

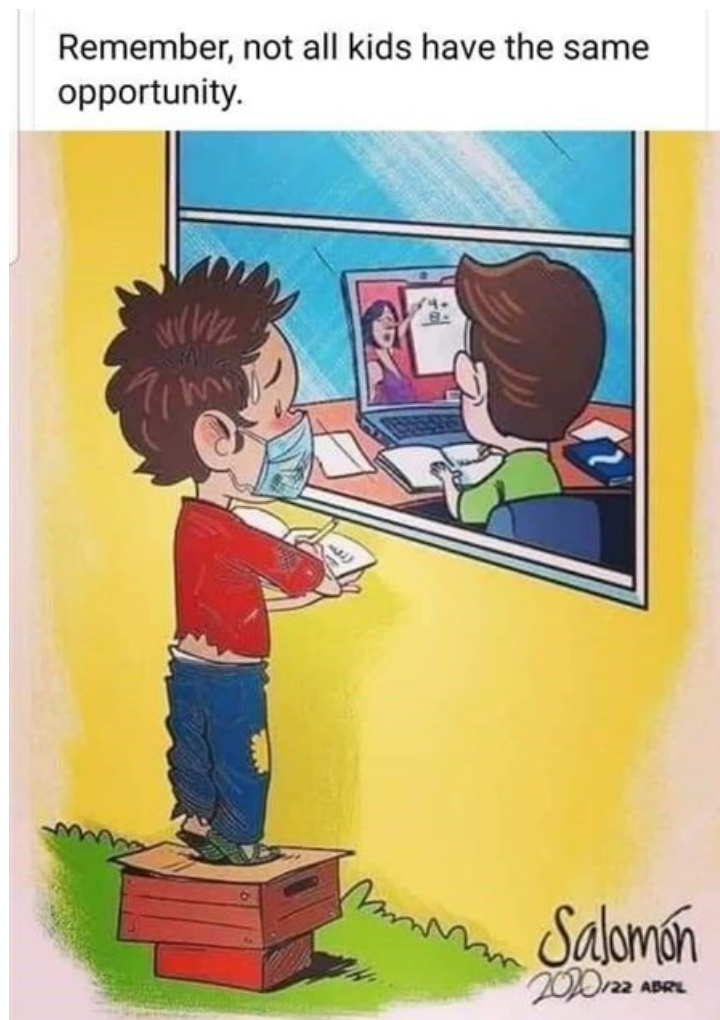
Just a few weeks left to help these kids

By [Peter Horszowski](#), issued by [Pert Industrials](#)

27 Oct 2020

Thanks to marketing departments, motivational speakers, life coaches and team builders, many of us have picked up an annoying habit of reflex positivity. Problems are 'challenges.' Obstacles are 'gifts'. We reflect on the good things which never would have happened without this disaster, etc, etc, etc. Of course, we have to. What else are we going to do, in the end, but get on with it? Still, a few moments of sympathy and commiseration are warranted. Let me just say, then, that 2020 has been rough. In fact, there is a great Afrikaans term, synonymous with human waste, three letters, sharp and palindromic. Got it? That's been 2020 for most people.

One of the uglier features of this unfortunate year is that most of the super wealthy got even richer through the chaos and devastation. The income gap, already horrible, has widened. There are no doubt many complicated reasons for this (many of them structural and not malicious), but here's an image which maybe gets to the heart of it:



People who already have resources can cope better, so their advantage is extended and entrenched. The relevant 'challenge' in South Africa is data. It is consistently more expensive than most African countries, and (surprise, surprise) the poor are worst affected because cost per megabyte is highest for those who can't afford bulk bundles. It is all very well for the government to send out these video lessons and internet resources but the kids who need it most, have slow, unreliable internet and can't afford the data.

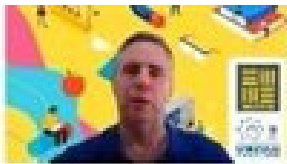
This is why Dr Derek Fish, director of the Unizulu Science Centre, invested so much effort to generate an offline solution

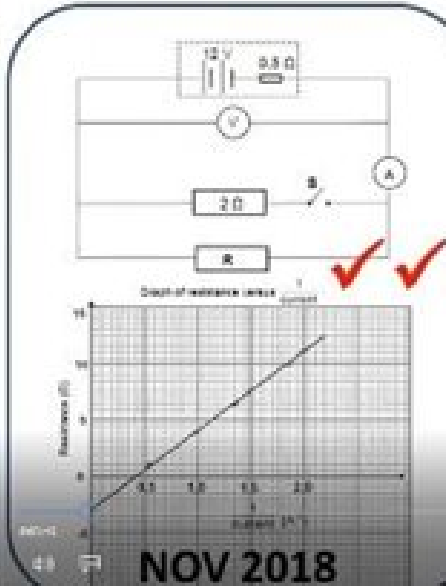
for their Paper One Matric Workshop in Physical Science. The South African institute of physics, with the support of Alan Gray employee philanthropy, have distributed thousands of his booklets and memory sticks to 100s of schools around South Africa. I am writing this now, so other learners can also benefit. (There is still a bit of time – paper one will be written on Friday, 20 November 2020). You can download all eight hours of video lessons and the correlated student books from the SAIP website: <http://www.saip.org.za/>

It is really worth getting this out to as many 2020 science learners as possible. Derek is a world renowned science educator and this particular workshop has evolved over decades. It is hard to explain why his teaching is so effective, so again I will try use imagery to get to the heart of it: the six screenshots below. In these you can see how Derek identifies an essential question area and uses familiar examples and special techniques for conceptual learning. He then runs simulations, a hands on live experiment, and finally brings it all together for the additional exam questions. This is high impact instruction and can make a profound difference. But please don't take my word for it. Check it out and get it out. Please. To as many needy learners and schools as you can. We only have a few weeks left to help those who need it the most.

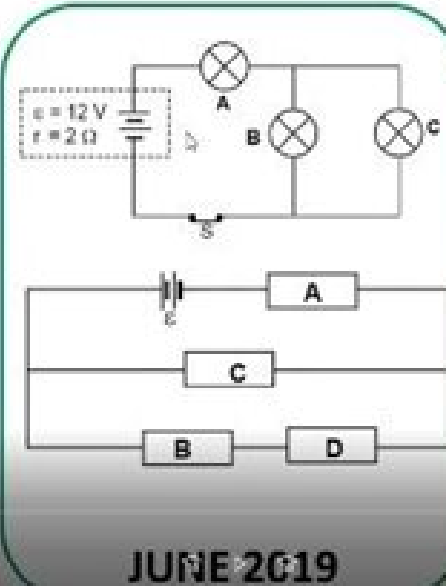
For more info please contact me peter@pert.co.za.

QUESTION 8/9: ELECTRIC CIRCUITS/ r : (19)

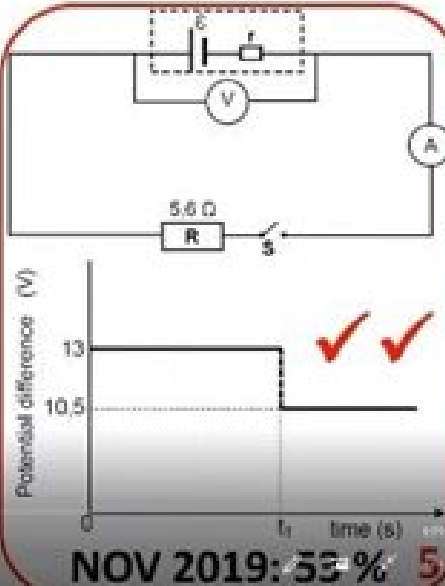




NOV 2018



JUNE 2019



NOV 2019: 53% 5

[click to enlarge](#)

STRAIGHT LINE GRAPHS: REAL LIFE EXAMPLE

AIRTIME REMAINING vs MINUTES USED



AIRTIME
(rands)

$c = 200$

$m = -2$

$$y = mx + c$$

$$\text{AIRT} = 200 - 2.\text{TIME}$$

$$A = (-2)T + 200$$

TIME (mins)

IF CALLS ARE CHARGED AT R 2 PER MINUTE AND INITIAL AIRTIME WAS R 200

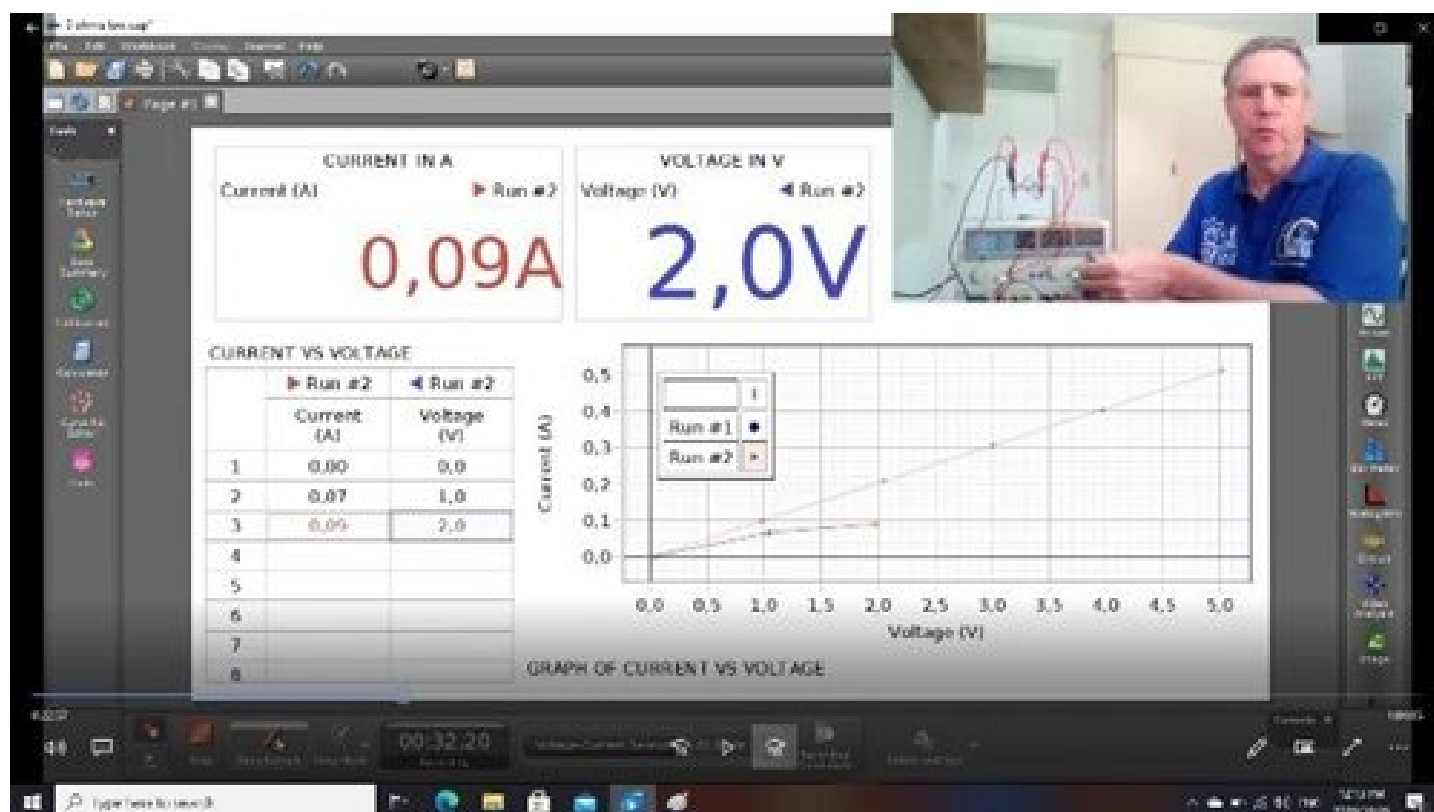
11:55

7

[click to enlarge](#)

The screenshot shows the 'Circuit Construction Kit: DC' simulation interface. On the left is a toolbar with icons for Wire, Battery, Light Bulb, Resistor, and Switch. The main workspace contains two circuit diagrams. The left diagram is a parallel circuit with three light bulbs connected to a battery. The right diagram is a series circuit with three light bulbs connected to a battery. A voltmeter is connected in parallel across one of the bulbs in the series circuit, displaying a reading of 8.44 V. A text box at the bottom center says 'The switch is closed.' On the right side, there are control panels for 'Labels' and 'Values', a 'Wire Resistance' slider set to 2.0 ohms, and a 'Battery Resistance' slider set to 2.0 ohms. The PhET logo is in the bottom right corner.

[click to enlarge](#)



[click to enlarge](#)

The screenshot shows a presentation slide titled 'CURRENT VS. VOLTAGE' and 'OHM'S LAW T.A.L.S.I.P.P.'. On the left, there is a large grid for plotting a graph, with 'CURRENT (A)' on the y-axis and 'VOLTAGE (V)' on the x-axis. On the right, there is a list of instructions for drawing a graph, titled 'Drawing your graph:'. In the top right corner, there is a video feed of a man in a blue shirt sitting at a desk with electronic equipment.

CURRENT VS. VOLTAGE

OHM'S LAW

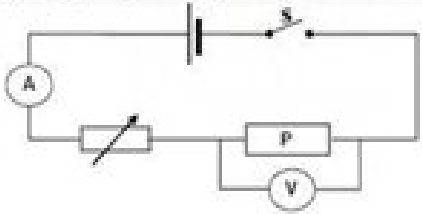
T.A.L.S.I.P.P.

Drawing your graph:

- T – Title – Write an appropriate title in the box above the graph
- A – Axes – Choose a variable for the X-axis (independent) and the Y-axis (dependent)
- L – Labels – Label your axes – with units, in the boxes next to them.
- S – Scale – There are up to 11 large blocks on each axis:
 - X: ___ ranges from ___ to ___ so 1 large block should equal ___
 - Y: ___ ranges from ___ to ___ so 1 large block should equal ___
- I – Intervals – There are 5 small blocks in each large block:
 - X: 1 large block equals ___, so 1 small block should equal ___
 - Y: 1 large block equals ___, so 1 small block should equal ___
- P – Plot your data from the table onto the graph carefully, checking the order (X and Y)
- P – Plot the best-fit line for the data points. Calculate intercept & gradient.

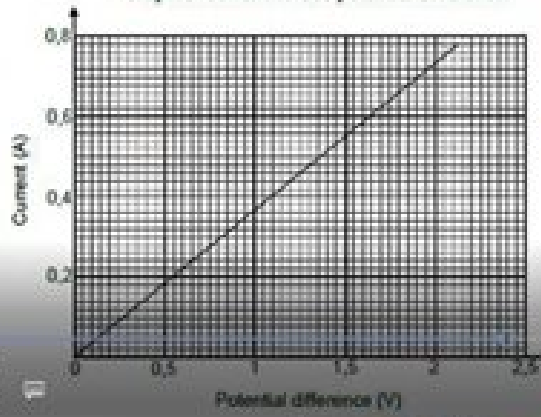
[click to enlarge](#)

The circuit represented below is used to investigate the relationship between the current passing through and the potential difference across resistor P.



The results obtained are used to draw the graph below.

Graph of current versus potential difference



PLEASE PAUSE THE VIDEO HERE FOR 17 MINUTES WHILE YOU TRY TO COMPLETE THESE 2 EXAM QUESTIONS

PSP1: March 2013 : Question 9.1

9.1.1	Write down the independent variable.	(1)
9.1.2	Write down the variable that must be controlled.	(1)
9.1.3	Write down the conclusion that can be obtained from the graph.	(2)
9.1.4	Using the gradient of the graph, calculate the resistance of resistor P.	(4)

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ABOUT PETER HORSZOWSKI

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