Science in your pocket - part a

Introduction
Have you ever thought about what *else* your phone can do? Sure it makes calls, takes photos, accesses endless information on the internet, tells you where you are, plays games, helps you get fit...This is still your phone remember.

There is more to it too. It also does science! Your phone is a sophisticated measurement device, and this investigation will concentrate on just one of the many complicated measurements your phone can do.

1a. Questions and predicts - Open
Aim
To investigate the relationship in intensity of light measurements over distance using a smartphone.

Hypothesis
Write a testable hypothesis to achieve this aim.

2a. Learns and plans - Open
Equipment
What equipment will you need?

Investigate some apps on your phone, make a choice about which one you'll use and justify your choice.

List three risks and corresponding consequences and precautions.

Method
Make a list of steps for this experiment. You'll need to make sure the steps could be followed by someone else wanting to replicate your investigation. Include a diagram. Be sure to control for variables. Make sure you list variables and how you have considered them.

3a. Conducts - Open

Results

Tabulate your results.

4a. Processes and analyses - Open
How would you best present this data to a scientific audience?

5a. Problem Solving - Open

Discussion
Why is it that phones can make such reliable light intensity measurements? List some industries, real life examples of people that would use this sort of information that you have gathered in your investigation.

Try and complete a risk assessment for one of these industry or career applications.

Further investigation
How would you make the investigation better? What else could you measure with a phone? What else do phones measure and why?

If you were to extend your investigation, what would your next hypothesis be? Try to use your results from this investigation to help you guide your next investigation.

6a. Communicates - Open

Conclusion
Answer the question that we asked in the Aim. Can you find a mathematical expression for the relationship? Reference your results to back up your conclusions:

Science in your pocket - part b

Introduction

In the previous part of this investigation we have used a smartphone to measure the relationship between light intensity and distance. We can now do the same investigation with a light meter in order to make a comparison between the smart phone and a lab-based measurement device.

1b. Questions and predicts - Open
Aim
To investigate the relationship in intensity of light measurements over distance using a smartphone. Now that you have done this investigation with a phone and a light meter, you can make a comparison between the two.

Hypothesis
Write a testable hypothesis to achieve this aim.

2b. Learns and plans - Open
Equipment
What equipment will you need?

List three risks and corresponding consequences and precautions.

Method
Make a list of steps for this experiment. You'll need to make sure the steps could be followed by someone else wanting to replicate your investigation. Include a diagram. Be sure to control for variables. Make sure you list variables and how you have considered them.

3b. Conducts - Open

Results
Tabulate your results.

4b. Processes and analyses - Open
How would you best present this data to a scientific audience?

5b. Problem Solving - Open

List similarities and differences between a light meter and a Phone	
Similarities • • •	Differences • • •

Discussion
Think of some industries, real life examples or people that would use this sort of information that you have gathered in your investigation. Also try and complete a risk assessment for one of these industry or career applications.

Further investigation
How would you make the investigation better? What else could you measure with a light meter? What would be the best way to compare the results from part a and part b?

If you were to extend your investigation, what would your next hypothesis be? Try to use your results from this investigation to help you guide your next investigation.

6b. Communicates - Open

Conclusion
Answer the question that we asked in the Aim. Can you find a mathematical expression for the relationship? Reference your results to back up your conclusions: