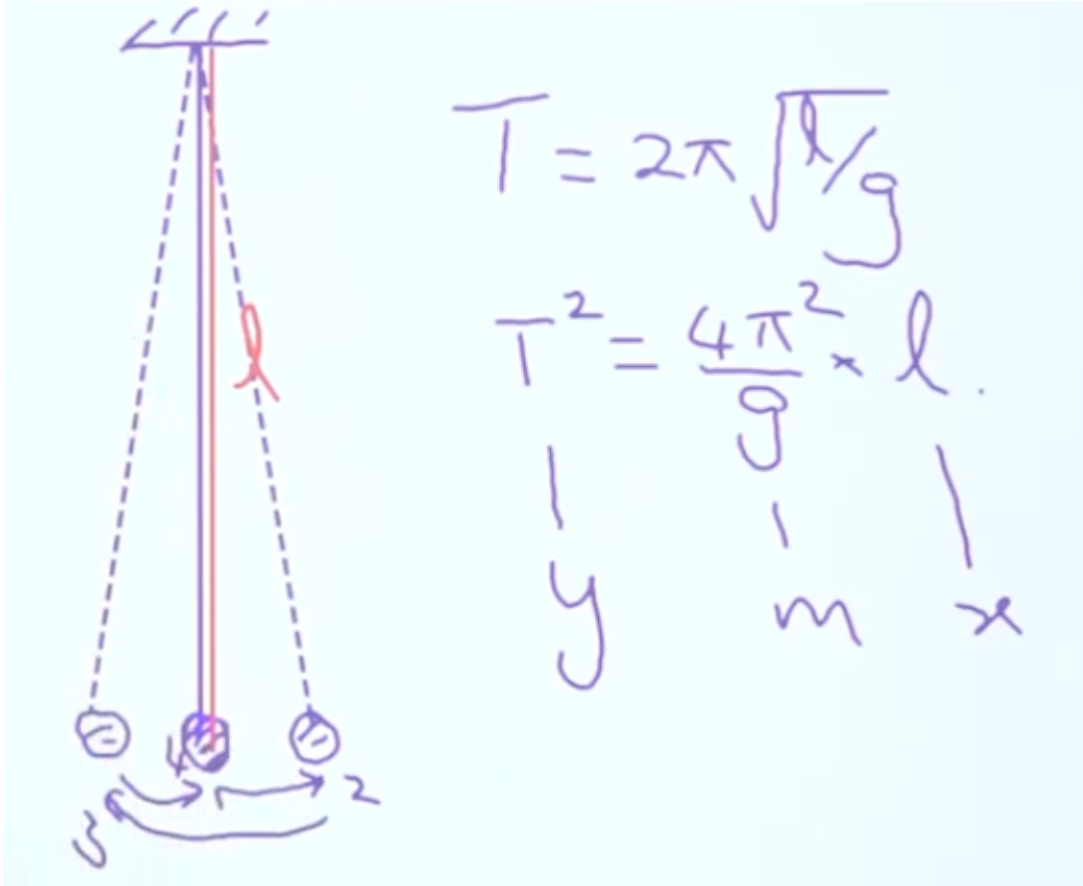


Initial setup



When you measure l you have to get it from the center of the gravity of the object

- Since we use a uniform sphere as the object, we need to add the radius of that sphere to the length of the string

From the graph, we will get the gradient as $\frac{4\pi^2}{g}$

$$\text{Gradient} = \frac{4\pi^2}{g}$$
$$g = \frac{4\pi^2}{\text{Gradient}}$$

- Why will the measurement of time period (T) will mainly affect the accuracy of the calculations of gravitational acceleration (g)?

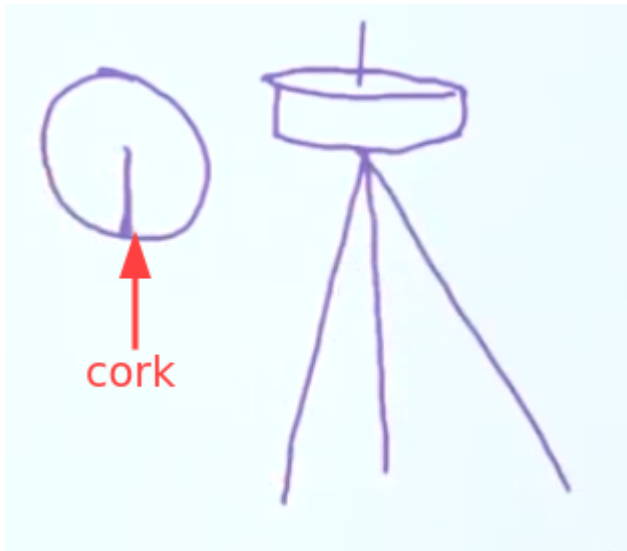
According to the equation, the time period is squared (T^2) which means its going to have a bigger percentage error (twice of error of T). Therefore it will have a bigger effect on accuracy of finding g .

- Why are we increasing the tilt of the string by a small angle, like 5 or 6 degree?

Because the equation we are using to find the time period is valid for only small angles where ($\sin A = A \text{ rad}$)

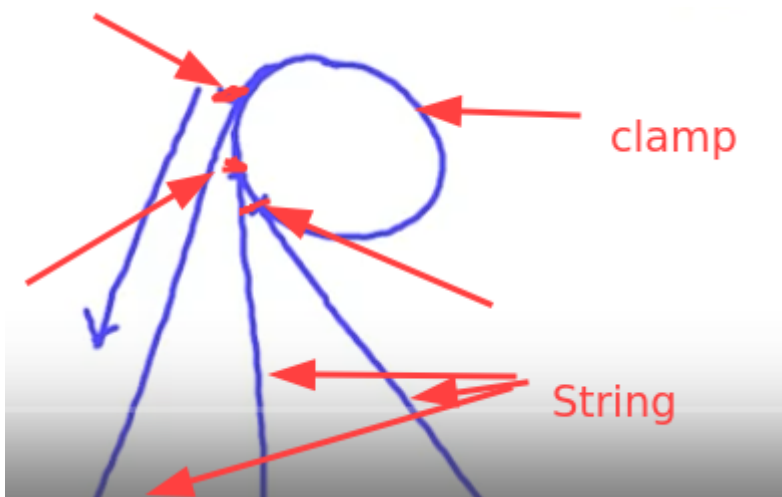
- Why do we need a cork when we set up the string from the clamp of the stand?

To have the same center of oscillation for all the time



- Why should we need the same center of oscillation every time?

Otherwise it would oscillate from different points changing the length of the string (l) everytime.



- We measure the time period for multiple oscillations, like 20-25, but not for 1. Why?

Because when calculating the time period for 1 oscillation, the fractional error would be high.

- Why should we use a high dense/mass object at the end of the string?

If we use a less dense/mass object it will get affected by the drag force of air and it will come to the equilibrium position faster after few oscillations.

But since the drag force affection for a high dense object it less, it will come to the equilibrium postion very slowly resulting more oscillations

- When we are keeping the locating pin to count the oscillations, it's better to keep it perpendicular to the string rather than the object. Why?

Because when we count the oscillations, its easier to get the correct time when the pointer has passed the string than the object as the object is much thicker than the string

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- Why is it better to keep the locating pin at the lowest point of the oscillation rather than anywhere else?

Because at the lowest position, the velocity is the highest. Therefore when counting the time of passing, the error will be less.

Best position to keep the locating pin

