**Preparing for A level – Study Support Pack – Summer 2022**

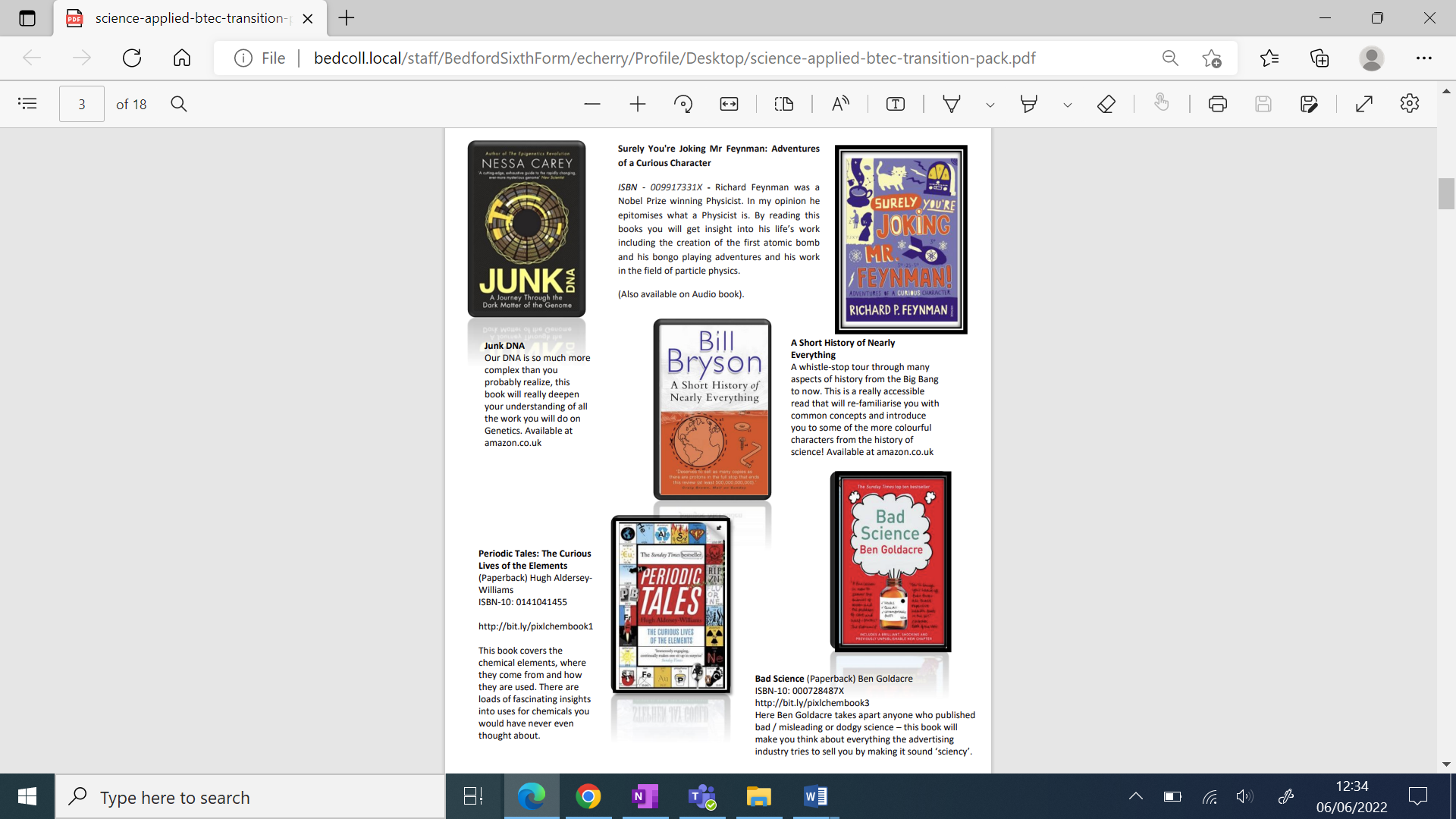


# Subject: BTEC Diploma in Forensic science and criminal investigation

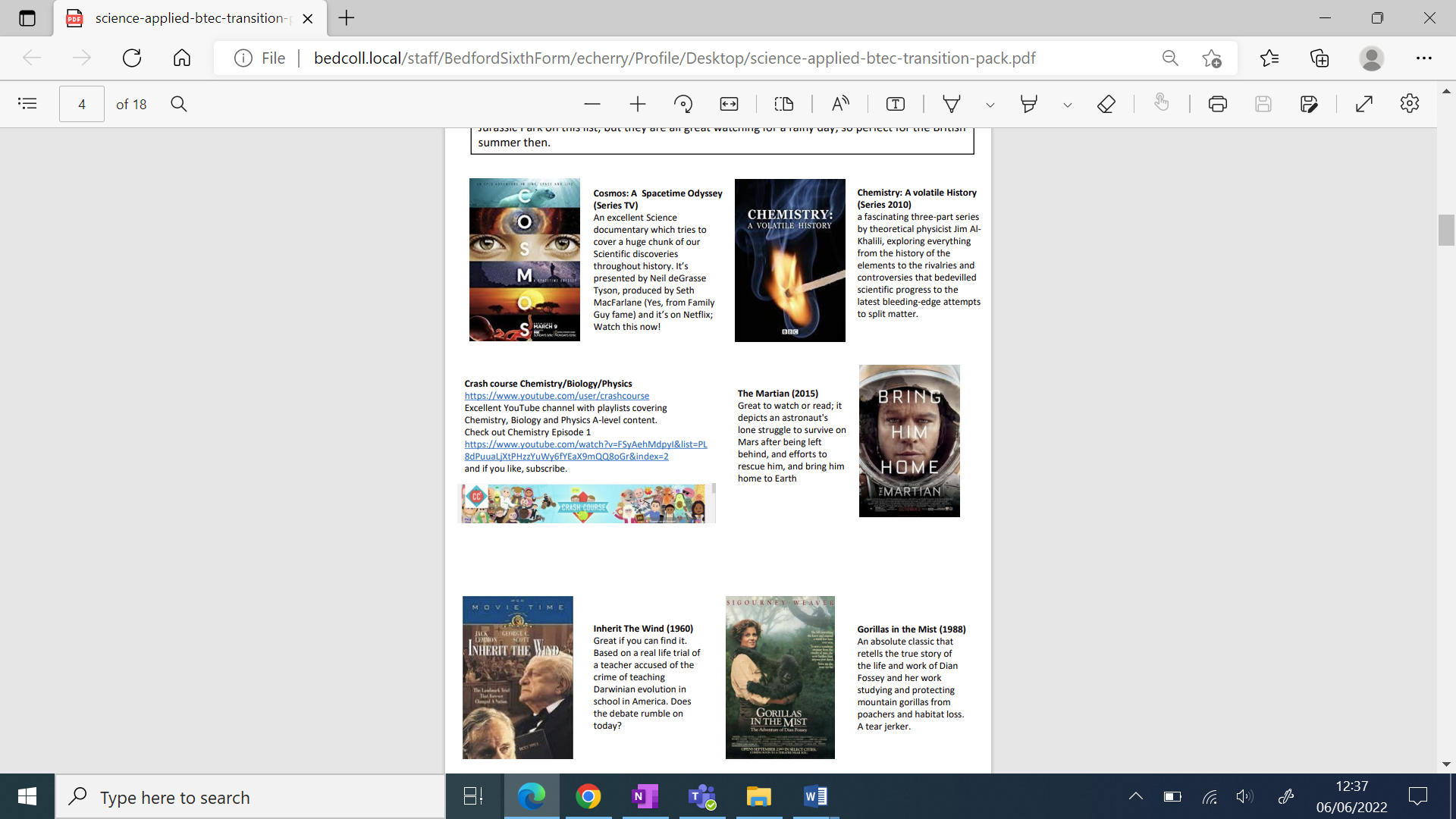
The aim of this pack is to help you bridge the gap between GCSE and A level. It is specific to one of the many A level subjects that are taught at The Bedford Sixth Form and we encourage you to work through all the relevant packs for the subjects that you would like to study. www.bedfordsixthform.ac.uk

**Book Recommendations (Optional – 10 points per book)**

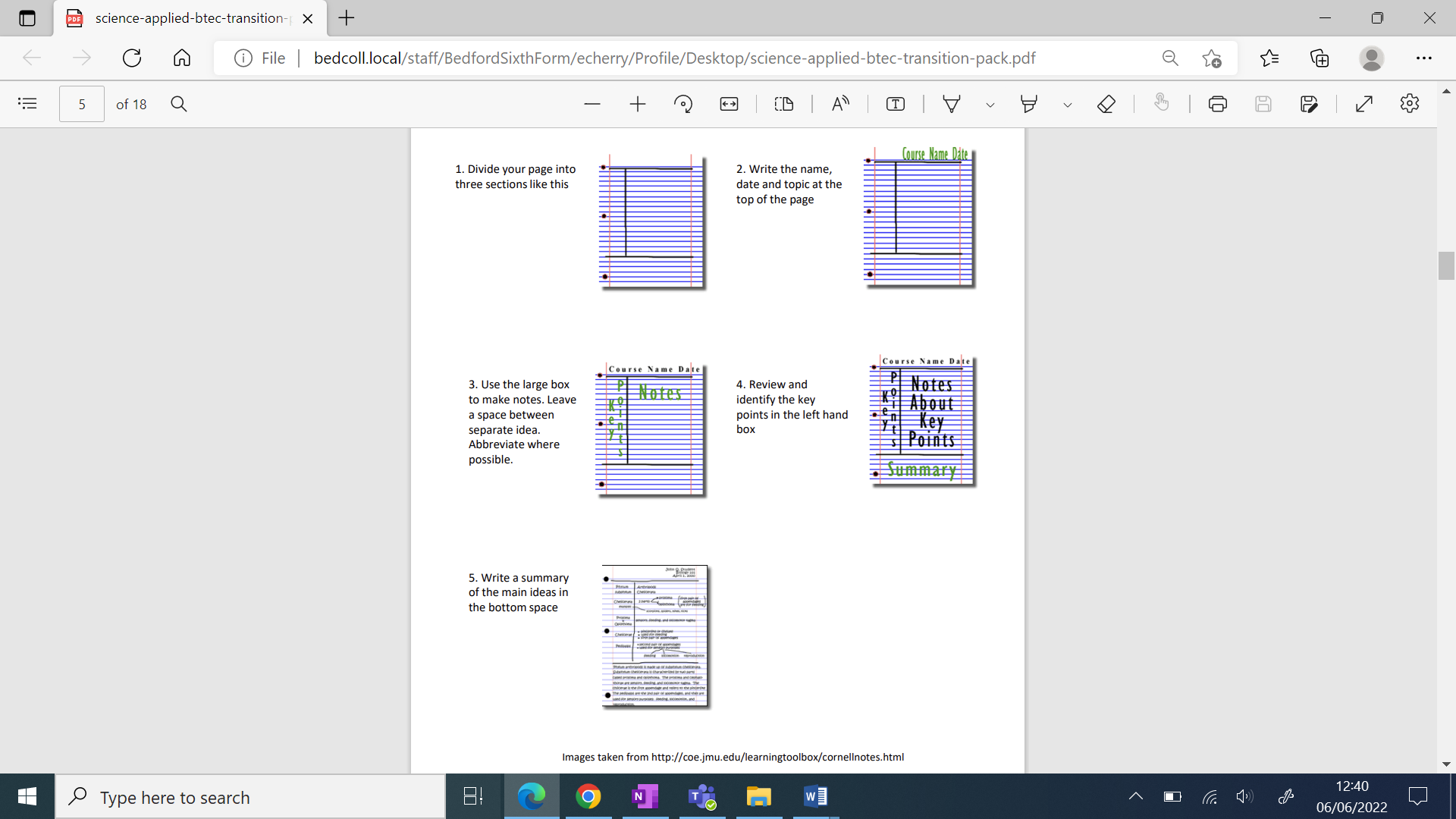
Kick back this summer with a good read. The books below are all popular science books and great for extending your understanding. Write a brief summary about the book you have read, including something new you have found out or something that interested you.

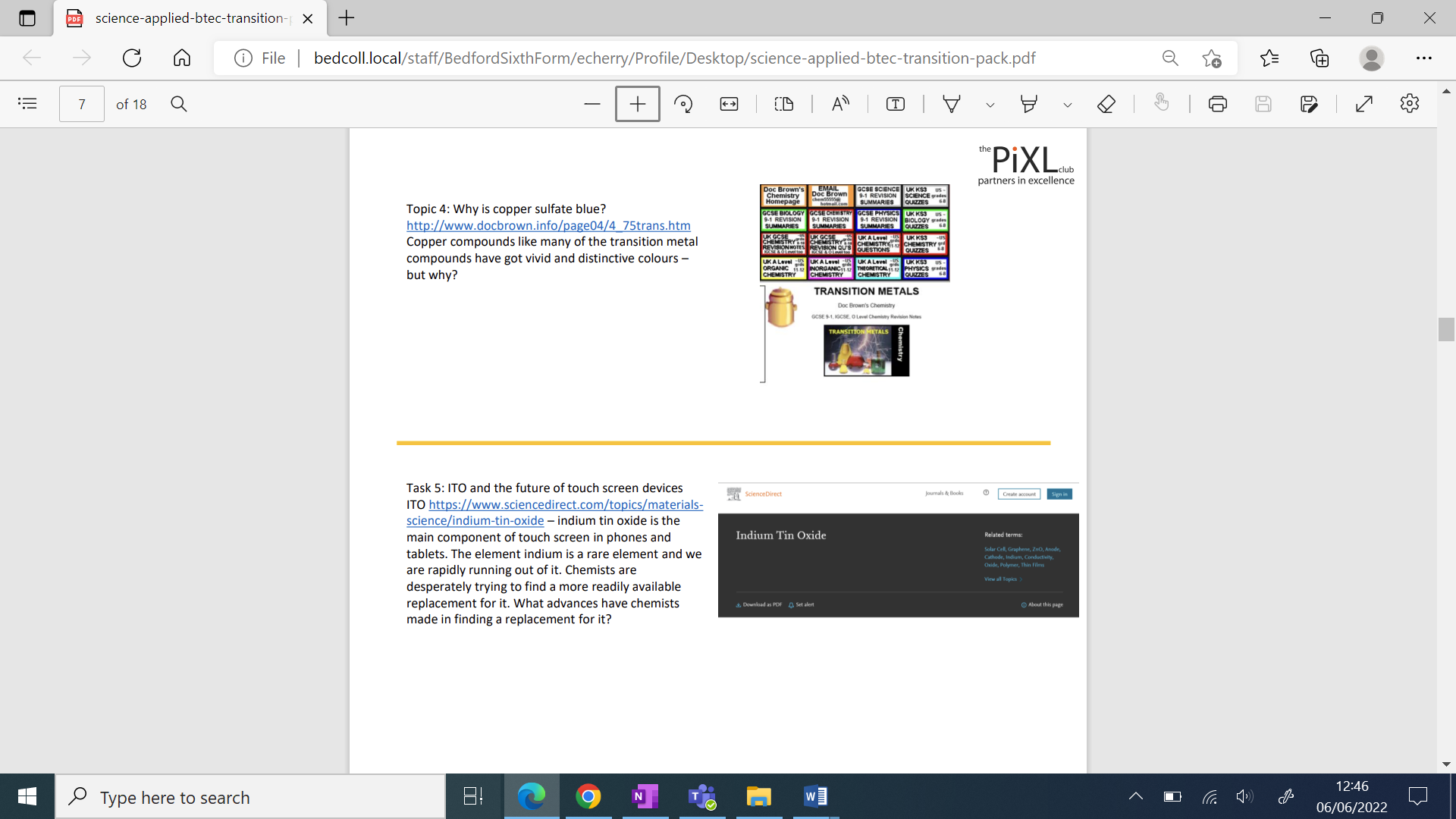
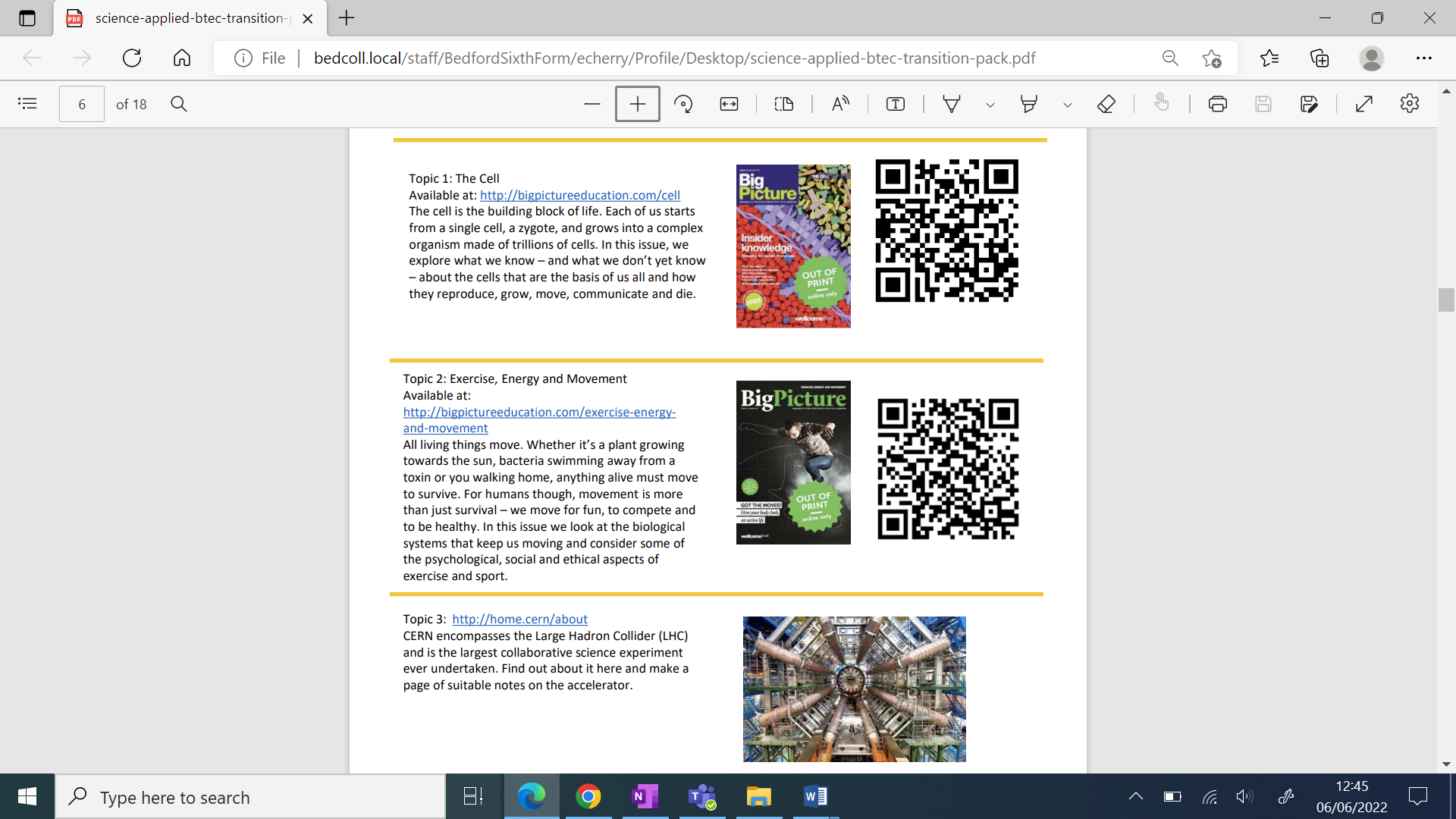


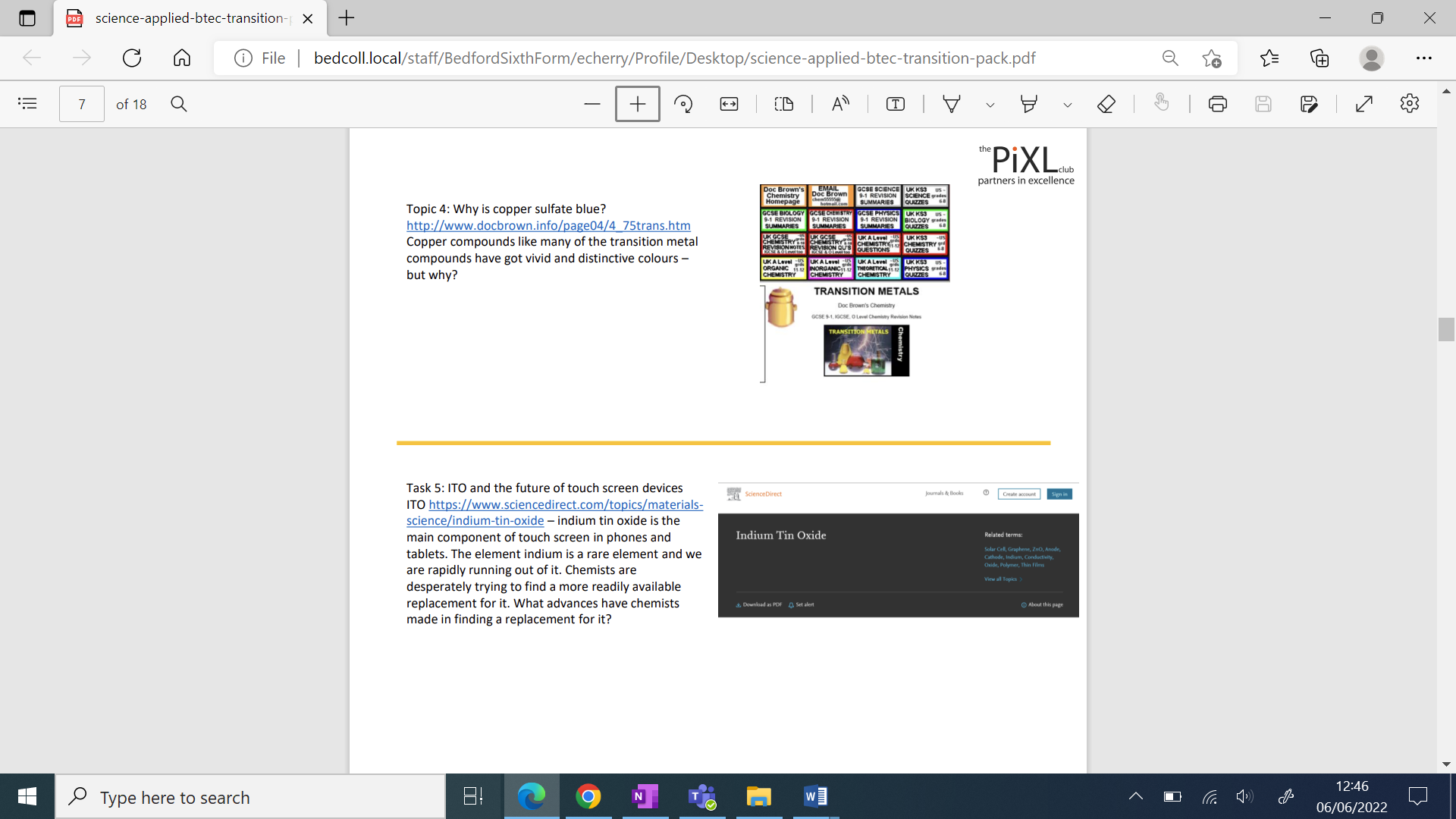
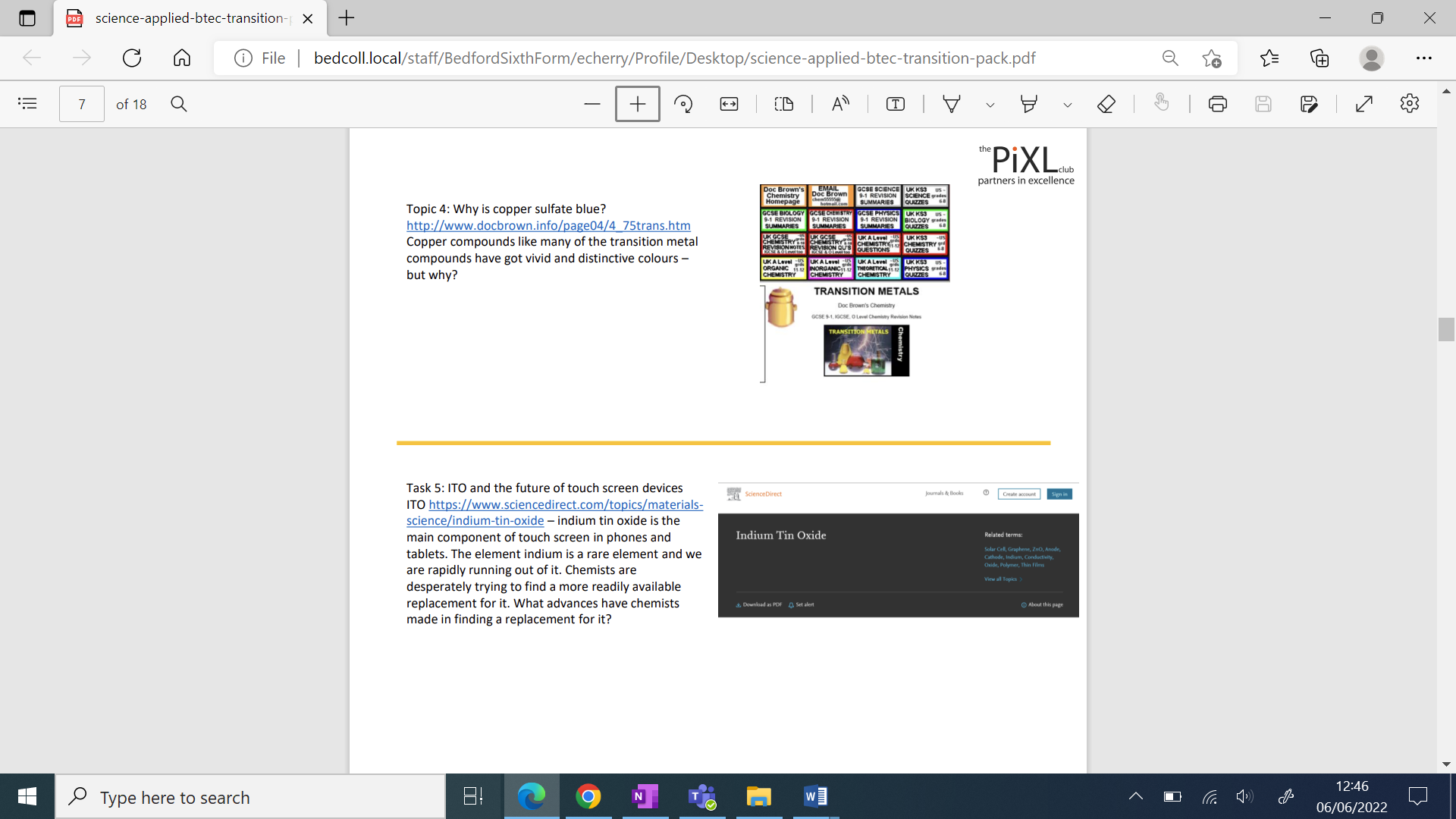
**Movie Recommendations (Optional – 10 points per movie)**

Everyone loves a good story and everyone loves some great science. Here are some of the picks of the best films and TV based on real life scientists and discoveries. Write a brief summary about the film you have watched, including any particular parts you enjoyed.

**Research activity (10 points)**

Research, reading and note making are essential skills for study. For the following task you are going to produce ‘Cornell Notes’ to summarise your reading. You must pick one of the topics on the next page.  






**Biology Topic 1: Exchange and Transport (5 points)**

Organisms need to exchange substances selectively with their environment and this takes place at exchange surfaces. Factors such as size or metabolic rate affect the requirements of organisms and this gives rise to adaptations such as specialised exchange surfaces and mass transport systems. Substances are exchanged by passive or active transport across exchange surfaces. The structure of the plasma membrane enables control of the passage of substances into and out of cells.

Read the information on these websites (you could make more Cornell notes if you wish): <http://www.s-cool.co.uk/a-level/biology/gas-exchange>

<http://www.s-cool.co.uk/a-level/biology/nutrition-and-digestion/revise-it/human-digestive-system>

And take a look at these videos:

<http://ed.ted.com/lessons/insights-into-cell-membranes-via-dish-detergent-ethan-perlstein><http://ed.ted.com/lessons/what-do-the-lungs-do-emma-bryce>

**Task:**

**Create a poster or display to go in your classroom in September. Your poster should either: compare exchange surfaces in mammals and fish or compare exchange surfaces in the lungs and the intestines. You could use a Venn diagram to do this**. Your poster should:

Describe diffusion, osmosis and active transport

Explain why oxygen and glucose need to be absorbed and waste products removed

**Biology Topic 2: Cells (5 points)**

The cell is a unifying concept in biology, you will come across it many times during your two years of A level study. Prokaryotic and eukaryotic cells can be distinguished on the basis of their structure and ultrastructure. In complex multicellular organisms cells are organised into tissues, tissues into organs and organs into systems. During the cell cycle genetic information is copied and passed to daughter cells. Daughter cells formed during mitosis have identical copies of genes while cells formed during meiosis are not genetically identical

Read the information on these websites (you could make more Cornell notes if you wish):

<http://www.s-cool.co.uk/a-level/biology/cells-and-organelles><http://www.bbc.co.uk/education/guides/zvjycdm/revision>

And take a look at these videos:

<https://www.youtube.com/watch?v=gcTuQpuJyD8><https://www.youtube.com/watch?v=L0k-enzoeOM><https://www.youtube.com/watch?v=qCLmR9-YY7o>

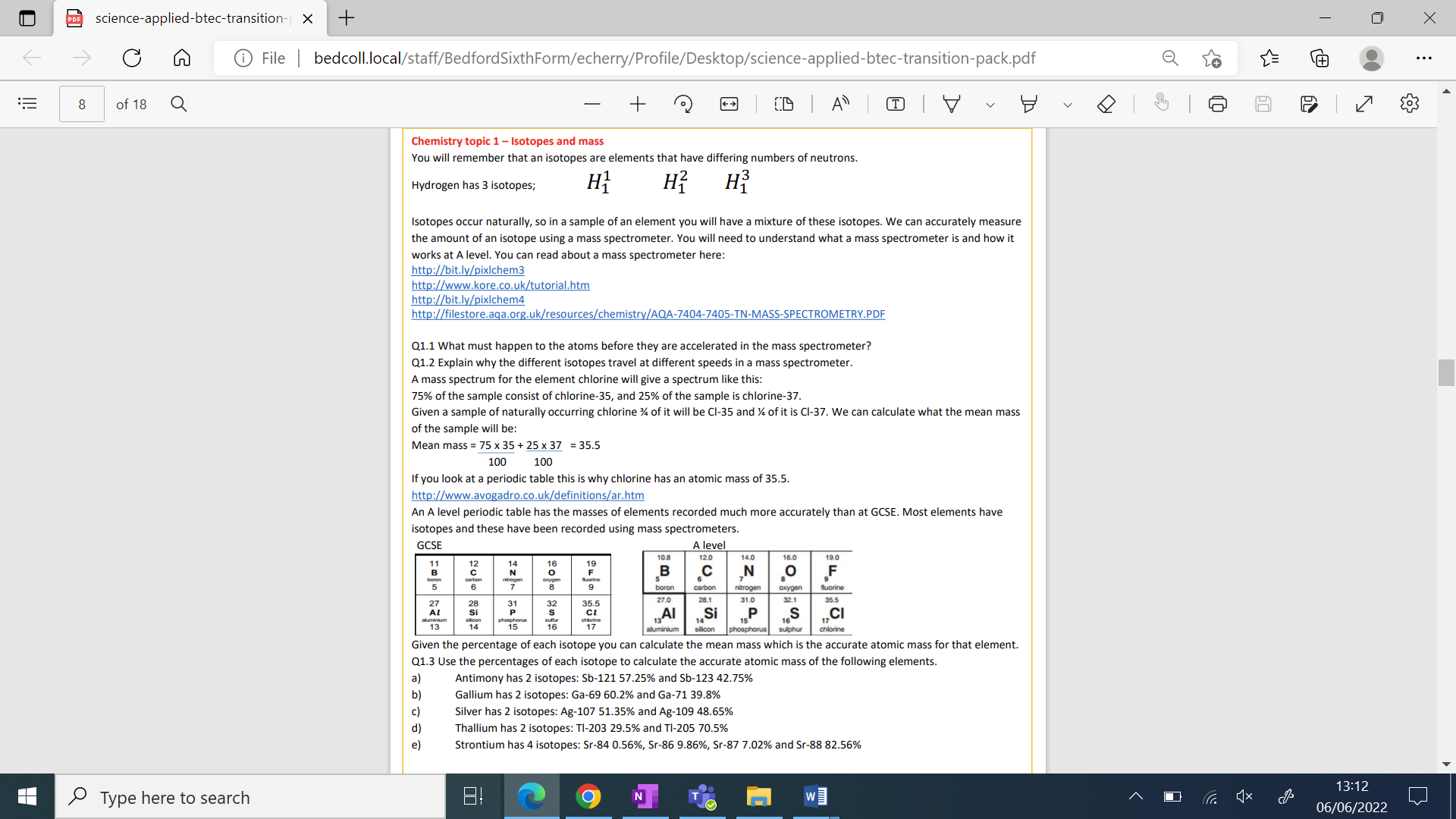
**Task:**

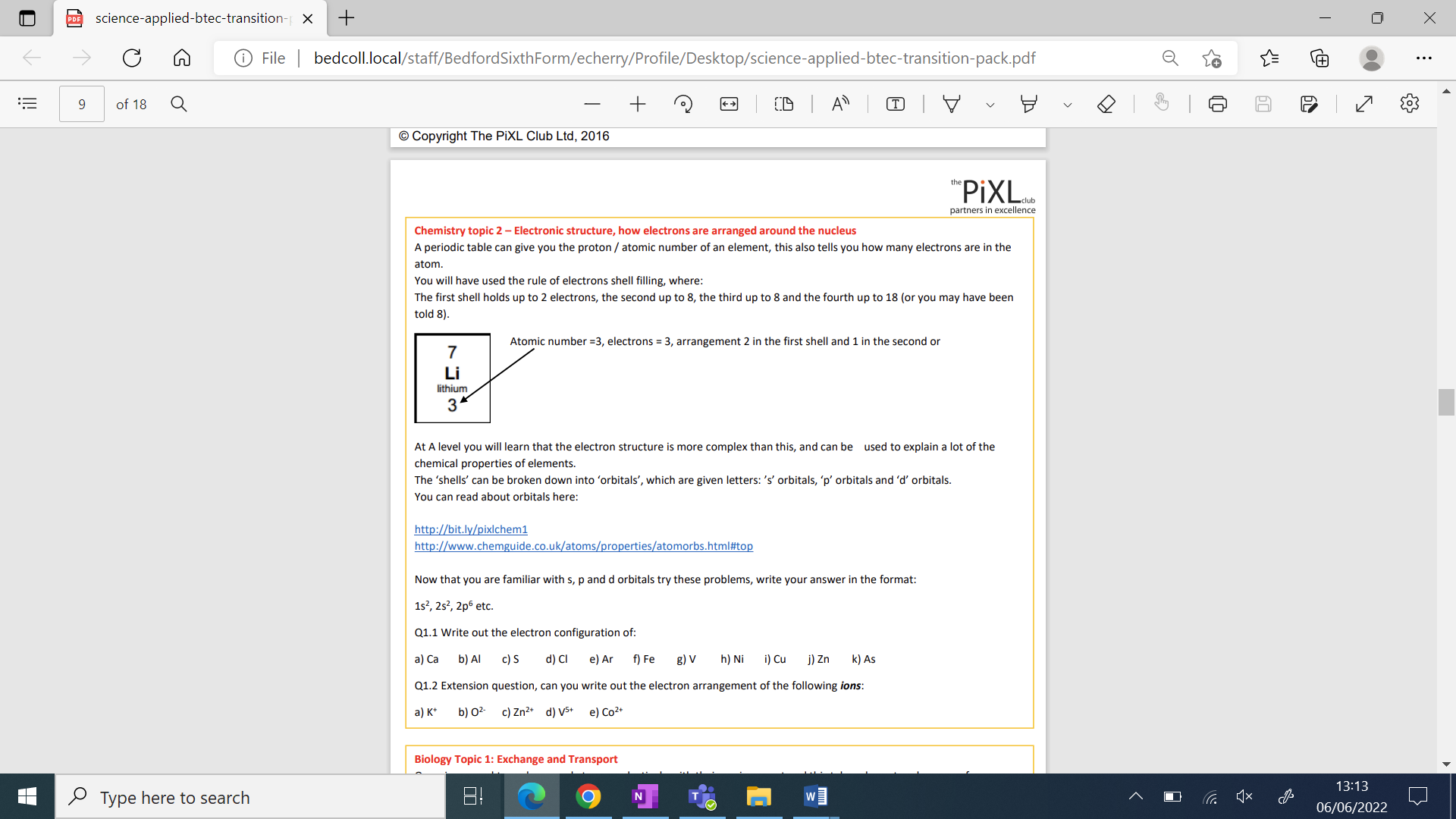
**Produce a one page revision guide to share with your class in September summarising one of the following topics: Cells and Cell Ultrastructure, Prokaryotes and Eukaryotes, or Mitosis and Meiosis.** Whichever topic you choose, your revision guide should include:

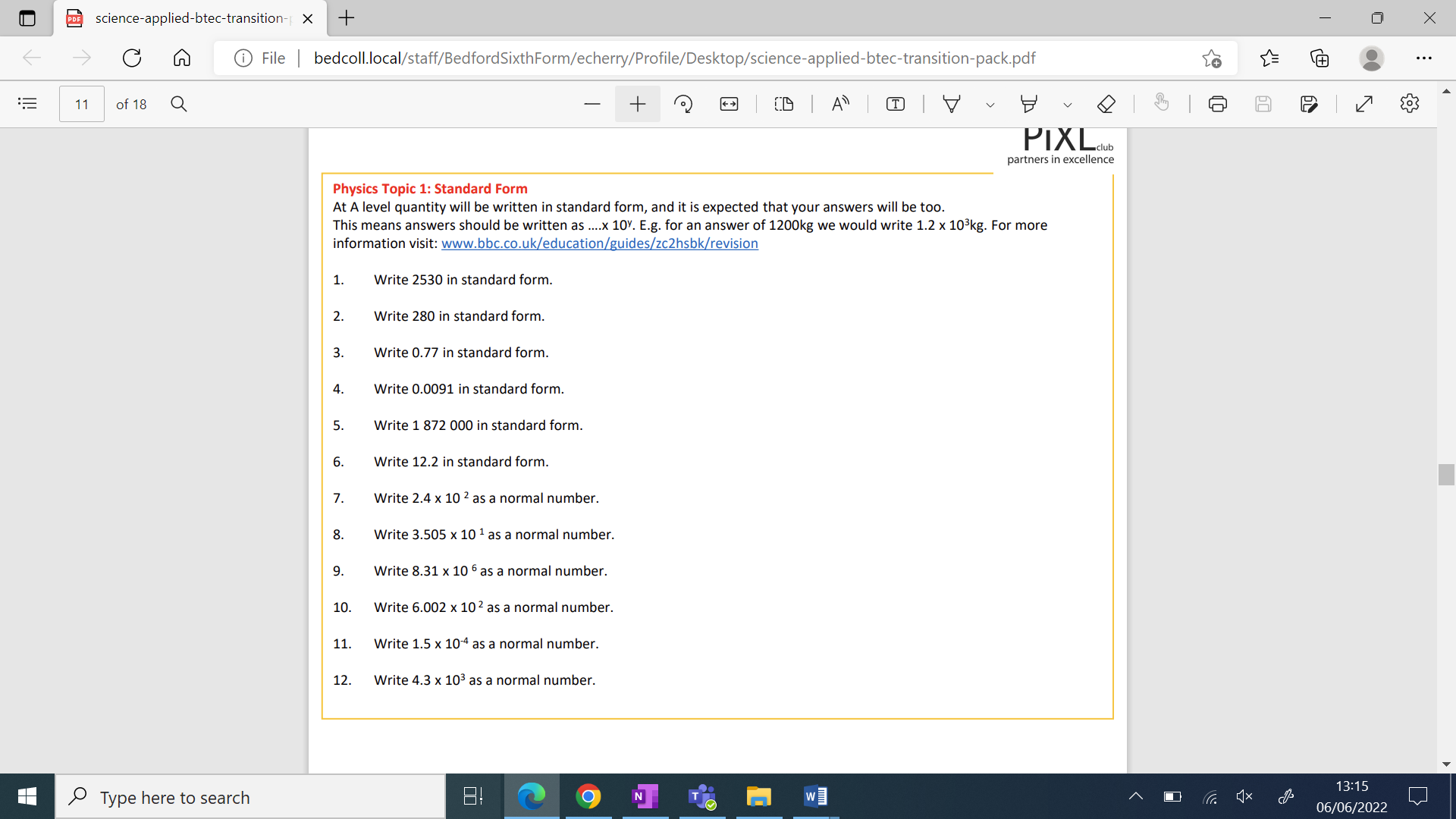
Key words and definitions

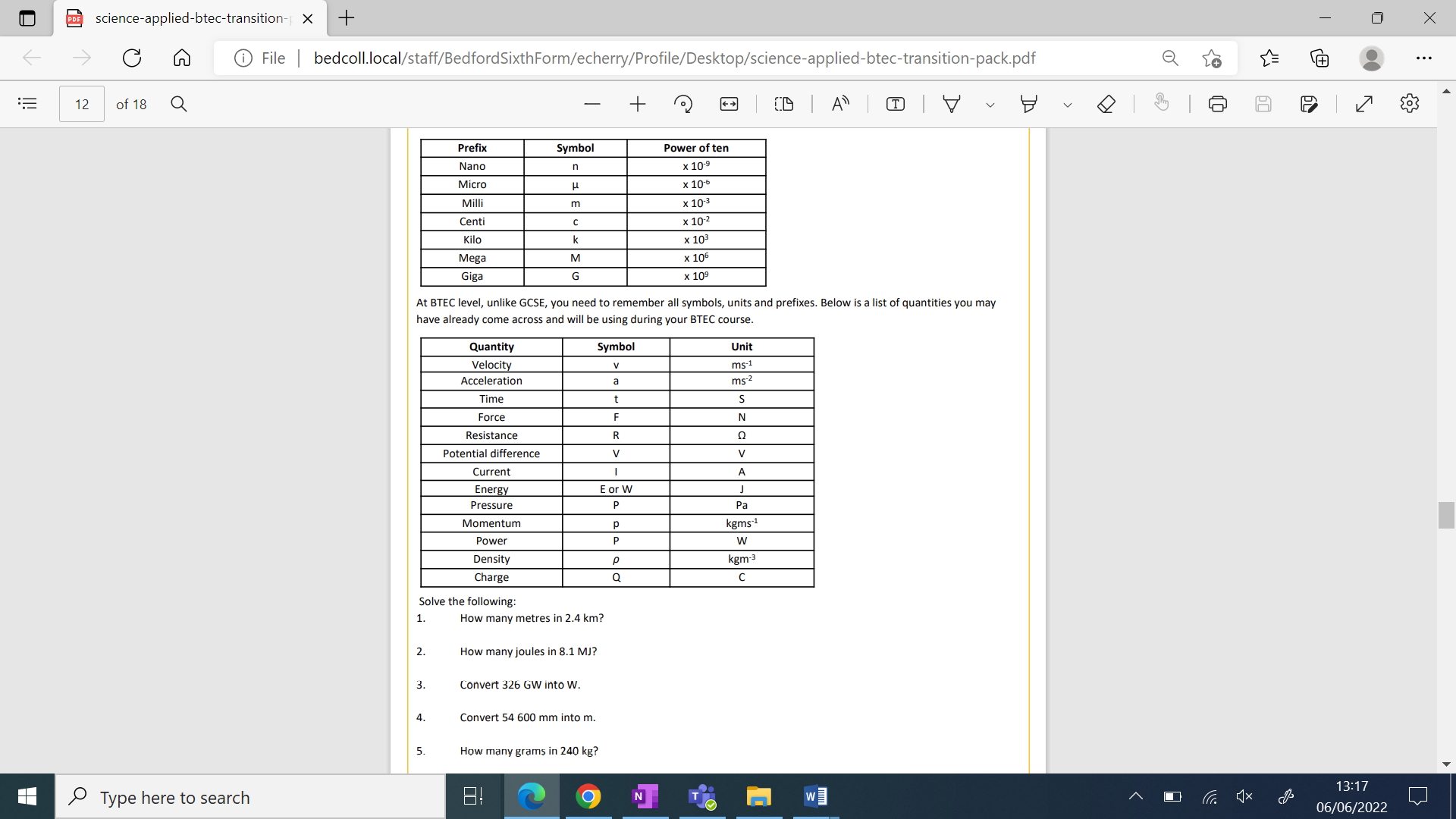
Clearly labelled diagrams

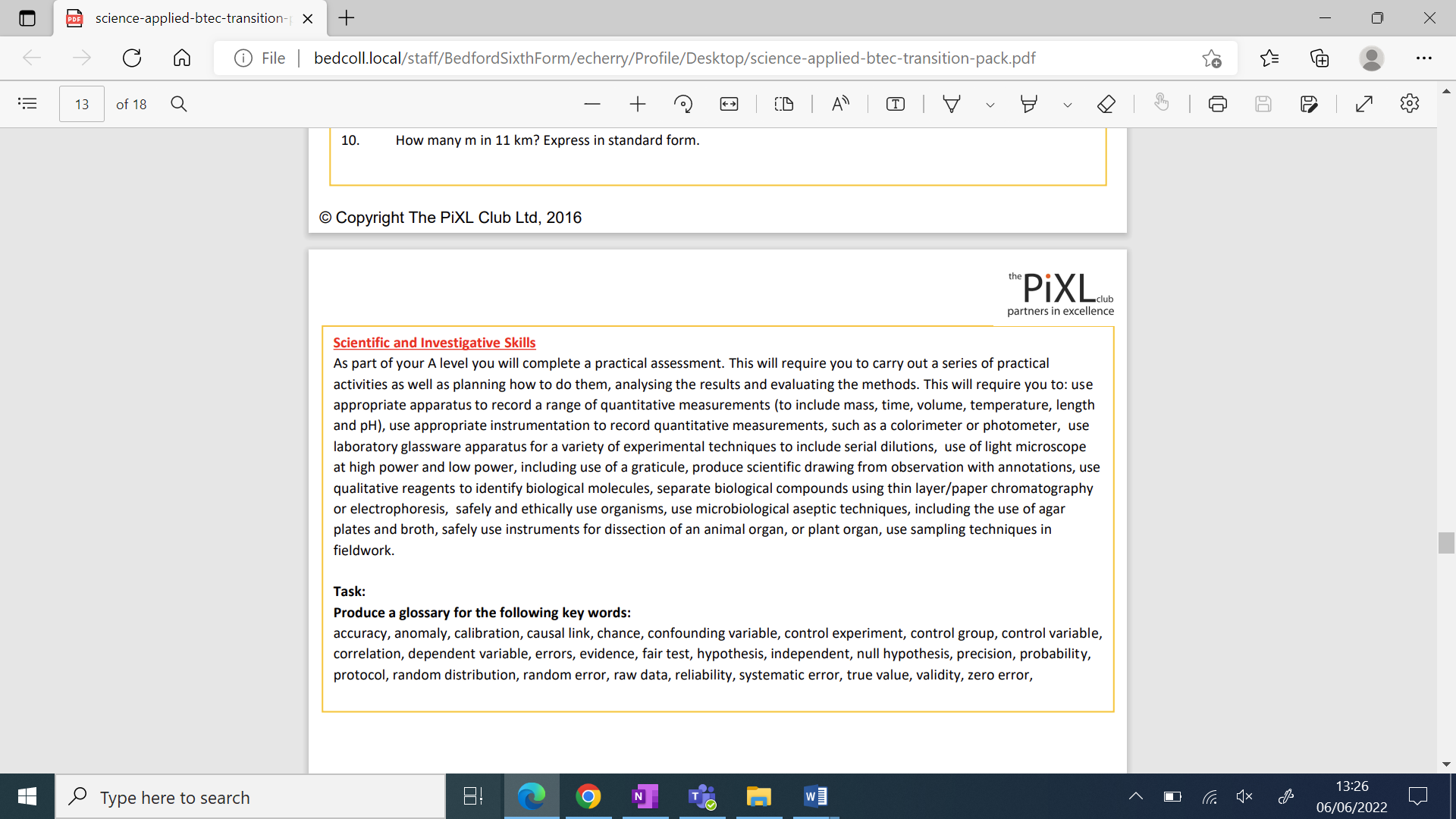
Short explanations of key ideas or processes.

**Chemistry Topic 1: Isotopes and mass (5 points)**

**Chemistry Topic 2: Electronic structure (5 points)**

**Physics Topic 1: Standard form (5 points)**

**Physics Topic 2: Symbols and Prefixes (5 points)**

**Scientific and Investigative Skills (10 points)**

**Reflective Skills Task (25 points)**

Throughout this course you are required to reflect and build upon the knowledge and skills you have learnt. You will be asked as part of an assignment to discuss skills you had before the course and skills that you have developed during the course.

Task: Produce a report summarising your performance and skill development across all the practical work you have done prior to joining The Bedford Sixth Form. This can must include the following:

* working to appropriate standards and protocols (methods)
* applying safe working practices and behaviour
* accepting responsibility for the quality of own work
* taking responsibility for completing tasks
* communicating and cooperating with others in the workplace
* behaviour for safe and effective working in science
* recognising problems and applying appropriate scientific methods to identify causes and achieve solutions
* identifying, organising and using resources effectively to complete tasks

# Forensic Task (25 points)

To complete a crime scene sketch plan incorporating all pertinent details as listed from the brief below.

* You can carry out this activity using a computer or by hand
* You MUST use an A4 sized piece of paper
* One extra side of an A4 sized piece of paper is allowed for descriptions and comments but must not have diagrams or drawings on it

|  |
| --- |
| The following is the criteria for this piece of work |
| North Pointer |
| Signature(s) |
| Not to Scale notation |
| Evidence location |
| Using the desired space |
| Clear identification of items on the plan |
| Dimensions |
| Labels |
| Neatness |
| Date |
| Using all space available (not drawn in one corner of the page) |

## Crime Scene Brief

At 0800 hrs on Monday the 21st June 2010 A crime was reported to the Police at Wilmington Police Station, Tobago.

The details are below.

Mrs Janice Sorbet, 34 stated she was awoken from her sleep by a sound in her house, 34 Drivel Road, Wilmington, Tobago. On investigation she has discovered the living room has been ransacked and items taken.

The house is a single storey building made of brick. Access is granted by a front door into a hallway with the kitchen to the right and the living room to the left.

The hallway is 1.5m wide with painted walls and a decorative tile floor.

The door to the living room is 2m away from the front door on the wall to the left in the hall.

The living room door is 80cm wide and has an inward opening wooden door on it. This door has a handle on the left and opens to the right into the room. The room is 7m x 4.7m and covers the whole side of the house.

The room has aspect widows at the front, measuring 2m wide and 1,5m high and patio doors at the rear. This is the entry and exit point taken by the intruder. The patio doors are 2m high, with each door 80cm wide.

The right side of the frame is 22cm from the corner nearest to it.

The patio doors consist of two panels, one of which slides into the other. They are made of glass and covered with a lace net curtain, facing the south west. At the front of the room is a sofa and two arm chairs. These all face each other with the sofa under the window.

The sofa is a standard two seater item made of heavy duty cloth in a brown colour. The arm chairs match the sofa. The floor is covered with a rug between the chairs and the sofa and red clay tiles throughout. Each tile measures 30cm square.

The walls are painted in magnolia coloured paint.

Lighting in the room is from two sets of hanging light bulbs with no covers. At the end of the room with the sofa is a small coffee table made of wood with a glass top. This has been smashed and while there are indentations in the rug where it usually is situated it is now upside down, leaning against the front of the sofa.

A TV bracket hangs on the wall opposite the door into the hallway. The 42 inch plasma TV is on the floor next to the patio doors.

As you stand in the living room looking at the patio doors to the left is a brown wooden and glass cabinet. This measures 70 cm x 2m x 1.5m high. The cabinet has various draws and cupboards which have all been opened. Papers and the contents of these draws and cupboards have been removed and thrown all over the floor. One item of paper, a utility bill appears to have a muddy footprint on it. The householder says this was not there before the incident. This item is 1.47m from the right-side frame of the hallway door and 3.26m from the middle support of the patio door.

On the floor just inside the patio door, to the right side is a bent screwdriver.

This item appears to have a red sticky substance on the handle. It appears wet. The screw driver is 15cm long with a red handle and a flat head. The metal is rusting. The screwdriver is 12 cm from the right side frame of the patio door and 22cm from the nearest wall at a right angle.

There are various pictures around the room, some appear to have been touched but they are still hanging in place.

A computer laptop is missing from the dining table which is situated on the right side wall as you are looking at the patio doors from inside the room. This table is 60cm high, round in shape measuring 90cm diameter and has four chairs around it. It is made of wood.

**Day Trip (Optional – 10 points a trip)**

Produce a brief summary about your day trip. You may have even been on a science related trip somewhere else.