Student book answers

Chapter 2 Approaches to problem-solving methodology: data analysis

Test your knowledge

PURPOSE OF GRAPHIC SOLUTIONS

1 A graphic representation is a pictorial diagram that shows interdependencies between variables. It is one of the most commonly used representing data and information, and can make the reading of data and information more interesting, less time-consuming and more understandable.

2 Responses will vary and may have a degree of overlap with graphic solutions.

3 Responses will vary.

DESIGN PRINCIPLES FOR GRAPHIC SOLUTIONS

4 Students should use one of the graphic solutions (or representations) they have selected from Question 2 and comment on this. Their responses will vary, but should reflect some of the commentary used throughout Chapter 2 to annotate various infographics.

5 A convention is a formal and accepted way of displaying information, like the layout of a letter. A format is a customised change to the appearance of a convention, for example the use of different fonts and sizes in letters from different organisations.

6 Graphs and charts must have titles.

Axes must be labelled.

If more than one set of data is provided on a single chart, use a key.

Include author identification and/or source of data, date and a filename (if appropriate).

Include the unit of measurement on the relevant axis.

7 Responses will vary. Examples include graphs, pictures, diagrams, narrative and timelines.

8 To test the quality of onscreen information you have represented, ask the following questions.

- Does the graphic representation depict the information required and fulfil its intended purpose?
- Is the overall look and tone of the graphic representation appropriate to its intended audience?
- Is the graphic representation accurate? That is, has the data source been validated and verified?
- Is the type of graphic representation the most appropriate type for the data?
- Is there anything that is misleading? Confusing? Unclear?
- Are the axes correct?
- Are there any unnecessary elements or information in the graphic representation?
- Is the numerical scale of the value axis identified; for example, thousands or millions?
- If the chart uses two value axes, can the audience easily identify the appropriate axis for each series?

- If more than one chart is being developed for the same solution, are the charts consistently formatted and presented?
- Is all of the text readable?
- Can any of the information presented be further summarised?
- Are font styles, sizes and colours consistent?
- Are there any spelling mistakes?

9 Responses will vary.

DESIGN TOOLS

10 A data set is a collection of data that is made up of separate parts that can be processed and manipulated as a whole or a unit by a computer.
11 Input: the data required for the solution; processing: the steps required to transform the data into information; output: the solution produced by processing the data
12 An annotated diagram visually depicts how graphic solutions should look.

TYPES OF TESTS

13 To check that what you are trying to produce meets the specified need and fulfils the specified purpose

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- Effectiveness: Is it complete, readable, attractive, clear, accurate, accessible, timely, relevant and usable?
- Does it communicate the message?
- Does the graphic solution provide the information required? It is clearly and accurately labelled?
- Will the intended users easily find what they need?

15 An unreliable graphic solution can cause confusion about a particular topic.
16 You should ensure that the infographic matches the user's search for information.

VALIDATION

17 Validation is checking the original data for illegal data types. Validation checks for reasonableness, for correct spelling, to ensure that data falls within a correct range. Validation also checks that codes that are used are consistent and reasonable. Data can be validated manually (by a person) or electronically (by software).

Apply your knowledge

1 The infographic looks at the impact of wireless internet on everything from social lifestyle and employment to cause of political change. It also shows how human expectations of the internet have grown along with usage. Long gone are the days of plugging a cable into the phone socket for connectivity and waiting patiently for one screen to load: if wi-fi does not pull up a page in three seconds, then 40% of users will just head elsewhere.
2 Responses will vary. Any 10 subsections, from the blue or black headings, will suffice.
3 Responses will vary based on the subsections chosen in the previous section.
4 The IoT is a giant network of connected 'things' with an on and off switch to the internet (and/or to each other).
5 Responses will vary.
6 Responses will vary.