

4A (Physics) – The Tablecloth Trick

Narrator : (A customer is eating heartily)

One day, a customer was enjoying his lunch in a fancy restaurant. Suddenly, something stained (弄污) the tablecloth.

Customer : (to the waiter) Hey, don't you think that the tablecloth is too dirty? I hate having lunch on such a disgusting table. Could you please replace it?

Waiter A : My pleasure! Please wait for a while.
(Waiter A cleans up the table slowly)

Customer : That's too slow. Make it faster please.

Waiter A : Okay! Let me show you my new trick. I learnt it from a television programme yesterday.
(Waiter A tries to pull off the tablecloth but fails)

Customer : Too bad.

Waiter A : Why!?! Did I do anything wrong?

Waiter B : (come out) Haha! You shouldn't pull it like this. You should pull it quickly and the bottles should be filled with water.

(Finally, Waiter B pulls the tablecloth off successfully)

Waiter B : We made it!!

Waiter A : (look up to the sky) Why? I don't understand! The water bottles didn't fall down when he (point at Kenny) pulled it?

[Everyone freezes]

Narrator : That is because of inertia (慣性). According to Newton's first law of motion (牛頓運動第一定律), an object has a tendency (趨勢) to remain at rest (靜止) or in uniform motion unless it is acted on by a net force. (淨力)

Bottles filled with water have a larger mass (質量), which means a larger inertia.

Waiter A : It seems complicated. Could you explain it in a simpler way?

Waiter B : Well. The water bottles on the tablecloth were at rest before we pull it. Therefore when we pulled off the cloth, those bottles tended to remain at rest.

Waiter A : That's why we feel being pushed in the MTR when the train suddenly stops from high speed, right?

Waiter B : Bingo! Because of inertia, even when the train stops, we can still feel ourselves moving.

Customer : Wow! I have learnt a lot of things! But... Can I eat now? I'm starving!