We consider how to design investigations primarily in chapter 2 with some reference to chapters 1, 4, 5, 6 and 7. We discuss how to report research in chapter 12. We review how to critique published research in 2.1 and 7.3. The following exercise allows you to apply your understanding of this material to a published report which is based on undergraduate research.

Q1. What are the aim and objectives for this study?

Q2. For each of the four objectives briefly summarise the experiment in terms of the experimental design.

The objectives were:

a. To determine the total polyphenol content in extracts from three tomato varieties (Alisa Craig, ‘high polyphenol’ and ‘low polyphenol’).

b. To characterize and quantify the flavonoid content in extracts from three tomato varieties (Alisa Craig, ‘high polyphenol’ and ‘low polyphenol’).

c. To examine the effect of extracts from three tomato varieties on the growth of human epithelial colorectal adenocarcinoma cells in vitro.

d. To examine the effect of extracts from three tomato varieties on the cell cycle of human epithelial colorectal adenocarcinoma cells in vitro.
Q3. Discuss the replication within the experiments designed for objectives a and c. How many replicates were used? What were they? Do they help to assess the effect of confounding variables and/or increase the representative sample size?

Q4. Write a brief outline of the key findings from the experiments for objectives a and c. How have the results from the statistics been presented graphically? Is this format clear?