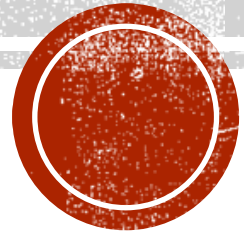
THE RESULTS SECTION



The Results section appears third in the section sequence in most scientific papers.

It follows the presentation of the Methods and Materials and is presented before the Discussion section.

Although the Results and Discussion are presented together in many journals.

This section answers the basic question ***"What did you find in your research?"***

1 **Read the statement and fill in the gaps with the words *Results* or *Discussion*. Say if you agree with the statement.**

Separating [1] _____ from [2] _____ preserves the objectivity of the [3] _____ which should be presented clearly and without comment. (D. Lindsay)

I. Organization and Approach

For most research papers, there are two possible ways of organizing the results. Both approaches are appropriate in how you report your findings, but use only one approach.

1) Present a synopsis (краткий обзор) of the results followed by an explanation of key findings. This approach can be used to highlight important findings. For example, you may have noticed an unusual correlation between two variables during the analysis of your findings. It is appropriate to highlight this finding in the results section.

2) Present a result and then explain it, before presenting the next result then explaining it, and so on, then end with an overall synopsis. This is the preferred approach if you have multiple results of equal significance.

The Results section should include the findings of your study and ONLY the findings of your study.

The findings include:

- Data presented in tables, charts, graphs, and other figures;
- A contextual analysis of this data explaining its meaning in sentence form;
- Report on data collection, recruitment, and/or participants;
- Data that corresponds to the central research question(s);
- Secondary findings (secondary outcomes, subgroup analyses, etc.).

2 **Put the words in the correct order to make sentences about the Results section of an article.**

1 provide evidence / in a research article / aims to / or reject / to support / a hypothesis. / The data presentation

2 most prominent. / We should / the main points / present / in ways which / make / all necessary data

3 to focus on / to interpret them. / helps readers / aspects of / and / the results / The accompanying text / the least important

4 should / randomly / Figures / and put / be numbered / in the article.

5 in the text. / Figures / in the order / referred to / are presented / in which they / should be

6 depends on what / to gain from your data. / a table, graph, diagram or text / The choice of / you want readers / whether to use

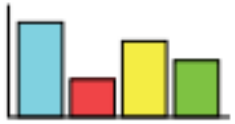
3. Compare your sentences and decide whether they are true or false.

Graphs and Diagrams

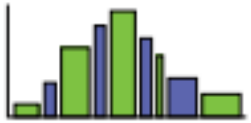
A Types of diagrams

Diagrams are visual ways of **presenting data** concisely. They are often also called **figures**. In an academic article they are usually **labelled** Fig. (Figure) 1, Fig. 2, etc.

A **pie chart** is a circle divided into **segments** from the middle (like slices of a cake) to show how the total is divided up. A **key** or **legend** shows what each segment represents.



A **bar chart** is a diagram in which different amounts are represented by thin vertical or horizontal bars which have the same width but **vary** in height or length.



A **histogram** is a kind of bar chart but the bar width also varies to indicate different values.

Number	Amount
1	10
2	5
3	20

A **table** is a grid with **columns** and **rows** of numbers.

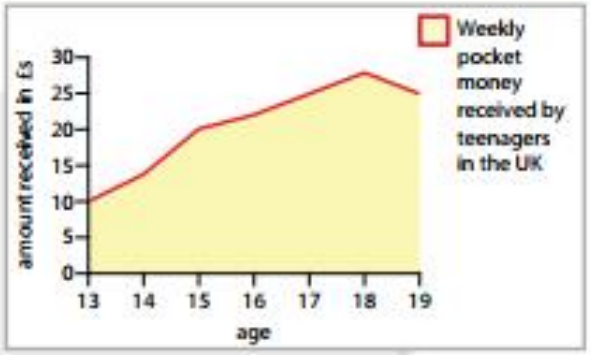
A **cross-section** is something, or a model of something, cut across the middle so that you can see the inside. A cross-section of the earth's crust, for example, shows the different **layers** that make it up. A **label** gives the name of each part of the cross-section. Cross-section can also be used to mean a small group that is representative of all the different types within the total group (e.g. *the survey looked at a cross-section of society*).

A **flowchart** is a diagram which indicates the **stages** of a process.

Common Mistake

Don't use the definite article (*the*) when referring to a specific diagram. *See Table 4 below.*
(NOT ~~See the table 4~~ …)

B A graph



The **graph presents** data relating to teenagers and pocket money. A **random sample** of 1,000 teenagers were surveyed and the average pocket money received at each age has been plotted on the graph. The **x axis** or **horizontal axis indicates** age and the **y axis** or **vertical axis shows** the amount of money received per week. The **graph shows** that 15-year-olds receive twice as much pocket money as 13-year-olds. **From the** graph **we can see** that the amount received **reaches a peak** at the age of 18 and then starts to decline. This **decline** can perhaps **be explained by the fact that** many teenagers start earning and stop receiving pocket money at the age of 18.

Graphs are drawn by **plotting** points on them and then drawing a line to join **adjacent** points. If there are two separate lines on a graph, the lines can **cross** or **intersect** at various points. Lines that **run parallel** to one another never intersect.

Graphs show how numbers **increase** or **decrease**. Numbers can also be said to **rise** or **grow** and **fall**, **drop** or **decline**. Other verbs used about growth include **double**[1], **soar**[2], **multiply**[3], **appreciate**[4] and **exceed**[5] [another number].

[1] increase to twice the number or amount; opposite = **halve** [2] increase very quickly and by a large amount; opposite = **plummet** [3] increase to a very large number [4] increase in value; opposite = **depreciate** [5] increase to greater than a particular number or amount; opposite = **fall below**

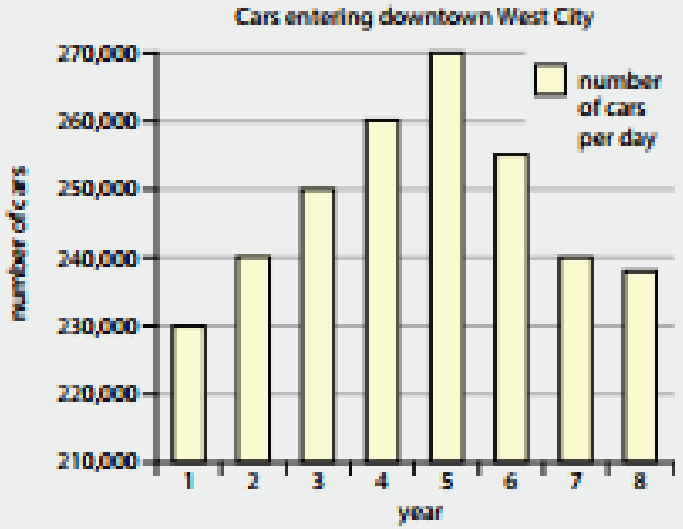
Language help

The verbs *increase* and *decrease* are followed by *by* (e.g. *The population of the city has increased by 10%.*). The nouns *increase*, *rise*, *growth*, *fall*, *drop* and *decline*, *decrease*, are followed by *in* (to explain what is rising) or *of* (to explain the size of the change), e.g. *a rise / an increase **of** 15% **in** the number of cars.*

35.1 **Look at the chart and complete the text with the missing words.**

Cars entering downtown West City

The chart [1] ..... the number of cars entering the downtown area of West City each day over an eight-year period (years 1-8). The totals are listed on the [2] ..... axis (give two answers), while the years are listed on the [3] ..... axis (give two answers). To the top right of the graph we see the [4] ..... .The number of cars [5]v..... over the period. The total rose in the first few years and [6]r..... a [7]p..... in year 5, after which the numbers started to [8] ..... . This decline can be [9] ..... by the [10] ..... that a new mass transit railway was opened in year 6, which is a clear illustration of how good public transport can dramatically affect car use.



35.2 **Answer the questions.**

1 Draw examples of a pie chart and a bar chart.
2 What is the best type of diagram to present the different layers of rock in the Grand Canyon?
3 In a table, what is the difference between columns and rows?
4 What would be the best type of diagram to present the different stages in a research project you did?
5 How many segments are there in the pie chart in A opposite?
6 If you look at two adjacent columns in a table, are they next to each other or separated?
7 What is another name for a legend in a diagram?
8 What type of data collection are you doing if you survey the first 50 people you come across?
9 What do two lines on a graph do if (a) they intersect and (b) they run parallel to each other?
10 Choose the correct sentence: (a) There was an increase in 12% of smart phone sales last year.
(b) There was an increase of 12% in smart phone sales last year.

35.3 **Replace the underlined words with more precise, academic words.**

1 The different bits of the pie chart show the numbers of people in each age group.
2 She kept a record by marking the midday temperature on a graph for a month.
3 People's salaries usually reach their highest point when they are in their late 40s.
4 This flowchart shows the different bits of our project over the next five years.
5 The two lines on the graph cross each other at point A.
6 Draw a line connecting the points that are next to each other.
7 The government's popularity in the opinion polls is beginning to go down.
8 If you look along the third line of the table you can see the figures for the 1950s.

35.4 **Rewrite the underlined words and phrases using words from B opposite. There is also a deliberate mistake in one of the sentences. Can you find it and correct it?**

1 Populations of some bird species in South Asia have crashed by 97% in recent years. The number of cases of death by poisoning has increased sharply.
2 In 2007 the child mortality rate fell to lower than 60 deaths per 1,000.
3 The average family car in the UK goes down in value by 20% per year. This means its value has fallen by more than half after just three years.
4 A typical piece of land on the edge of the city will go up in value by 15% per year, and house prices have gone up rapidly by a large amount in the last six months.
5 Business courses have increased greatly in number while science programmes have gone down.
6 The temperature rose higher than 45°C in some parts of the country. See the figure 3.
7 Between 1983 and 2006, the number of this species of eagle went up from 22 pairs to 58. Other bird populations have gone up to twice the number in the same period.
8 The numbers of old soldiers attending regimental reunions are becoming smaller each year.

4 **Look at the table from the Results section of the article 'Teaching More by Lecturing Less' (the Introduction to which is on pages 85–6). Work in pairs and discuss the questions.**

1 Why are the two groups of results (Fall '03, Spring '04) presented?
2 Which column do you think shows the results of the interactive course?
3 Which results in the table would you expect the article to refer to particularly?

Table 4. Comparison of average performance on different assessments for the two courses

Assessment	Performance (average percent of maximum score)	
	Fall 2003	Spring 2004
Pre-test (12 questions)[a]	34	31
Post-test (12 questions)[a]	65	74
Normalized learning gain[b]	46	62
Final exam	77	71
Problem sets	82	85
Participation	N/A	86
Final total points	76	81

a Data based only on the 12 questions that were common to all three pre-tests and post-tests.
b Average for each class is shown.

5 Text 1 is an extract from the Results section which describes the table in Activity 4. Read it and check if your answers to question 3 in Activity 4 were correct.

Text 1

[1]As shown in Table 4, the average performance on exams and problem sets differed only slightly between the two semesters. [2]Although the questions on the F'03 and S'04 exams were similar, they were not identical. [3]The exams in S'04 were designed to test more conceptual and less factual knowledge than those in F'03. [4]Because the exams were substantially different, we cannot make meaningful comparisons of exam performances between the two semesters. [5]The average performance and standard deviation on the pre-test were not significantly different in the two semesters: traditional, 34% (±12%); interactive, 31% (±12%), indicating that the incoming students were equally well prepared. [6]However, the average performance on the post-test was significantly higher in the interactive course (S'04), by 9 percentage points ($p = .001$, two tailed t-test).

[7]The most compelling support for superiority of the interactive approach came from comparisons of normalized learning gains calculated from pre-test and post-test scores in the traditional and interactive classes (Table 4). [8]Normalized learning gain is defined as the actual gain divided by the possible gain, expressed as a percentage (Fagan et al., 2002). [9]A comparison of the F'03 and S'04 courses showed a significant 16% difference ($p = .001$) in average learning gains, corresponding to a 33% improvement in performance by students in the more interactive S'04 course.

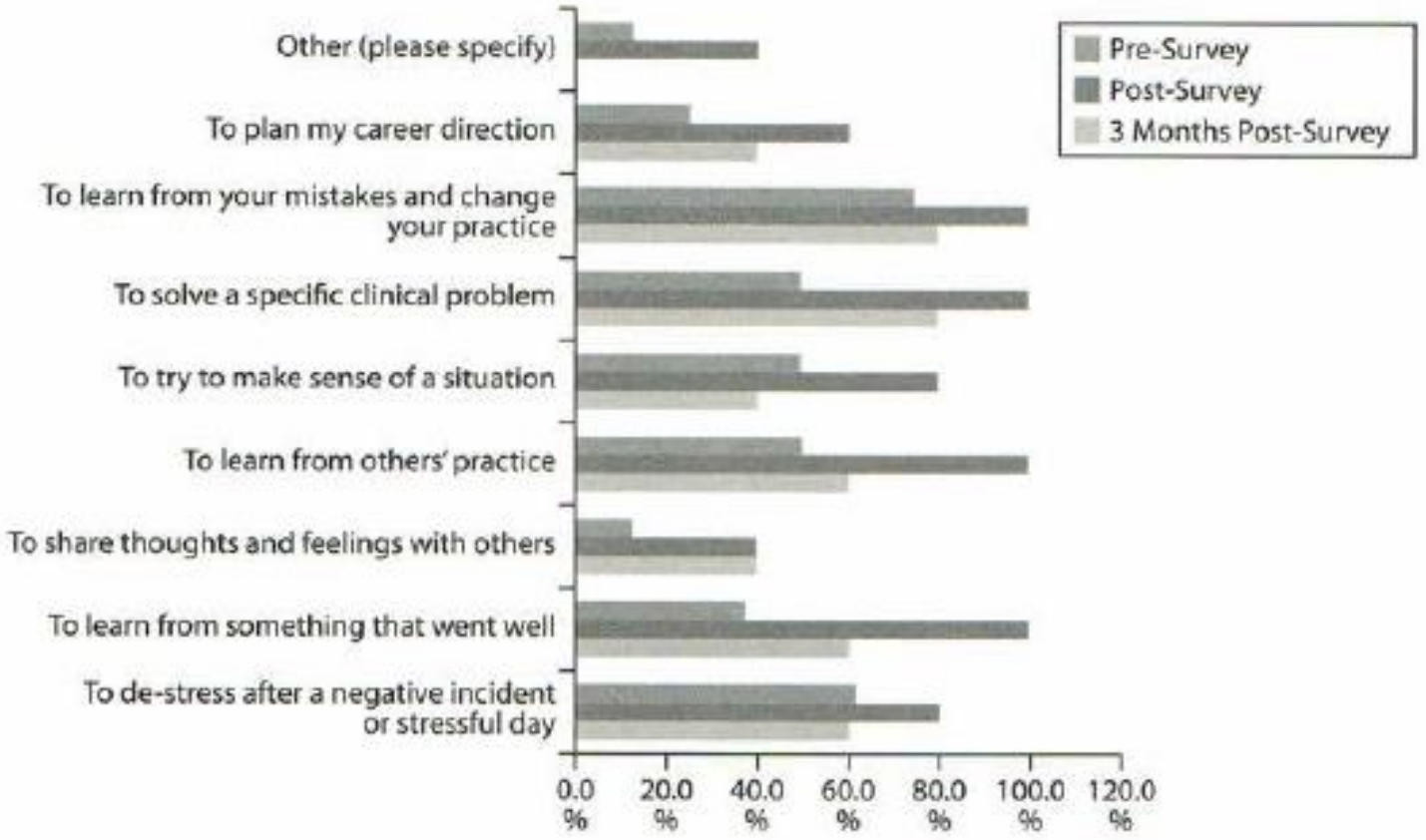
6 Read Text 1 again and identify the functions (a–d) that sentences 1–9 perform in the text. Some sentences may perform more than one function.

a to direct readers to the table where the results can be found
b to explain the particular features of methods used
c to highlight the most important findings
d to comment on the results

11 Work in pairs. Look at the graph from the article 'Encouraging Reflection' (see pages 65 and 80–1). Discuss the questions.

1 What method was used to collect the data?
2 How many times did the researchers collect the data?
3 Do you think the authors are satisfied with the results? What helped you to decide?

Graph 1. Reasons for reflection



12 Complete Text 2 with the correct form of the words in brackets. Compare your answers in Activity 11 with Text 2.

Text 2

[1]Graph 1 displays the various scenarios in which participants [a]_____ (*frequent*) reflect. [2]The pre-RPC (Reflective Practice Course) results indicate that the [b]_____ (*frequent*) reason to reflect was 'to learn from your mistakes and change your practice'. [3]The post-survey results demonstrate a [c]_____ (*considerable*) increase in all categories, with four categories receiving 100%. [4]In addition, when comparing the post- and 3 months post-results, there was a [d]_____ (*slight*) decrease in [e]_____ (*frequent*) at 3 months in all categories. [5]However, the overall frequency in each category at 3 months remained [f]_____ (*great*) than at the pre-survey level. [6]These results suggest that a [g]_____ (*positive*) shift in participants' value of reflection may occur during and after the RPC.

13 Work in pairs. Find the sentence in Text 2 which

1 directs readers to the visual
2 comments on the results obtained