CBA Scaffolded Template

1. Define your problem

Here you state your mathematical problem. You must state what your question or investigation is in a specific and concise way. You don't want to have a broad and vague question as this will be hard to answer. You want to narrow down your question to the exact thing you want to solve and what you want to find out. Here you should mention why you chose this problem. Can you predict what the outcome may be?

2. Make assumptions (Where necessary)

Not everyone will have to complete this step. You may need to restrict your problem and so assumptions may be necessary. If you make any assumptions, make sure you justify them. Here are some examples of assumptions: you may need to assume a pool you're constructing will be 2m deep, or that you have a €1,000 budget for your garden makeover, or that you're ignoring wind resistance in a situation.

3. Break the problem into manageable parts

What will you do first to try to solve your problem? What will you do next? This is an important step, and you should spend a good bit of time on it. Here you must state exactly how you are planning on solving the problem. Literally list the steps you will follow, i.e Step 1, Step 2, Step 3, ... Explain how you will complete each step.

For example, say you are completing a bedroom makeover. The steps may look like this:

Step 1: Draw a plan of the room and find measurements using a measuring tape
Step 2: Make a list of new items needed for the room – bed, carpet, paint, rug.
Step 3: Find the cost of the items needed by researching 3 different online shops
And so on...

4. Translate the problem into mathematics

Here you should identify any variables and constants. Variables are things that can change. For example, they could be prices, distances, measurements, speeds, times etc. Constants are fixed values that don't change. Examples could include your budget, the area of the land you are working on, the number of animals in the enclosure you are designing, or the temperature that may be constant in an experiment.

Do any of the variables have an impact on each other? If so, comment on this.

5. Engage with the problem

This is the most important step in the investigation. Here you will do the work needed to solve the problem. You will follow the steps you created in step 3 to work to solve your problem. You may need to research and record data. When working out any calculations be sure you show all your workings. Through your work, you should try and spot any patterns, trends, or solutions. Here you should use tables, graphs, formulas etc to engage with the maths in the problem. Can you find more than one way to solve the problem?

6. Present your solution

After engaging with the maths and the problem in step five, now try to find a way to best present your solution. This may be a single way or in multiple ways using a statement or sentence, a graph, a formula, a diagram etc.

7. Interpret your findings and try to extend/generalise your findings

Here you should comment on your solution and link it back to the original question. Does the answer make sense? Is it what you predicted? Were your assumptions justified? Could this investigation or solution be extended or used on other problems, or could it open a door to another investigation?

8. Reflection

Here you should reflect on the process of the CBA. What were the strengths and weaknesses of the approach you took? What went well and what would you do differently?