



The Thomas Hardy School

Summer Preparation Task

A Level Electronics

Purpose of task:

1. Get a working copy of Circuit Wizard on your home computer
2. Gain basic familiarity with Circuit Wizard
3. Be familiar with basic circuit concepts

Tasks:

- Read and complete the Core Skills booklet
- Complete Circuit Wizard tasks

These two tasks are explained in more detail in the attached worksheet.

Recommended resources:

As detailed on the worksheet –

1. Circuit Wizard software
2. WJEC core concepts PDF book

Recommended resources:

You can take a copy of Circuit Wizard 3 Student Edition from the shared network drive:

- T:\Art & Design\DesignTech\Electronics\Circuit Wizard\Circuit Wizard 3 (Student Edition)

Alternatively, you can download via the school website:

- <https://files.thomas-hardye.net/s/ra8ZFDrQBnKC46R>

You will need a password to download the software. You can request the password by email from Mr Pizzey (bpizzey@thomas-hardye.net) using your school email address. No personal email addresses, please.

Deadline for Task: First lesson in the week commencing 13th September 2021

Recommended reading & activities list:

If you have time, browse the Core Concepts document available here:

<http://resources.eduqas.co.uk/Pages/ResourceSingle.aspx?rlid=937>

Required Stationery and Equipment for A Level Electronics

Pens, pencils, eraser, ruler and scientific calculator (not programmable)

Essential Resources

Essential:

None. All resources will be provided.

Useful:

1. EDUQAS GCSE Electronics ebook <https://resources.eduqas.co.uk/pages/ResourceSingle.aspx?rlid=938>
2. EDUQAS GCE Electronics ebook <https://resources.eduqas.co.uk/Pages/ResourceSingle.aspx?rlid=1179>

Things to Consider Throughout the Year

Most resources will include student exercises, worked examples and past examination questions. It is essential that you attempt the exercises and exam questions independently as this will develop the necessary skills to pass the final exam with an excellent grade. Students who skip the exercises or work with a friend to answer the sample exam questions tend to perform poorly.

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Circuit Wizard **Summer** Tasks

Task #1 – summer reading task

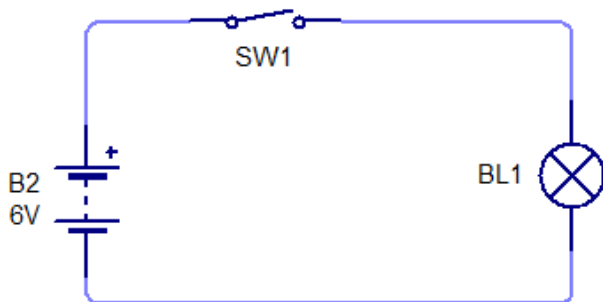
Read the WJEC core concepts PDF book online.

http://resource.download.wjec.co.uk.s3.amazonaws.com/vtc/2016-17/16-17_1-9/gce-electronics-book-core-concepts.pdf

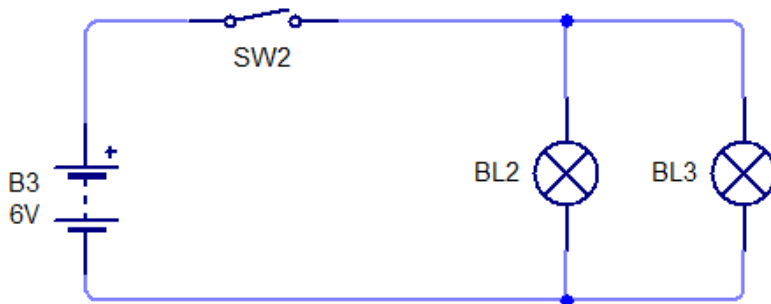
Task #2 – Circuit Wizard

You will need a computer running Microsoft Windows to complete the next task. If you do not have a suitable computer, you should complete the task at school when you start Year 12.

1. Download and install a copy of Circuit Wizard on your home computer.
<https://files.thomas-hardye.net/s/ra8ZFDrQBnKC46R> (You can request the password by email from Mr Pizzey (bpizzey@thomas-hardye.net) using your school email address. No personal email addresses, please.)
2. Create a new project (Electronics Circuit > Circuit with Genie Flowchart).
3. Build the following circuit making sure you have matched the lamp (6V 60mA) and battery (6V) voltage.



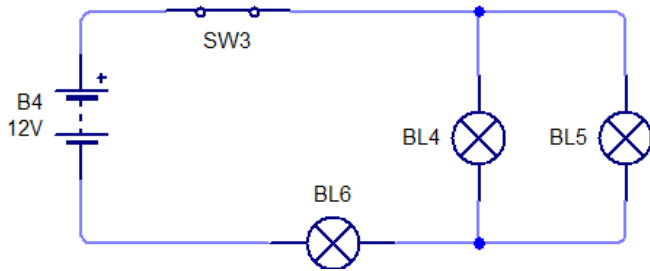
4. Simulate the circuit and check that it runs as expected.
5. Duplicate the circuit (copy and paste) and add a second lamp in parallel.



6. Add a text box next to each circuit (Project > Author > Text box) and add a note about the voltages and currents. You can measure these values by hovering the mouse pointer over a wire / component when the simulation is running.

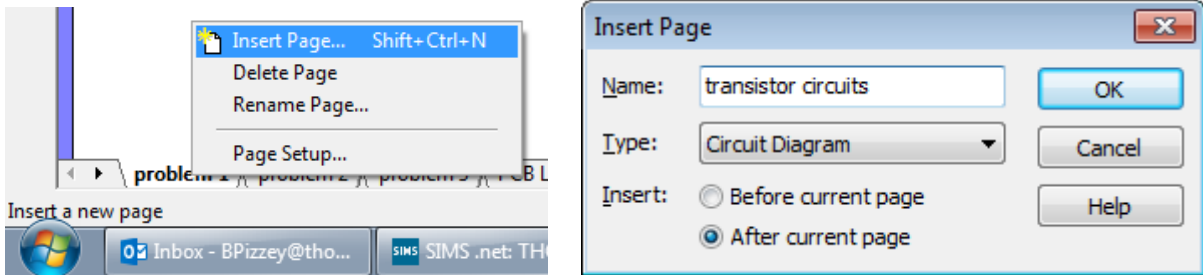
Deadline for Task: First lesson in the week commencing 13th September 2021

7. Duplicate the circuit again and add a third lamp. Change the battery voltage to 12V.

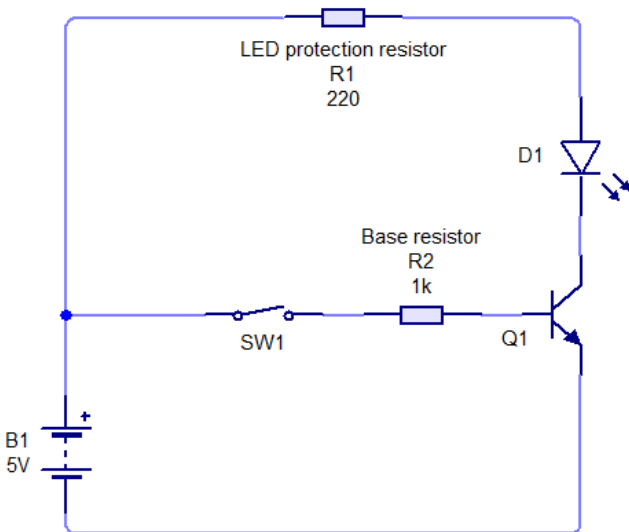


8. Add a text box and comment on the measured voltages and currents in the circuit. Also comment on the relative brightness of the lamps.

9. Insert a new page (Circuit Diagram) in your Circuit Wizard document.



10. Build the following circuit making sure you connect the “load” (LED and protection resistor) between the positive terminal of the battery and the collector of the NPN transistor. Add descriptive labels to the resistors as shown.



11. Simulate the circuit and add a text box to include comments on the circuit. What happens when the switch is open? What happens when the switch is closed? Measure and compare the current into the base and collector of the transistor. Measure and comment on the emitter current.

12. Save your Circuit Wizard file as follows: first_name_last_name_summer_task
e.g. David_Jones_summer_task

13. Email me your file in the first week of term. (bpizzey@thomas-hardye.net)

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