



# KS4 PHYSICS LITERACY MAT

## PHYSICS FORMULA TRIANGLES

$\begin{array}{c} d \\ \hline s \times t \end{array}$ <p><b>d</b> = distance (m) <b>s</b> = speed (m/s) <b>t</b> = time (s)</p>	$\begin{array}{c} \Delta mv \\ \hline F \times t \end{array}$ <p><b>Dmv</b> = change in momentum (kgm/s) <b>F</b> = force (N) <b>t</b> = time (seconds)</p>
$\begin{array}{c} v-u \\ \hline a \times t \end{array}$ <p><b>v</b> = final velocity (m/s) <b>u</b> = initial velocity (m/s) <b>a</b> = acceleration (m/s<sup>2</sup>) <b>t</b> = time (s)</p>	$\begin{array}{c} V \\ \hline R \times I \end{array}$ <p><b>R</b> = resistance = (ohms, <math>\Omega</math>) <b>V</b> = potential difference (volts, V) <b>I</b> = current (amperes, A)</p>
$\begin{array}{c} F \\ \hline m \times a \end{array}$ <p><b>F</b> = force (N) <b>m</b> = mass (kg) <b>a</b> = acceleration (m/s<sup>2</sup>)</p>	$\begin{array}{c} ET \\ \hline P \times t \end{array}$ <p><b>ET</b> = energy transformed (joules, J) <b>P</b> = power (watts, W) <b>T</b> = time (secs)</p>
$\begin{array}{c} W \\ \hline F \times D \end{array}$ <p><b>W</b> = work done (J) <b>F</b> = force (N) <b>D</b> = distance moved (m)</p>	$\begin{array}{c} P \\ \hline V \times I \end{array}$ <p><b>P</b> = power supplied (watts, W) <b>V</b> = potential difference (volts, V) <b>I</b> = current (amperes, A)</p>
$\begin{array}{c} P \\ \hline M \times V \end{array}$ <p><b>P</b> = momentum (kgm/s) <b>M</b> = mass (kg) <b>V</b> = velocity (m/s)</p>	$\begin{array}{c} Q \\ \hline I \times t \end{array}$ <p><b>Q</b> = charge flow (coulomb, C) <b>I</b> = current (amperes, A) <b>t</b> = time (secs)</p>

## SPELLING AND GRAMMAR

I am proud of my work because...

I have written clearly so that my reader can understand my writing easily.  
I have checked my spelling and corrected any errors.  
I have used full sentences with a subject and a verb.  
I have used correct punctuation and grammar.  
I have paragraphed my work.

Commonly misspelt words:

affect/effect	measure
anomaly/anomalous	separate
Bunsen burner	science/scientific
dependent	sulfur/sulfate/sulfuric
hydrochloric acid	temperature
independent	thermometer

## COMMAND WORDS

### Calculate

Work out a number. You can use your calculator to help you. You may need to use an equation. The question will say if your working must be shown. (Hint: don't confuse with 'Estimate' or 'Predict')

### Compare

Write about the similarities and differences between two things.

### Describe

Write a detailed answer that covers what happens, when it happens, and where it happens. Talk about facts and characteristics. (Hint: don't confuse with 'Explain')

### Discuss

Write about the issues related to a topic. You may need to talk about the opposing sides of a debate, and you may need to show the difference between ideas, opinions, and facts.

### Estimate

Suggest an approximate (rough) value, without performing a full calculation or an accurate measurement. Don't just guess – use your knowledge of Science to suggest a realistic value. (Hint: don't confuse with 'Calculate' and 'Predict').

### Explain

Write a detailed answer that covers how and why a thing happens. Talk about mechanisms and reasons. (Hint: don't confuse with 'Describe')

### Evaluate

You will be given some facts, data, or other kind of information. Write about the data or facts and provide your own conclusion or opinion on them.

### Justify

Give some evidence or write down an explanation to tell the examiner why you gave an answer.

### Outline

Give only the key facts of the topic. You may need to set out the steps of a procedure or process – make sure you write down the steps in the correct order.

### Predict

Look at some data and suggest a realistic value or outcome. You may use a calculation to help. Don't guess – look at trends in the data and use your knowledge of Science. (Hint: don't confuse with 'Calculate' or 'Estimate')

### Show

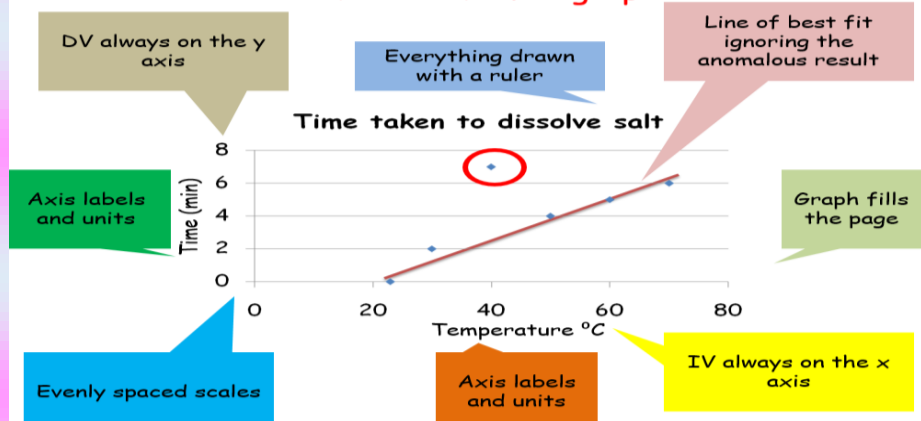
Write down the details, steps, or calculations needed to prove an answer that you have given.

## LANGUAGE OF MEASUREMENT

Word	Description
accuracy	a measurement result is considered accurate if it is judged to be close to the true value
anomaly (outlier)	a result which does not agree with other results in the data set
control variable	variables which are kept the same
dependent variable	variable which is measured whenever there is a change in the independent variable
independent variable	variable which is deliberately changed by the person in the planning of the experiment
precision	a quality denoting the closeness of agreement between (consistency, low variability of ) measured values obtained by repeated measurements
range (of a variable)	the maximum and minimum values of the independent or dependent variables
repeatability	how close (precise) values are when repeated by the same person with the same equipment
reproducibility	how close (precise) values are when repeated by different people using different equipment
resolution	smallest change in a value that can be detected by an instrument
uncertainty	interval within which the true value can be expected to lie, with a given level of confidence or probability
validity (of experimental design)	suitability of the investigative procedure to answer the question being asked
valid conclusion	a conclusion supported by valid data, obtained from an appropriate experimental design and based on sound reasoning

## ANALYSING DATA

How to draw a line graph



longitudinal wave, electromagnetic spectrum, the normal, refraction, diffraction, angle of reflection, the big bang, red shift, galaxy spectral lines, static electricity, battery, electrons, energy transferred, opposite charge, switch, ammeter, ohm (Ω), diode, electrostatic charge, attract / repel