

Planning a fair test

**Change one thing.
Trust the comparison.**

Plan variables, record with units and judge what the evidence can support.

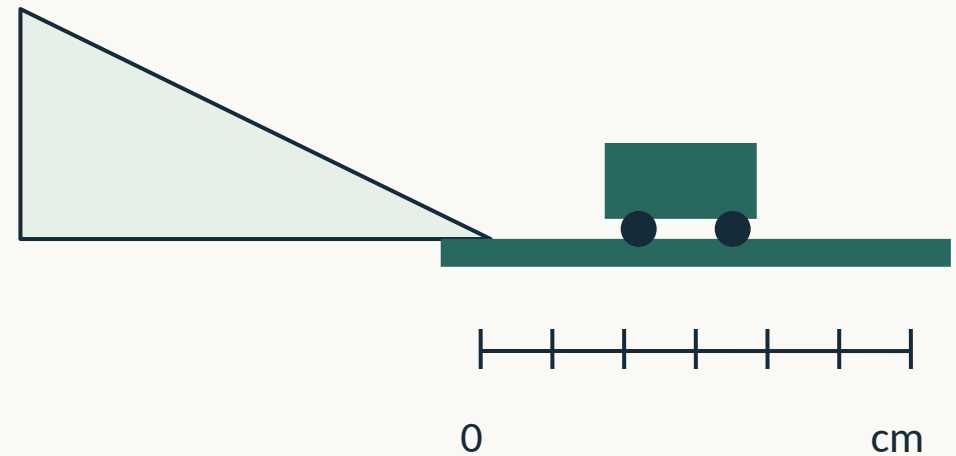


What will we change?

Does the run-out surface affect how far a trolley travels before stopping?

Name one thing to CHANGE. If ready, name two things to KEEP THE SAME.

same release • no push



Three steps in the investigation

1 Name the variables.

2 Plan three trials for each surface.

3 Judge what the results can tell us.

Watch an unfair comparison

01

The adult changes the surface AND adds a push.

02

The trolley stops farther away.

03

Which change caused that difference?

04

What would you change about the method?

Repair the method

CHANGE: run-out surface

KEEP: trolley, slope, release

MEASURE: stopping distance / cm

A variable is something that could change in the investigation.

Plan each box before testing.

Classify the five variables

01 The surface the trolley rolls on

02 Distance the trolley travels

03 Height of the ramp

04 Which trolley we use

05 How the trolley is released

Check the variable roles

CHANGE AND MEASURE

CHANGE: run-out surface

MEASURE: stopping distance / cm

KEEP THE SAME

Ramp height

Same trolley

Release mark; no push

Direct one useful correction

01

Check the ruler's zero against the agreed start.

02

Is the ruler end the same as its zero mark?

03

Direct the adult to correct one control.

Say the plan before touching kit

I will change ____.

I will keep ____ and ____ the same.

I will measure ____ in ____.

Your plan should make the comparison clear.

Fair method or a problem?

- 01 Same ramp height; different surfaces

- 02 Different ramp heights AND different surfaces

- 03 Three repeats for each surface

- 04 Ignoring a result you did not like

- 05 Measuring in 'about a ruler'

Check what each problem means

SUPPORTS THE COMPARISON

Same height; one planned change
Repeats with method unchanged

NEEDS CORRECTION

Two changed causes: unclear
Discarding disliked data: biased
'About a ruler': no clear unit

Keep an unexpected result

**A trolley stopped much farther away on Trial 3.
That is something to investigate.**

Keep the value. Note any method issue. Plan a repeat.

Keep your plan for Tuesday

I will change the surface, control the release and measure stopping distance in cm.

Three repeats can show consistency. They cannot repair an unfair method.