

# Chapter 1.2-1.3

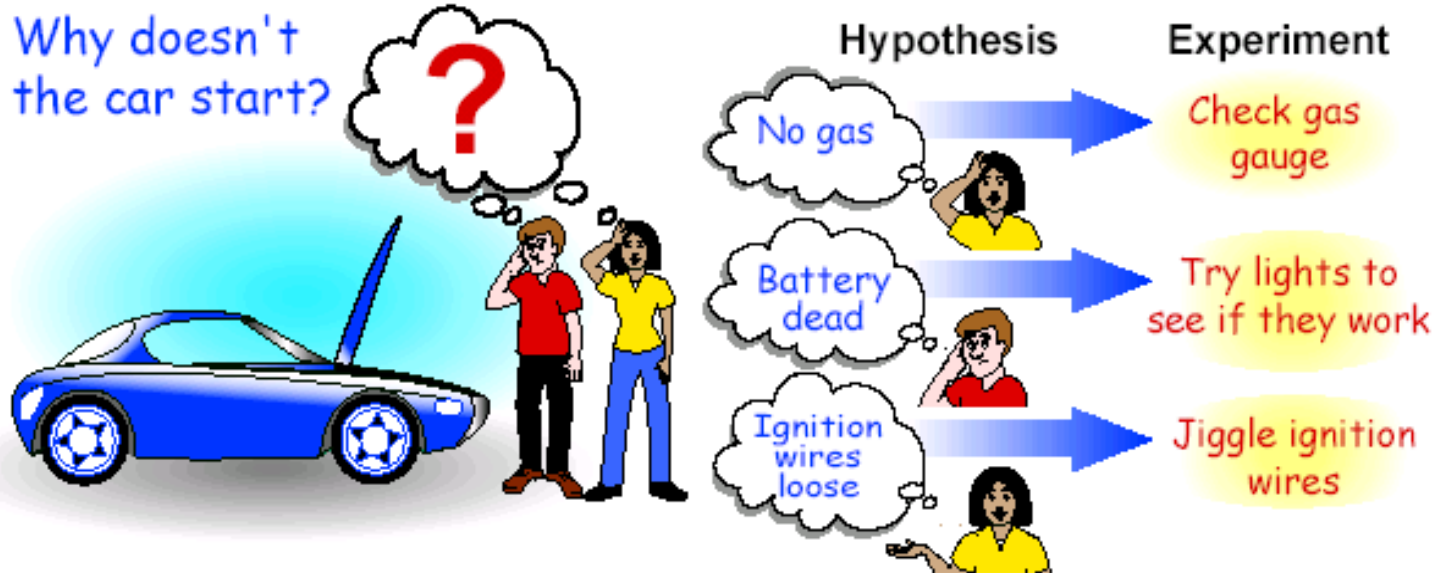
## The Scientific Method and Speed

# Scientific Method

- Scientific method is a process that is used to gather evidence
- Scientific evidence is any observations that can be repeated with the same result
- Variables are factors that effect the result of an experiment. In an experiment you change on variable at a time and observe what happens

# Scientific Method

Why doesn't the car start?

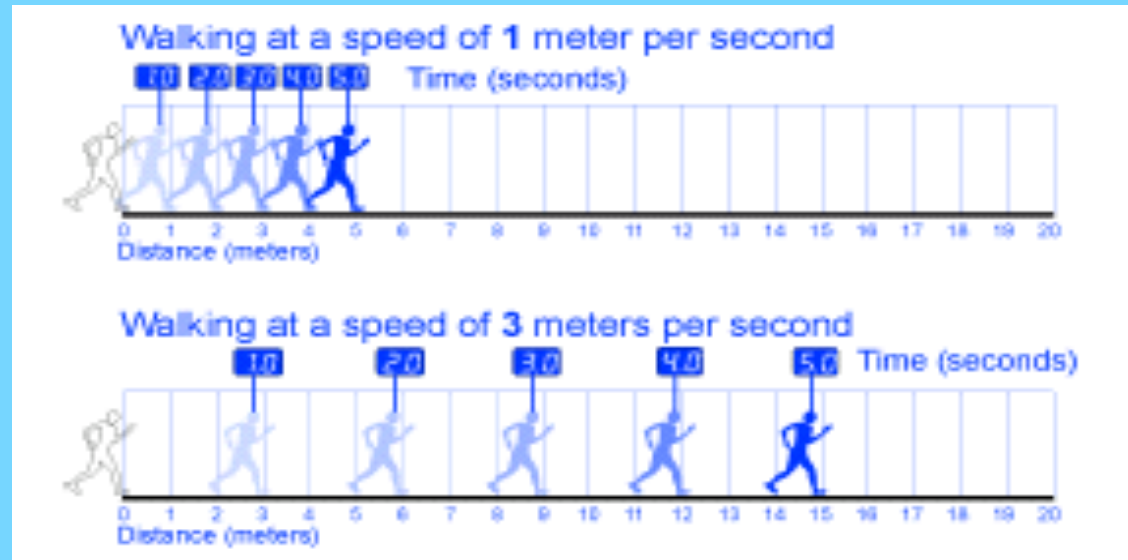


## Steps in the scientific method

STEP	EXAMPLE
1. Ask a question.	1. <b>Why doesn't the car start?</b>
2. Formulate a hypothesis.	2. <b>Maybe the battery is dead.</b>
3. Design and conduct an experiment.	3. <b>Turn the lights on to test the battery.</b>
4. Collect and analyze data.	4. <b>The lights go on.</b>
5. Make a tentative conclusion.	5. <b>Battery is OK.</b>
6. Test conclusion, or if necessary, refine the question, and go through each step again.	6. <b>Are the ignition wires loose or wet?</b>

# Speed

- Speed of an object is a measure of how quickly the object gets from one place to another



# Calculating Speed

- Speed is the distance traveled divided by the time taken.
- The units for speed are a ratio of distance units over time units.

Distance	Time	Speed	Abbreviation
meters	seconds	meters per second	m/sec
kilometers	hours	kilometers per hour	km/h
centimeters	seconds	centimeters per second	cm/sec
miles	hours	miles per hour	mph
inches	seconds	inches per second	in/sec, ips
feet	minutes	feet per minute	ft/min, fpm

# Equation

- $s$ =speed
- $d$ =distance
- $t$ =time

$$s = \frac{d}{t}$$

Speed is a single measurement that tells how fast you are going. Velocity is your speed and the direction you are going

# Homework 13

- Three group of students are doing car and ramp experiments. Each group does three identical releases of the car and measures the following times from photogate A to photogate B. Which group did the best experiment and why?

Group 1	Group 2	Group 3
0.2315 seconds	0.2442 seconds	0.2315 seconds
0.2442 seconds	0.2437 seconds	0.2202 seconds
0.3007 seconds	0.2443 seconds	0.2255 seconds

# Homework 18

- A cross-country runner runs 60 km in 45 minutes. What is his average speed?



# Homework 26

- A high speed train travels with an average speed of 270 km/h. The train travels for 10 hr. How far does the train travel?