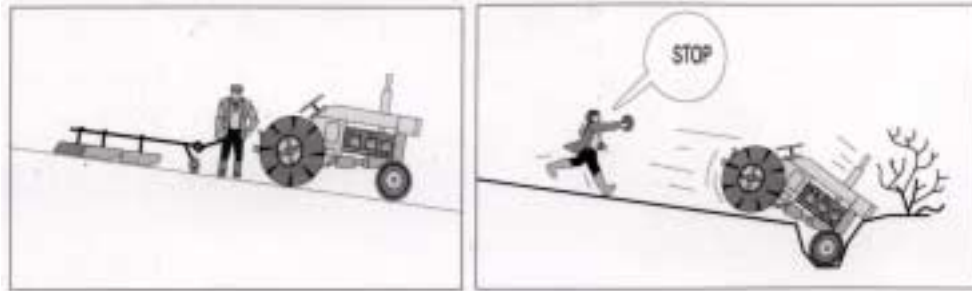


MOTION: ACCELERATION

1. RUNAWAY TRACTOR

The driver unhooked the chain...



Then, slowly at first, the little tractor trundled down the hill. The driver ran after the runaway tractor but couldn't catch up until it came to rest in a ditch.

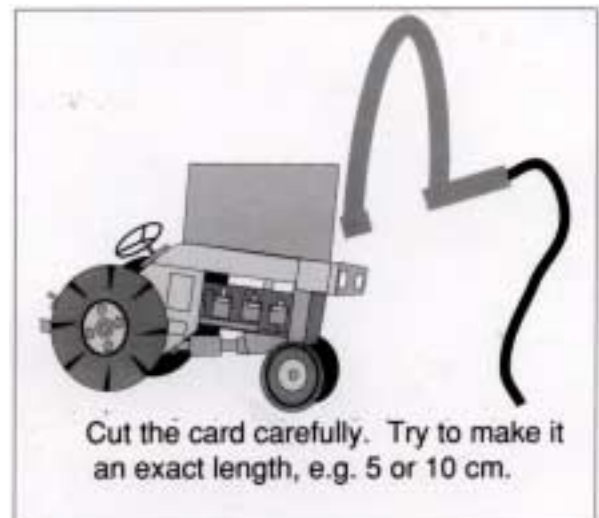
Find out if the tractor was gaining velocity as it moved down the slope.

PLAN Find a model tractor or a suitable toy vehicle.

What kind of a slope will you run it down?

Decide whether the surface of the slope should be rough or smooth.

You can measure the velocity of the model by attaching a card and arranging for it to pass through a light gate.



Think about how you would use two light gates to find out if and how the velocity changes.

APPARATUS

Light gates (2)
Sloping surface
Piece of card
Model tractor or wheeled toy

COMPUTER

Measurement: Velocity at A then B
Display: Digits
Table: Change of velocity in 1 second

DISCUSS AND FIND OUT

Move the light gates to a number of different positions to find out how the velocity varies as the toy runs down the slope. Use 'table' to calculate the rate of increase in velocity. Does this depend upon the position on the slope?

Is there a connection between the speed and the distance travelled?

GOING FURTHER

Suppose the toy could be made heavier. How could you find out if it would speed up faster or slower?

Would it make any difference if it were running backwards?

What would happen if the slope

- levelled out?
- got steeper?
- went uphill?
- was given a rougher surface (try some carpet)?