

Visuals

WRITING ABOUT GRAPHS,
TABLES AND
DIAGRAMS

Gabi Duigu

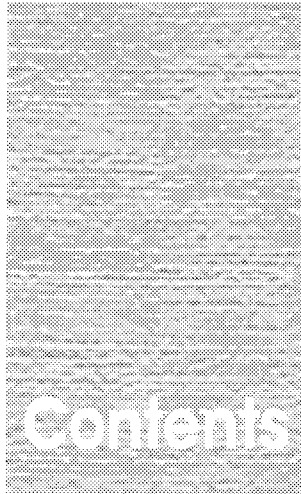
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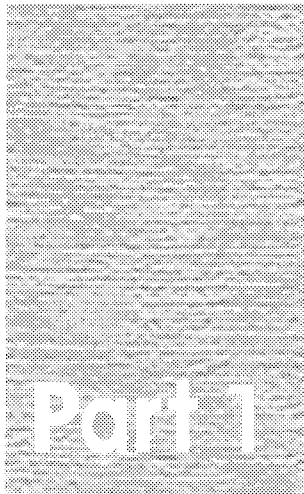
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Many of the graphs and tables in this book are based on visuals from various issues of the UNESCO Courier, to which very worthwhile publication grateful acknowledgment is made.



Introduction and Overview

Many books exist that are guides to academic writing for native speakers. There are also a number for non-native speakers. Of these, quite a few deal with the use of graphs, tables and other visuals. However, they normally explain how to *insert* or *use* these visuals to make your work more interesting and easy to understand. They do not usually explain how to *write about* these visual aids.

The primary purpose of this book is to help you with the Writing Task 1 of the IELTS Academic test. However, because it attempts to deal with the language required in a systematic way, you may find that much of the information it contains could be useful to you later during your studies, if you ever need to use graphs, tables or the like in your work. So perhaps you should not give the book away as soon as you have passed your IELTS.

In order to write about visuals, as required in IELTS Academic Writing Task 1, it is necessary to understand *what* to write, as well as *how* to write it. The first section of this book therefore begins with a discussion about the main purpose and features of graphs, tables and other visuals, and provides exercises to practise identifying these correctly.

The later sections then go on to deal with the language required to write about them. There are vocabulary lists, explanations about meaning and grammar, and exercises. There is also an Answer Key, and model answers are provided, so that the book can be used for self-study as well as class-room use.

Since most of the IELTS Academic Writing Task 1 questions deal with graphs and tables, and since they require specific interpretation and writing conventions, we will first focus on these.

A Note on terminology: The IELTS Handbook mentions diagrams and tables. Clearly this includes graphs (the most common visual used in Writing Task 1) under diagrams. Other books talk about visuals to cover all of these. You do not need to worry about this as the label is usually given in the introduction to the task and you can simply use the same word in your answer.

1. The Purpose of Graphs and Tables

In order to know how to do something properly, it is necessary to understand the *purpose* of that thing.

We actually need to know two things:

- a) the purpose of *using* graphs and tables; and
- b) the purpose of *writing* about the graphs and tables that have been used.

We will deal with the first one first.

1.1 Using Graphs and Tables

TASK 1

Which of the following statements do you think best describe the purpose of providing graphs and tables in an academic text?

- a) to explain what is in the text in a different way
- b) to provide information which is additional to that provided in the text
- c) to make it easier to understand the concepts by using a visual rather than by just using words
- d) to give an overview or an impression or a summary
- e) to provide more exact details than is desirable in the text

☛ *Answer Key*

1.2 Writing about Graphs and Tables

In real life, the *text* usually comes *first*, and the graph or table is added to support the text. In fact, most books that advise on writing, explain how to use graphs or tables to illustrate the words more clearly. However, in IELTS the reverse occurs – you are given the graph, table or diagram and must supply the words.

In Task 1 candidates are asked to look at a diagram or table, and to present the information in their own words. Depending on the type of input and the task suggested, candidates are assessed on their ability to:

- **organise, present and possibly compare data**
- **describe the stages of a process or procedure**
- **describe an object or event or sequence of events**
- **explain how something works**

IELTS Handbook, 1999

Note that the first of these is the most common task found in the Test, and the one we are dealing with now.

TASK 2.

Which of the following do you think best describes the purpose of writing about graphs and tables (in real academic writing)?

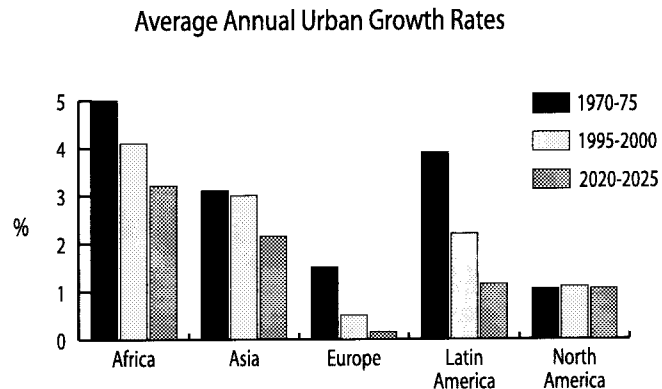
- a) to explain what is in the graph or table in a different way which makes it easier to understand
- b) to give exactly the same information in words, in order to emphasise it
- c) to expand on what is in the graph or table by giving additional explanations about the reasons etc.
- d) to draw attention to the most important aspects of the information shown in the graph or table.

☛ *Answer Key*

1.3 Understanding the Purpose

TASK 3.

Look at the following graph and the descriptions given underneath, and decide which one is the most suitable. Try to explain why you think so.



a) This graph shows the average annual urban growth rate of 5 continents from 1970 to 2025. According to the graph, Africa had about 5% average annual urban growth rate in 1970 and over 4% average annual urban growth rate in 1995 and in 2025 the average annual urban growth rate is expected to be just over 3%. For Asia the average annual urban growth rate was just over 3% in 1970 and 1995 and it was expected to be about 2% in 2025. In Europe, by contrast, the average annual urban growth rate was only about 1.5% in 1970 and it went down to about 0.5% in 1995, and in 2025 it will be less than 0.2%. In Latin America the average annual urban growth rate went from just under 4% in 1970 to just over 2% in 1995 and it will probably be just over 1% in 2025. In North America the average annual urban growth rate was about 1% in 1970 and 1995 and is expected to stay the same in 2025.

b) Looking at the graph we can see that urban growth has happened on all 5 continents since 1970 and that it is expected to continue right up to 2025. The most dramatic growth is in Africa, Asia and Latin America, because these continents have experienced the most development and industrialisation since 1970, while Europe and North America show less increase probably because they already started being more urbanised. In developing countries many people from the countryside are attracted to the cities to look for work and better opportunities in health and education, but this rapid urbanisation is causing many problems and needs to be controlled.

c) The graph shows that since 1970 there has been considerable urban growth in all 5 continents presented and that this trend is expected to continue at least until 2025. However, the rate for each continent has not been the same. The developing countries of Africa, Asia and Latin America experienced the most dramatic growth rates in 1975, with Africa having around 5% per annum, Latin America just over 4% and Asia over 3%. In 1995 these rates decreased to just over 4% in Africa and down to about 2% for Latin America, but Asia remained the same. This growth rate is expected to decrease by about 1% for all three continents by the year 2025. Meanwhile North America is expected to maintain its growth rate of 1% p.a. over the entire period, while Europe, having started the period at about 1.5% growth rate is expected to reduce this to only about .2% by 2025.

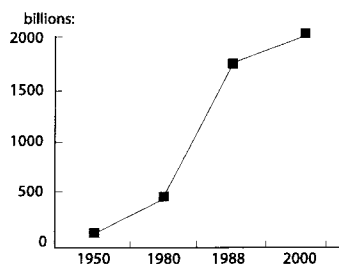
Answer Key

1.4 Understanding different types of Graphs and Tables

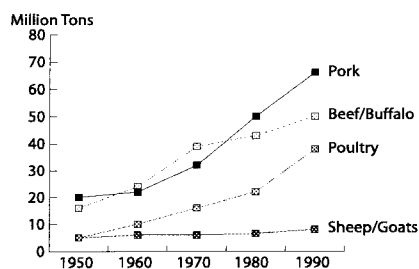
We now need to look more closely at what graphs and tables show, and the differences between them.

a) What features do the following graphs have in common?

Cigarette Consumption in China

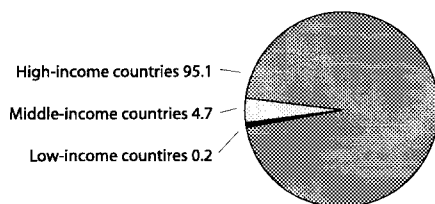


World Meat Production, 1950 - 90

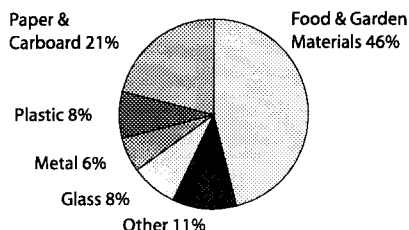


b) What features do the following graphs have in common? How are they different from the previous ones?

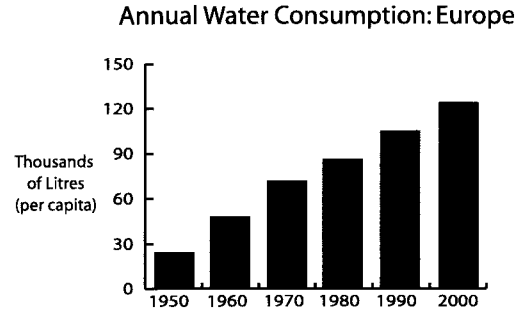
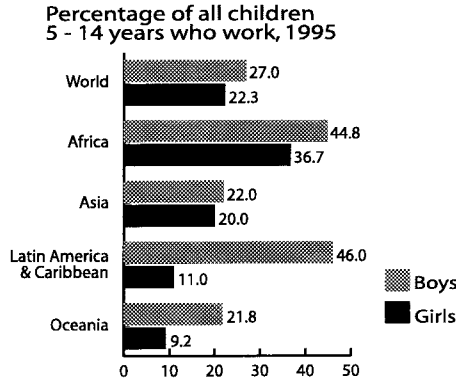
Percentage of distribution of Internet-connected computers, by income of countries, July 1999



Household Waste 1999



c) What about these graphs?



d) What kind of information do the following tables provide? How does this differ from the graphs?

Internet-connected computers worldwide, 1981-1999	
1987	28,174
1988	56,000
1989	159,000
1990	313,000
1991	617,000
1992	1,136,000
1993	2,056,000
1994	3,864,000
1095	6,642,000
1996	12,881,000
1997	19,540,000
1998	36,739,000
1999	56,218,000

The largest number of foreign students by country of origin, in the 50 major host countries: 1995	
China	115,871
Korea, Republic of	69,736
Japan	62,324
Germany	45,432
Greece	43,941
Malaysia	41,159
India	39,626
Turkey	37,629
Italy	36,515
Morocco	34,908
France	32,411
Canada	28,280
United States	27,749

☛ Answer Key

Understanding graphs and tables involves understanding the following details:

1. What is the **information or data** in the graph or table about? [*This information is normally supplied with the graph or table.*]
2. What are the **units of measurement** used?
3. What is the **area (place)** involved ?
4. What is the **time-scale** involved ?
5. What is the **purpose** of the graph or table?

Let us look at the graphs and tables shown above once more, and answer the following questions:

1. What are the units of measurement used?
2. What is the area (place) involved ?
3. What is the time-scale involved ?
4. What is the purpose of the graph or table?

After examining the graphs and tables above you will have noticed the following:

In the case of a **line graph**, the **horizontal and vertical axes** provide most of the information. Usually **trends** over a specific period of time are shown in this way. A **bar graph** shows the same kind of information but with the units presented as bars or columns. Another kind of bar graph (also called a **histogram**) may show numerical distributions rather than changes.

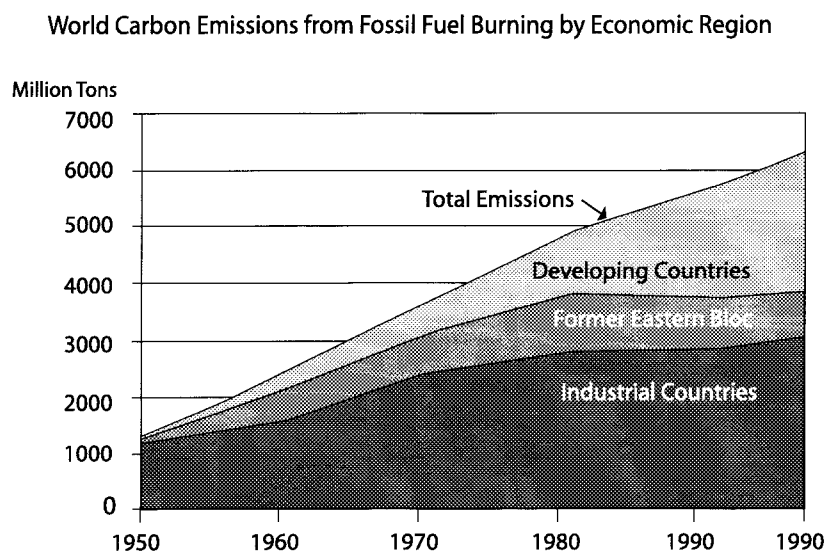
Pie graphs show proportions, normally represented as **percentages**.

Tables give detailed data and may be used to display **changes over time** or they may show distributions of variables according to place, or type. They usually require more interpretation than graphs do.

1.4.1 Wedge-shaped Graphs

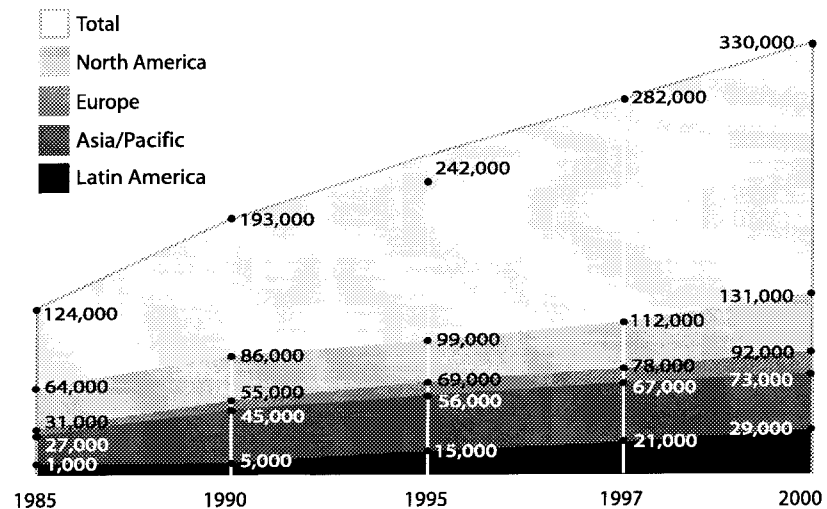
There is one kind of graph that can cause confusion because it appears to combine the features of both the pie chart or the bar graph and line graph. Look at these graphs and answer the questions that follow.

TASK 4



1. What was the amount of emissions from industrial countries in 1950?
2. What was the amount of emissions from developing countries in 1950?
3. How much did the Former Eastern Bloc countries emit in 1980?

World Spending on Advertising from 1985 - 2000
(in \$US millions)



4. Did the European countries spend more or less than the Asia/Pacific ones on advertising in 1985?
5. Did the Latin American countries spend more or less than the European ones in 2000?

• Answer Key

1.4.2 Combined Graphs

It is very common to find two or more graphs presented together. This is usually done to show either a **comparison**, or a more complicated correlation than can be shown in one graph.

A **correlation** is the way two sets of facts are related to each other. The relationship may be a **change over a period of time**, or it may be a possible **cause and effect** link. There is a section dealing with Correlations in more detail, starting on page 35.



Writing about Graphs and Tables

This section is going to deal with selecting the right approach and style, learning to use the appropriate vocabulary, and becoming aware of the grammar related to this vocabulary.

The language of graphs and tables is divided, for convenience, into:

introductory expressions
time expressions
terms of measurement

In Part 3 we will deal with:

expressions of comparison and contrast
expressions for trends
correlations

To use this language correctly, it is necessary to keep the following points in mind:

1. You must know the exact meaning and usage of the terms
2. You must know the collocations of the terms: i.e. you must know which expressions go together, and which are **never** found in combination
3. You must know the grammatical features of the terms
4. **YOU MUST CARE ENOUGH TO BE ACCURATE**

Warning! From the lists that follow in this section, do NOT, in your own writing, use any expressions you are unfamiliar with. Only use the terms that you know, and make sure you know them correctly. Only selected examples are given here. It is essential for you to have at least one of the following ESL dictionaries, which will give you more examples:

Oxford Advanced Learner's Dictionary
 Longman Dictionary of Contemporary English
 Collins CoBuild Dictionary
 Cambridge Dictionary of International English

2.1 Writing the Introduction

Often the hardest part of writing anything is writing the introduction. If you have a good technique for this, then the rest of the task is usually less difficult.

The first thing to note is that writing about visuals is not the same as writing an essay. This means three things in particular:

1. You are not asked to discuss the information, but generally to “write a report describing” the information.
2. It is not necessary to write an introduction like in an essay for this writing task. You are writing a report, which means that you do not begin with a broad general statement about the topic.
3. You do not need to write a conclusion which gives any kind of opinion about the significance of the information.

So how do you begin? There are three steps.

Step 1: Identify the main idea behind the graph or table. This will be the focus of your first sentence.

Step 2: Consider the details of what is being shown –the units of measurement and the time frame - and decide how much you need to include.

Steps 1 and 2 involve understanding the visual. This was discussed in Part 1.

Step 3: Consider the language to use –the introductory expressions, the tenses of the verbs, the correct expressions of time and / or measurement etc.

For Step 3 this section should help you.

2.1.1 What introductory expressions to use

There are three possible ways to start.

One is to refer to the visual directly (e.g. *This graph shows the population of Alia in the 20th century.*) However, this method is not advisable, since the instructions in the IELTS test will normally give you just this information. If you copy directly from the paper you are wasting time, since the examiner cannot assess your English from a copied sentence.

The second way is to refer directly to the main message conveyed by the visual (e.g. *There was a sharp increase in the population of Alia in the 20th century.*) This way is perfectly acceptable, and shows that you are able to recognise the main concept or message that the graph or table shows.

The third way combines the two (e.g. *The graph shows that there was a sharp increase in the population of Alia in the 20th century.*) This is also acceptable, and is often used as a convenient way to start. In order to use this method, it is necessary to use a few fixed expressions, which refer to the text itself, like those below.

2.1.2 Introductory Expressions

The graph / table shows / indicates / illustrates / reveals / represents

It is clear from the graph / table

It can be seen from the graph / table

As the graph / table shows,

As can be seen from the graph / table,

As is shown by the graph / table,

As is illustrated by the graph / table,

From the graph / table it is clear

Notice that it is best to avoid using personal pronouns. Instead of saying *We can see from the graph....* it is better to use the passive or impersonal constructions, as above. Do not forget that the second way is also very acceptable (i.e., not referring to the text directly at all). There will be more examples of this in the following pages.

Most of the above expressions can be followed by a clause starting with *that*.

Several of the above expressions can be followed by a noun or noun phrase.

Several of the above expressions must be followed by a main clause.

Try to identify which is which by doing the next exercise.

TASK 5:

Make all the possible matches between the expressions in the table on the left with those on the right:

<ol style="list-style-type: none"> 1. The graph shows / indicates 2. It is clear from the table 3. It can be seen from the graph 4. As the table shows, 5. As can be seen from the graph, 6. As is shown/ illustrated by the graph, 7. From the graph it is clear 	<ol style="list-style-type: none"> a) <i>that the population of Alia grew in the 20th century</i> b) <i>the growth in the size of the population of Alia</i> c) <i>the population of Alia grew in the 20th century</i>
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➤ Answer Key

Warnings:

1. Avoid using the phrase: *according to the graph*. This is because the phrase *according to* generally means that the information comes from another person or source, and not from our own knowledge. (For example, *According to the Handbook, you cannot take the exam more than once in three months. According to my friend, the essay question was not too difficult.*)

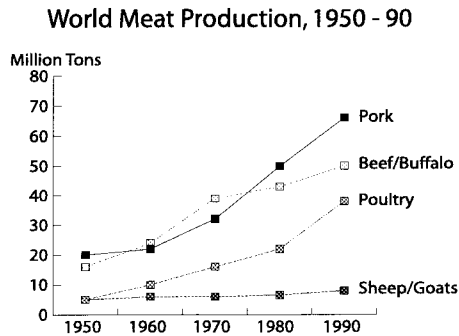
In the case of a graph or table that is shown, the information is there right in front of you, the writer, and also the reader, and so you can both 'know' it. That is, it does not come from another source.

2. Note that the expressions *as can be seen from the graph* or *as is shown / illustrated by the table* do not contain the dummy subject *it*. Avoid these expressions if you think you are going to forget this unusual grammar.

3. The word *presents* is best avoided, since it requires a sophisticated summarising noun to follow. For example: *The graph presents an overview of the population growth of Alia in the last 20 years.*

TASK 6

Which is the best introductory sentence for a description of this graph from the following?



- a) *This graph shows the changes in world meat production between 1950 and 1990.*
- b) *From this graph we can see that most meat production is a lot higher in 1990 than in 1950.*
- c) *Between 1950 and 1990 meat production in the world rose significantly for all kinds of meat except sheep and goat meat.*
- d) *The graph shows that in 1950 production of poultry and sheep and goat meat was less than 5 million tons, while production of pork and beef and buffalo meat was around 20 million tons.*

☛ Answer Key

2.2 Time Expressions

As you can see in the above exercise, you can start your description with a time phrase in some cases:

Between 1950 and 1990 production rose significantly...

Even if you do not begin your sentence with a time expression, in many cases, particularly those involving line graphs, the time frame is given and is an important element of the visual and will need to be mentioned. For this reason it is important that you know how to use the common expressions of time, and that you revise them from any normal grammar book if they cause you difficulties.

Here are the common ones:

in	for	during	from - to / until
between –and		before	after

in:

In 1999... In the 20th century... In the first ten years...
there was a significant increase in production

for:

For the first six months... For twenty years...
the number of employees remained the same.

during:

During the first six months... During the first half of this century...
During the remainder of the year...
production was slowing down, while imports increased.

from - to / until:

From August to/ until November... From 1950 to 1960...
there was no change in energy use.

between –and:

Between 1950 and 1960...
there was no change in the rate of fuel consumption.

before / after:

Before 1960 *the number remained small*, but after 1965 *there was a sudden increase.*

around / about:

Around / about 1980 *there was a change in the number of female part-time employees.*

by:

By the late 19th century *the rural workforce had declined significantly.*

at:

At the end of the last century *there was a sharp increase in manufacturing.*

since:

Since the 19th century *there has been a steady decline.*

Other useful expressions are:

(in) the period from _____ to _____

(in) the period between _____ and _____

in the first/last three months of the year

over the period _____ to _____

over the next years/ decades/ quarter of a century etc.

over a ten year period

throughout the 19th century

from that time on

after that

then

in the 1980s

Note that you can refer to a decade as *the 1980s* etc. There is no apostrophe before the *s*.

2.2.1 Using the right tenses.

It is important to select the correct tenses. Points to remember:

- a) For most visuals a specific time in the past will be given and you will need to use **the past simple tense**. If two things took place at the same time, you may use the past continuous tense for one of them. (*While poultry production was rising during this period, there was no change in mutton production.*)
- b) If you use *since* or *recent(ly)* it means that you are referring to events that have come up to the present. That means using **the present perfect tense**. (*The use of the Internet has risen enormously since the 1990s.*)
- c) With *by* you will often need to use the past perfect or the future perfect tense. (*By the end of the century the rate of urbanisation had doubled.*)

TASK 7

Look again at the graph of World Meat Production (in Task 6) and complete the following statements with a suitable expression of time:

1. *The production of sheep and goat meat remained almost unchanged _____.*
2. *_____ the production of pork rose sharply.*
3. *Poultry production increased slowly _____ and _____ rose dramatically.*
4. *Beef and buffalo production experienced steady growth _____.*

➤ *Answer Key*

2.3 Expressions of Measurement

Since graphs and tables show measurements, it is necessary for you to have a knowledge of the most common terms used to describe quantity and related expressions, and, as always, to know how to use them CORRECTLY. The following lists are there to act as a reminder for you of nouns that you are probably already familiar with, and to show you the verbs that they are associated with, and the typical phrases used to describe visual aids.

2.3.1 Quantities

amount	quantity	number
figure	the total	the total amount
the total quantity	the total number	all of the
the whole of the	the whole amount	the full amount
the majority	the greatest amount	the greatest number
the maximum	the minimum	

It is best to use *amount* and *quantity* for **uncountable nouns**, although both are used for **countable nouns** as well, particularly *quantity*. However, *number* can generally be safely used for all **countable nouns**.

The amount of production increased in the last 20 years.

The number of cars on the roads increased in the last 20 years.

However, you cannot say **The quantity of production increased.*

This is because **quantity** is only used for items that can actually be measured or counted (e.g. iron ore, shares, weapons), not for abstract terms. Since *amount* can be used more widely (e.g. *the amount of wealth / experience / waste*) it is generally safer to use this word if you are not certain.

For *number* you must of course have a plural, countable noun following: *the number of cars; the number of unemployed people.*

There is some confusion about whether the verb following these phrases should be in the singular or plural. Strictly speaking, it should be singular, because the noun *number* is itself singular, so we should say: *The number of cars has increased. The number of unemployed people has decreased.*

But you may also come across this kind of sentence: *There are a number of people who have asked for this book.* This is because in this case we are thinking about the people rather than the number.

The word *figure* refers to the actual number itself, not the thing that the number refers to: *While the number of Internet users was only 2.6 million in 1990, this figure has more than doubled in the last two years.*

Note the combinations given in the table above (e.g. *the total amount*). A more simple and idiomatic way of expressing *the whole / total amount* is to say *all of the* or *the whole of the*. However, note that *all of the* can be used with both countable and uncountable nouns (e.g. *all of the population; all of the people*), while *the whole of the* can only be used with **uncountable nouns** (e.g. *the whole of the population; the whole of the production for that year*). It is clearly safer to use *all of the*.

Warning! A common error is to omit *the* after expressions like *all of* or *the whole of*. Do not write **All of population; *the whole of energy used*. It must be: *All of the population; the whole of the energy used*.

Remember also that *many* is used for countable nouns, while *a great deal of* should be used for uncountable nouns. (For uncountable nouns *a lot of* can be used informally, but it should be avoided in formal writing.) Here is a summary of the points made above. The expressions in brackets are the less common ones:

With countable nouns	With uncountable nouns
(amount) (quantity) number all of the many (a lot of)	amount (quantity) the whole (of the) a great deal of (a lot of)

2.3.2 Other Measurements

- (i) range rate level degree
 extent scale proportion ratio
 percent percentage

- (ii) length weight distance height
 altitude area volume size
 frequency duration

The words in set (ii) above (and the adjectives related to some of them) are very restricted in use, and you will be unlikely to need them in the IELTS Academic Writing Task 1. If you need them in university work, you will certainly know their meanings and use.

However, most of the words in set (i) are very widely used because they refer to change or to the relationship of something to something else, and that is what graphs and tables are usually designed to show. These terms, however, can present difficulties in usage.

2.3.3 Usage

Rate is defined in the Longman Dictionary of Contemporary English as:

a quantity such as value, cost, or speed, measured by its relation to some other amount.

The Cambridge International Dictionary gives this definition:

a level of speed with which something happens or changes, or the number of times it happens or changes within a particular period.

So we can talk about *the rate of growth*, or, more commonly, *the growth rate* of the population; *the birth rate*; *unemployment rate*; *divorce rate* etc. These are all measurements considered in relation to the rest of the population, or involving changes over time.

Level indicates *height*, as *in the level of water in a glass*, but it also has the meaning of *amount*. The Oxford Advanced Learner's Dictionary defines it as:

a point or position on a scale of quantity, strength, value etc.

Collins Cobuild English Language Dictionary gives this definition:

the amount of something at a particular time;

Thus we can talk about the *level of production*; *the level of expenditure*; and also *the level of unemployment*.

In all the examples given above, the word *level* could be replaced by the word *rate*. (i.e. *the rate of production*; *the rate of expenditure*; *the rate of unemployment* (or *the unemployment rate*). In most cases it is probably safer, therefore, to use the word *rate* unless you especially want to refer to a particular point, rather than to make a comparison.

If you think of *level* being represented by a bar graph, and *rate* by a line graph, it is easier to remember that *level* goes with the verb *rise* and *rate* goes with the verb *increase*. (Go to the section on Trends for further examples.)

Most of the other words in the list are not quite so common, and you should not use them unless you are confident that you know them well. However, another very common and important term is *percentage*. While *percent* means literally *for every hundred* the word *percentage* is used more broadly to mean *proportion*. Thus we can say that *the percentage / proportion of women in the workforce has risen*.

The term *proportion* is also used to compare two things:

The proportion of women to men in the workforce increased.

2.3.4 Related Verbs

be	make up	consist of
constitute	comprise	amount to
equal	account for	represent
include	record	reach
stand at	become	

The verbs that show change are given in the next section - Trends.

2.3.5 Usage

It is usually correct to use some form of the verb *to be*. However, it is not good to keep repeating the same verb. On the other hand, it is safer to use the same verb repeatedly and **correctly** than to use any of the other ones incorrectly. It is therefore best to learn to use at least two or three of the expressions above accurately. Your ESL dictionary will give you more examples, but here are some:

The number of unemployed was 10% of the population.

The percentage of women in the workforce was higher than in the previous year.

*Women **made up** / **constituted** a significant percentage of the workforce.*

*Food and garden materials ***comprise** nearly half of all household waste.*

*Paper and cardboard **amounted to** 21% of the total household waste.*

*The population of Alia **stood at** 21 million at the turn of the century.*

*Fossil fuel emissions **account for** the majority of greenhouse gases.*

*The consumption of fossil fuels **reached** the highest levels in recent years.*

*Note: It is difficult to use *comprise* correctly, since it has several related meanings, and can also be used in the passive. It is best to avoid using this word, unless you are very confident. Check your ESL Dictionary for examples.

2.3.6 Mathematical Expressions

half n.	halve vb.	double n. / vb.
triple n.	treble vb.	threefold adj.
quarter n. / vb	multiply vb.	divide vb.
average adj. / vb / n.	total adj. / vb.	partial adj.
equal adj. / n..	fraction n.	

2.3.7 Phrases

Note especially the use of the prepositions *at*, *in* and *with* in some of the following, and try to learn these phrases, as they are very useful:

production rose at a rate of 20% per year / per annum / p.a.

consumption stood at the same level in the following decade

the annual increase was in / within the range of 10% and 20%

production increased / decreased by 20%

the increase was very significant, at 50%

X was the largest producer, with 45% of the total production

the number remained steady at 300 for the next year

Exports doubled, to reach 80% of imports in 1990

There were three times as many users as in the previous year

The number of users increased fivefold

TASK 8

Graphs and tables often refer to common situations, and certain nouns often occur. Test yourself to see if you know how to use some of them by making all the possible matches between the words in the first column and those in the second.

number	population
amount	GDP
size	employees
degree	unemployment
quantity	literacy
rate	production
level	growth
	arms sales
	cigarette consumption
	smokers
	income / expenditure
	years

• Answer Key

Warning: Be careful to use measurement terms to avoid mistakes like the following:

**In the past 10 years the cars rose*
instead of:

In the past 10 years the number of cars rose.

2.3.8 Related Adjectives and Adverbs

The expressions of amount should be modified with suitable adjectives and adverbs:

Common Adjectives:

These are some of the more common adjectives, with examples of appropriate collocations:

- high / low:** *a high / low percentage*
- large:** *a large number*
- great:** *a great number*
- significant:** *a significant number / percentage / amount*
- considerable:** *a considerable amount / increase*
- substantial:** *a substantial increase / decrease*
- major:** *a major increase / decrease*
- remarkable:** *a remarkable increase*
- steady:** *a steady decrease*
- widespread:** *the widespread consumption*

2.6.2 Common Adverbials:

Adverbs and adverbial phrases are also widely used to modify adjectives or numbers in order to express precise meaning. Here are some examples:

- over:** *over 20%*
- under:** *under 5000*
- just over / under:** *just over / under 50 000 people*
- around / about:** *around / about 50%*
- approximately:** *approximately 25%*
- slightly:** *slightly more than half; slightly over 40%*
- marginally:** *a marginally smaller percentage*
- significantly:** *significantly fewer women*
- close to:** *close to half*
- considerably:** *considerably more exports*
- substantially:** *substantially less traffic*
- almost:** *almost exactly twice as many*

NOTE: Many of the above adjectives and adverbials, as well as others, are listed under **Trends**.

TASK 9

Fill the gaps in the following description of the table by selecting any appropriate expression from those given. Note that more than one choice may be correct!

Types of Waste at the University of NSW in 1996

Audit area	Waste type	% of total waste stream
Outside eating areas	recyclable drink containers	30%
	compostable materials	40%
Inside buildings	A4 paper -used on one side	22%
	A4 paper -used on both sides	7%
	other paper	52%
	cardboard	6%
	compostable material	3%
Skips (building waste containers)	compostable materials	40%
	cardboard and paper	15%
	ferrous metal	9%
Food Outlets	cardboard	30%
	compostable material	27%
	plastic packaging	30%
	glass	3%
	ferrous metal	3%

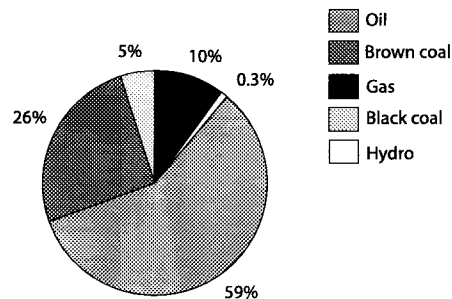
Of all the waste reported in the UNSW survey in 1966, it was found that
¹ _____ was paper which ² _____ 52% of the waste found
 in buildings. Both in outside eating areas and in skips ³ _____ of waste
⁴ _____ compostable materials, which ⁵ _____ 40% of the
 total. Considering the ⁶ _____ of waste collected in the university, it is
 clear that ⁷ _____ could be recycled or re-used in some way.

1. a) the largest amount b) the greatest proportion c) the majority
 d) the biggest number
2. a) made up b) included c) accounted for d) was
3. a) the most significant proportion b) most c) the highest level
 d) the greatest percentage.
4. a) consisted of b) was c) amounted to d) accounted for
5. a) represented b) was c) accounted for d) stood at
6. a) whole percentage b) total amount c) full number d) majority
7. a) the majority b) practically all of it c) nearly the whole amount
 d) most of it

TASK 10

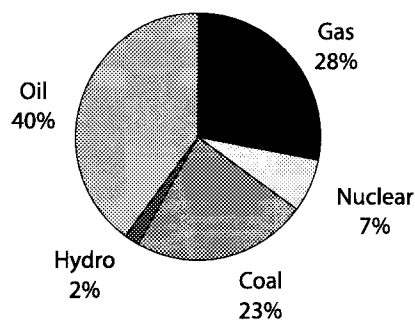
Read the following description of the pie chart given, and *underline* all the expressions of measurement, and put a circle around the verbs. Then write a description of the graph that follows, using as many of these expressions as you can.

Electricity generation in Australia by fuel type, 1996/97



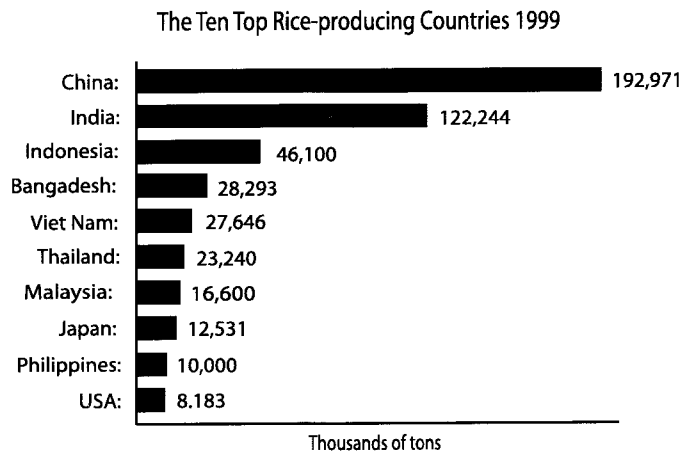
It is clear from the pie chart that in 1996/7 by far the greatest proportion of electricity was generated by oil, at 59%. Less than half as much, namely 26%, was produced from brown coal. Black coal and gas together accounted for another 15% of generation, leaving hydropower at only 0.3%. In other words, virtually 100% of electricity generation in Australia at the time came from fossil fuels, and only the insignificant amount of 0.3% came from a renewable energy source.

World Energy Sources



TASK 11

Read the following description of the bar graph given underneath, then cover the description and try to fill the gaps in the version below. You do not need to use exactly the same expressions as those given, but the meanings and grammar must be accurate.



Nine of the ten top rice producing countries in the world in 1999 were in Asia. As one would expect, China was the greatest producer of rice, with nearly 193 million tonnes. It was followed by India, which produced over 122 million tonnes, while the third largest producer, Indonesia, was responsible for about one third of that amount, at just over 46 million tonnes. Bangladesh, Viet Nam and Thailand had similar levels of production, i.e. between 20 and 30 million tonnes each, while Malaysia, Japan and the Philippines ranged between 16 and 10 million tonnes. The only non-Asian producer on the list, the USA, accounted for just over 8 million tonnes.

Nine of the ten top rice-producing countries in the world in 1999 were in Asia. As one would expect, China was _____ of rice, _____ tonnes. It was followed by India, which _____ tonnes, while the _____, Indonesia, was responsible for _____, at just over 46 m. tonnes. Bangladesh, Viet Nam and Thailand had similar _____, i.e. between 20 and 30 million tonnes each, while Malaysia, Japan and the Philippines _____ tonnes. The only non-Asian producer on the list, the USA, _____ 8 million tonnes.



Writing the Report

Graphs and tables are generally intended to show comparisons, contrasts or correlations. In some cases a variety of things are compared or contrasted, while in other cases the same items are compared at different times. This is done to show movement or trends. This section will deal with comparisons of different items, while the next section, on trends, will deal with changes over time. We will then look at how **correlations** are used and interpreted.

3.1 Comparison, Contrast and Correlation

Note that the verb *to compare* means to show both the similarities and the differences between two things, while *to contrast* means simply to reveal the differences. It is therefore enough to use *compare* for both purposes. There is, however, a significant difference in looking at **correlations** because they may show a relationship between two things happening at the same time –often a **cause and effect** relationship. This will be discussed further below.

There are many ways of expressing comparison.

3.1.1 Implicit Contrast

In some cases a contrast is implied because of the way the ideas are juxtaposed, that is, placed next to each other. For example:

Alia is a republic with a popularly elected president. Betastan is a military dictatorship.

In this case it is not necessary, or even desirable, to use a connector such as *By contrast*, because the contrast is so obvious. The style of writing is improved if connectors are not overused, so implicit contrast is worth using at least from time to time.

3.1.2 Explicit contrast

Contrast is shown explicitly by using various parts of speech, particularly connectors.

The most simple comparisons are expressed with the words:

more	less	fewer	greater
larger	smaller	higher	lower

3.1.3 Usage

To use these correctly you need to consider the nouns they are used with. Look again at the common measurement terms we have studied:

amount	number	quantity	degree
rate	level	size	proportion
percentage			

a	greater larger smaller	amount quantity size	a	greater larger higher smaller lower	number proportion percentage
a	greater higher lower	degree rate level			

1. *More less* and *fewer* do not combine with any of the nouns listed above.
2. *More, greater, higher* and *less* are used with **uncountable** nouns and the **singular** verb:

There is more / greater / less growth in GNP p.a.in Alia than in Bestastan.

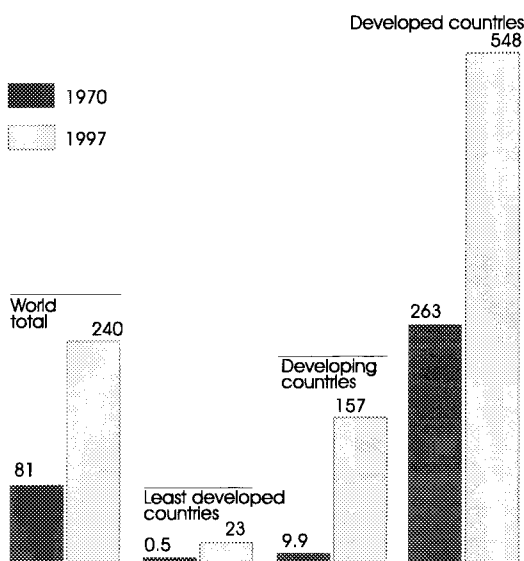
3. *More* and *fewer* are followed by **countable** nouns in the **plural**:

There were more / fewer accidents last year than the year before.

TASK 12

The bar graph below shows the number of television receivers per 1,000 inhabitants in the world in 1970 and 1990.

Write a report for a university lecturer describing the information shown below.



First consider the following ways of expressing the same idea for an introductory sentence:

- In 1970 the number of TV receivers per 1000 inhabitants in the world was much less than in 1997.*
- In 1997 the number of TV receivers in the world was much greater than in 1970.*
- There were nearly three times as many TV receivers in the world in 1997 as in 1970.*
- There were far more TV receivers in the world in 1997 than in 1970.*
- The ownership of TV receivers in 1997 was 200% (three times) higher than in 1970.*

Which of the above do you think are the best descriptions? Why?

Now try to describe the rest of the graph using the most appropriate expressions you can, and avoiding repetition.

☛ Answer Key

Similarity can be shown by using:

similarly	likewise	equally
in the same way	the same	in a similar way / fashion
both.... and....	as well as	not only... but also
also	too	like x, y....
as.... as....	just as x, y...	just as x, so y....

Contrast –which is more common –can be expressed by using:

but	while	in contrast to
however	whereas	by contrast
nevertheless	although	instead of
yet	even though	apart from
on the other hand	as opposed to	except for
unlike		

TASK 13

Some of the above are *conjunctions* and are used within sentences, to connect clauses, while some are *connectors* that are used to join sentences. Which are the ones that are used to start a new sentence? Some are *prepositions* and must be followed by nouns. Which are these?

☛ Answer Key

3.1.4 Other Parts of Speech

Contrast can also be shown by using specific verbs, adjectives and nouns:

Verbs:	Adjectives:	Nouns:
compare (with / to)	compared (with / to)	comparison
contrast (with)	contrasting	in comparison with
differ (from)	different (from)	contrast
differentiate (between)		in contrast to
distinguish (between)	distinct (from)	difference (between)
	as distinct from	distinction (between)
resemble	same	resemblance (to / with)
	the same as	
	similar (to)	similarity (with)
vary (from / between)		variation (between)
change (from / to)		change (from)

WARNING!!!

Compared and *comparing* are often used incorrectly. Look at these sentences:

Compared with x, y is more efficient.

Comparing x with y we find that x is more efficient.

Comparing with x, y is more efficient.

Two of the above are correct and one is incorrect. Can you see which is which?

People compare things (or people). If the active voice is used (*comparing*) then it must refer to someone doing the comparing –i.e. people. So we say:

Comparing x with y we find that...

Comparing x with y, it can be seen (by us) that...

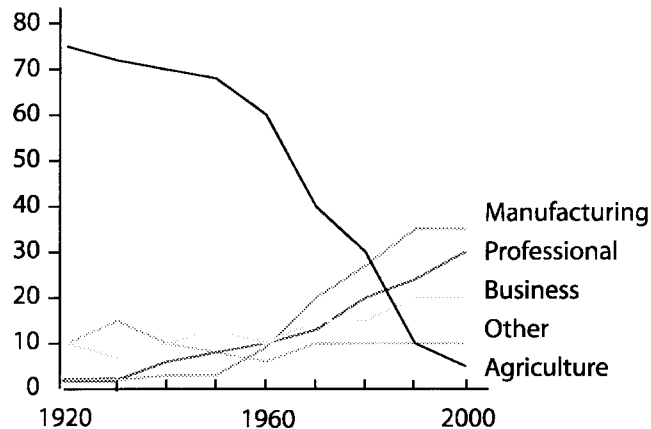
If the person or people doing the comparing are not relevant to the sentence, then the passive form (*compared*) must be used. So the first two sentences are correct, but not the last one.

But note also: *Compared with x, y is more efficient* is grammatically correct, but it is not a very good sentence stylistically. For a comparison within a sentence, the use of an explicit expression of comparison is not usually necessary and actually makes the sentence clumsy. Such expressions should only be used in more complex comparisons, between sentences, or longer sections of text. Within a sentence, it is normally enough to say: *X is more efficient than y.*

TASK 14

Fill in the gaps in the following description, using expressions from the above lists. Try to vary the expressions you use, to avoid repetition.

Employment Patterns in Alia, 1920—2000

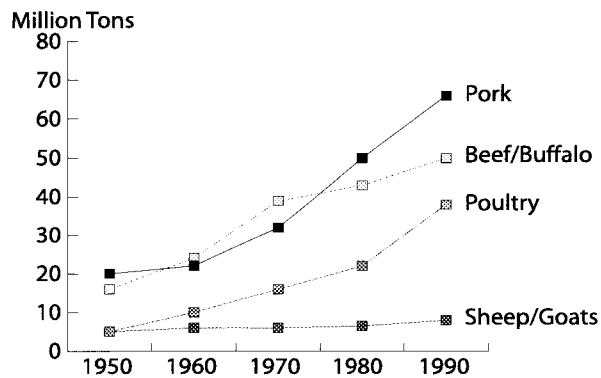


In 1920, 75% of the labour force in Alia was employed in agriculture _____ only 10% worked in business and trade. At the same time _____ the manufacturing sector _____ the professional sector constituted just 2% of the workforce each. This situation changed only very gradually over the next 20 years, _____ the professional workforce, which increased more than threefold. _____ by 1970 there had been a significant change in the pattern of employment. _____ the agricultural employees had declined in number to 40% of the workforce, manufacturing employees _____ professionals had increased their share to 13% and 10% respectively. _____ the business sector did not increase until 1970. The most dramatic _____ could be seen by 1990, when the proportion of agricultural workers was reduced to just 10% _____ the three other major sectors had all increased to over 20% of the workforce.

● Answer Key

TASK 15

World Meat Production, 1950 — 90



World production increased in all types of meat _____ sheep and goats between 1950 and 1990. There was a slow rise in the production of pork and beef/buffalo meat up to 1980, _____ after this pork production increased more rapidly. Poultry production showed a _____ trend. Starting from a low base of just 5 million tons, it increased relatively slowly for the first 20 years of the reported period. _____, after that it increased sharply, until by 1990 it had reached over 30 million tons. _____, the production of sheep and goat meat remained steady throughout the period at around 5 million tons.

☛ Answer Key

3.2 Trends: Increase and Decrease

Graphs as Landscape

Because of the appearance of graphs, the following geographic and descriptive expressions are often used to describe graphs:

Nouns:

peak	trough	top	bottom
drop	fall	highest/lowest point/ level	

Adjectives and adverbs:

steep(ly)	sharp(ly)	steady/steadily	gentle/gently
dramatic(ally)	high	low	

Verbs:

climb	plunge	level off	drop
fall	rise	mount	

These terms are generally used with those indicating **change** (see below). However, it is advisable to avoid them unless your general level of English is quite high, and you are confident that you can use them correctly. They can sound strange and exaggerated when not used in the right way, and it is easy to avoid them.

A very common kind of comparison is when one compares something with itself: in other words, one describes **changes over time**. Graphs and tables often demonstrate such changes. Graphs often have a time axis, while tables also often show variations involving time or place apart from other factors.

NOTE: The noun *trend* is not to be confused with the verb *tend* although they have a similar meaning. There is also the noun *tendency* just to confuse matters. Here are examples to show you the difference:

Market researchers are interested in identifying trends in consumption.

There is a tendency for consumers to follow fashions.

Young people in particular tend to follow the latest fashions.

The changes over time normally involve **increase** or **decrease** of some factor and so it is useful to know a number of expressions that have these meanings. Here are some of the most common ones. As usual, it is essential to know the grammar of these words, and their precise meaning before it is safe to use them.

3.3.1 Verbs

increase	go up	rise	grow
expand	double	multiply	jump
climb	gain	raise	accelerate
develop	escalate		
decrease	go down	fall	drop
decline	reduce	shrink	lessen
lower	contract	slow down	deplete
diminish	level off		

remain / stay the same / unchanged / steady / stable / constant

fluctuate vary

3.3.1. Usage

WARNING: Please do not confuse *fall* with *fall down!* The latter is only used for **physical** falls. In other words, a person or a vase can fall down, but not the value of the dollar!

Also do not confuse *grow* with *grow up!* Only a person can *grow up* to become an adult, but not a whole population or an economy!

Note: You must know the verb forms of the irregular verbs in the above list: *rise*; *fall*; *shrink*. In particular, do not confuse *rise* (*rose*; *risen*) with *raise* (*raised*; *raised*). The other two are: *fell*; *fallen* and *shrank*; *shrunk* although you can really forget about the last one because it is hardly ever used in the past or present perfect tense. Note that *arise* has the same forms as *rise*, but a very different meaning!

Remember that it is very important to know which verbs are transitive and which are intransitive, since only transitive verbs can be used in the passive.

TASK 16

Mark those verbs in section 3.3.1 which are transitive with *tr.* and the intransitive ones *intr.* Some can be both!

Check your answers in your Learner's Dictionary.

TASK 17

Identify which form of the verb should be used in the following:

Note that in those cases where the verb can be both transitive and intransitive, the choice depends on whether the action itself is stressed (intransitive) or there is the idea that someone was responsible for the action. E.g. *The number of unemployed people doubled in the last 10 years.* But: *The output of the factory was doubled when the new machinery was installed.*

1. *The number of workers in manufacturing increased / was increased between 1950 and 1960.*
2. *The total professional sector expanded / was expanded throughout the last 80 years.*
3. *The business sector also grew / was grown after 1980.*
4. *The number of manufacturing employees rose / was risen / raised / was raised significantly between 1950 and 1970.*
5. *The agricultural workforce has steadily decreased / has been steadily decreased over the last 80 years.*
6. *Other kinds of employment remained / were remained fairly steady throughout the period.*
7. *The agricultural workforce reduced / was reduced quite sharply after 1960.*

➤ *Answer Key*

3.2.2 Nouns

increase	acceleration	development	doubling
expansion	gain	growth	rise
jump	decrease	decline	depletion
diminishing	drop	fall	lessening
lowering	downturn	fluctuation	

TASK 18

Note that it is very important to combine nouns and verbs correctly.
Combine as many of the following as is possible:

The number of	(the) workforce	<i>rose</i>
The quantity of	(the) banking sector	<i>fell</i>
The proportion of	(the) workers	<i>increased</i>
The rate of	(the) consumption	<i>decreased</i>
The level of	(the) production	<i>declined</i>
The percentage of	employment	<i>grew</i>
The size of		<i>expanded</i>
The amount of		<i>shrank</i>
		<i>dropped</i>
		<i>reduced</i>
		<i>fluctuated</i>

☛ Answer Key

3.3 Correlations

One of the most interesting ways to use graphs and tables is to place two together that show a connection, or a correlation. This is often used in the IELTS examination. In this case it is necessary to understand what the link is that connects the two.

Correlations can often show an **indirect causal link**. For example, it has not been possible to say that smoking *causes* illness in the same way that one can say that a poison *causes* illness, because many people smoke without becoming ill. Nevertheless, as the example below shows, a strong correlation between smoking and death from certain illnesses can show that tobacco is an indirect cause of illness and death.

Correlations can also be used to show economic or other activity where there is no causal link, or where the cause is a separate one (as in the example about tourism below). These are often interesting because they can indicate trends and perhaps suggest future actions to be taken. In the IELTS examination it is necessary to understand why the two visuals have been placed together, but you are not expected to discuss the implications in any detail.

3.3.1 Vocabulary and Usage

There is no special vocabulary to be used for describing correlated graphs and tables. There are two grammatical forms which are more likely to occur in this context: the superlatives of quantity, such as *the greatest number*, *the lowest incidence / occurrence* etc. and the comparative form: *the greater the..... the greater the....etc.* You will find examples in the model given below.

TASK 19

In the following description, underline all the useful expressions you can find and use them in your own description of the correlation of the graphs that follow.

Tobacco related deaths 1998				Cigarettes consumed per capita, 1995
	Total	Male	Female	
Africa	125,000	112,000	13,000	480
The Americas	582,000	413,000	169,000	1,530
Europe	1,369,000	900,000	469,000	2,080
Southeast Asia	580,000	505,000	75,000	415
India	383,000	332,000	51,000	1,200
Western Pacific	1,185,000	986,000	200,000	1,945
China	913,000	783,000	130,000	1,800

There is a clear correlation between the number of cigarettes smoked per capita and the number of tobacco related deaths. The table shows that the greatest consumption of cigarettes in 1995 was to be found in Europe, China and the Western Pacific, and that each of these regions also had by far the largest number of tobacco related deaths in 1998. Europe, with the greatest consumption per head of cigarettes, namely over 2000 for 1995, also experienced well over 1 million tobacco-related deaths by 1998. The region with the second highest consumption of cigarettes was the Western Pacific, with nearly 2000 per head, and it also recorded the second highest number of tobacco-related deaths, namely 1.185 million.

In all regions except Southeast Asia it can be seen that the higher the consumption of cigarettes, the higher the tobacco-related mortality rate. It is interesting that in Southeast Asia, with the lowest level of cigarette consumption, at 415 per capita, the mortality rate was as high as in the Americas, namely .58 million, although in the latter the consumption level was nearly three times as high. Clearly other health or economic factors must be involved. It is also interesting to note that in each case the number of female deaths was significantly lower than that of males, which seems to be a reflection of the fact that in general far fewer women than men smoke.

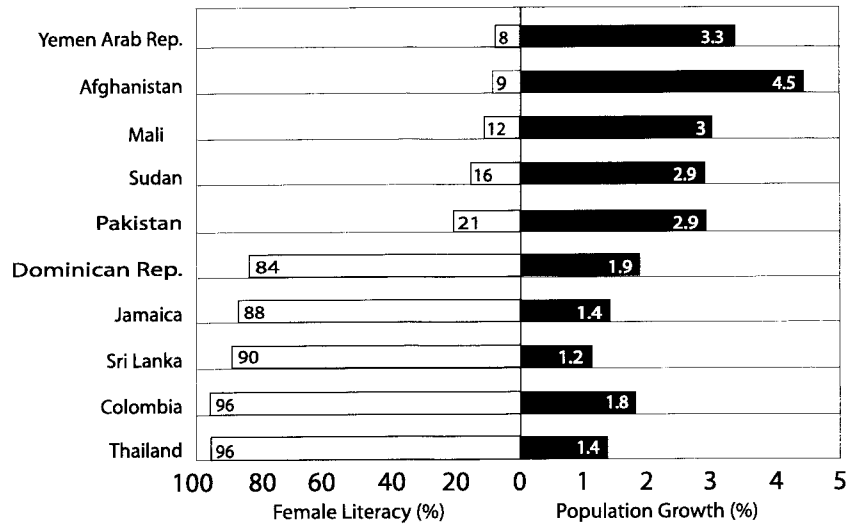
TASK 20

Now write a description of the following, using as many suitable constructions as possible from the above model.

In the IELTS test the question would typically be expressed as follows:

The graph below shows the rate of women’s literacy and population growth in selected countries from 1988 to 2000.

Write a report for a university lecturer describing the information shown below.



Answer Key

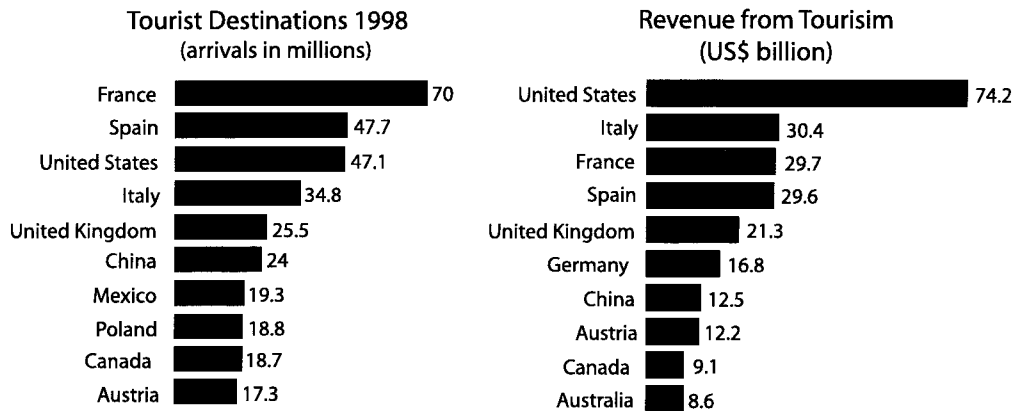
TASK 21

Study the following three graphs showing the top ten countries for World Tourism and comment on the following in your description of the graphs:

1. The relationship between the top spenders and the top earners.
2. Which countries made an overall profit on tourism.
3. The relationship between number of visitors and amount of income.

Now treat this as an IELTS Writing Task 1. Write about 150 words in no more than 20 minutes.

The tasks below show the top 10 countries in terms of tourist destination, revenue and spending. Write a report for a university lecturer describing the information shown below.





Part 4

Using the Right Style

There are a number of features of academic writing that you need to observe in order to write well. **Modifiers** are very important for giving your exact meaning, and you also need to know how to **avoid informality, redundancy and repetition**.

In all academic writing it is essential to know how to use modifiers accurately. This is one of the most important ways in which you can express your exact understanding of what you are writing about, and the more accurate your use of modifiers the better your writing will be. In writing about graphs and tables there are a number of common adjectives and adverbs that are very frequently used. It is generally NOT safe to translate these directly from your own language, as the usage in English is often quite idiomatic, so you need to study the following examples.

4.1 Modifiers

As you can see from the following lists, there are a large number of modifiers available. Mostly they are used in the form of adjectives and adverbs (although there are also other ways of using them).

There are generally more errors made in the use of modifiers than in any other aspect of Writing Task 1, so it is worth your while to study the grammatical information given below. If it seems too much to memorise all that information, you should at least learn a number of expressions as complete phrases so that you use them correctly. Translating from your own language into English will seldom give good results!

4.1.1 Adjectives Showing Amount, Emphasis, Time

Amount:

small	slight	limited	marginal
minor	partial	restricted	
large	great	substantial	enormous
extensive	extreme	major	numerous
vast	widespread		

Emphasis:

considerable	dramatic	major	marked
notable	noticeable	sharp	significant
striking	strong	substantial	insignificant
minor	slight	consistent	moderate

Time:

slow	gentle	gradual	steady
constant	fluctuating	rapid	fast
sudden	quick		

4.1.2 Adverbials

These too can show amount, emphasis and time, but they also need to be classified according to their use. This is because there are a number of difficulties with using adverbs and adverbial phrases correctly.

Adverbs can modify verbs, adjectives or other adverbs. However, not all adverbs can be used in all these ways. That is one difficulty.

The other difficulty is knowing the correct position for these expressions in relation to the verbs in a sentence.

In the lists below, the adverbs are divided into groups according to their meaning and the way they can be combined with other parts of speech. After each relevant section there is information about where they are placed in relation to the verbs in a sentence.

- Adverbs of degree or amount which can be used with verbs and often also in comparisons. (Many can be used in adjective form.)

For example: *slightly*:

The population increased slightly.

There were slightly more doctors than dentists.

Employment in industry increased slightly more rapidly.

hardly	barely	scarcely	a little
slightly	somewhat	marginally	moderately
partly	relatively	significantly	considerably
substantially	particularly	exceptionally	remarkably
dramatically	enormously	to some extent	mostly
mainly	largely	a great deal	very much
to a small/ certain/ large/ great/ considerable extent			

Note: *largely* means nearly the same as *mainly*. It does not mean the same as *very*.

Note: Avoid using *a bit* and *a lot* as they are used only in informal and spoken English.

The following can only be used in comparisons or superlatives:

far by far very much

(*far more inhabitants; by far the greatest number; very much more rapid(ly)*)

Placement: The first three adverbs (*hardly, barely, scarcely*) go before the verb:

The number hardly / barely / scarcely increased in the next few years.

In the case of verbs with auxiliaries (e.g. the present perfect tense, the passive), or with modals (*may, could, should etc.*) they go between the auxiliary or modal and the main verb: *The number of women in government has hardly (barely, scarcely) increased in the last few years. The number is so small it can hardly be considered.*

The rest of the adverbs will go after the verb (*The numbers increased a little / significantly etc.*).

In the case of verbs with auxiliaries or modals, it is possible to place a few of them between the auxiliary and the main verb, but it is always safer to place all of them at after the verb.

The number of women in the workforce has increased dramatically / significantly etc. in the last fifty years.

The number of women in the workforce may increase considerably in the next decade.

- **Adverbs which can only be used with verbs. They are indicators of time or of manner.** (The adjective forms are equally commonly used.)

For example: **steadily**:

The population increased steadily over the next years.

(There was a steady increase in the population.)

slowly	steadily	gradually	quickly
rapidly	suddenly	sharply	strongly
at a fast / faster / slow / slower rate			

Placement: All of these, except for the last phrase, can be placed before a verb or after it:

The population increased steadily.

The population steadily increased.

In the case of *sharply* and *strongly* it is more common to place them after the verb. In fact, it is probably simpler to learn to place *all* of them after the verb.

In the case of auxiliary and modal verbs, the same principle applies: either the adverbs are placed between the auxiliary or modal and the main verb, or they can be placed after the complete verb:

The number of accidents has sharply declined / has declined sharply since the new regulations were introduced.

The amount of unemployment could sharply increase / could increase sharply in the next few years.

- Adverbs which can only be used with adjectives or other adverbs, to intensify them or tone them down. They can not be used with verbs or comparatives (unless the verbs are in the adjectival form, i.e. as present or past participles (e.g. *highly increased, highly increasing*):

For example, *highly*:

There was a highly noticeable increase in the number of complaints.
The increase occurred fairly rapidly.

quite	rather	fairly	very
highly	extremely	comparatively	relatively

- Adverbials which are used with nouns and expressions of measurement.

For example: *hardly any; approximately*:

There was hardly any change in the number of readers.
There were approximately 10 million inhabitants.

hardly (any)	less than	about	around
approximately	practically	almost	nearly
(just) under	(just) over	exactly	precisely
some	(several)*	many	more than
most	(well) under	(well) over	all

For example:

Hardly a fifth of the workers took their full holidays.
Nearly all of the population watches television.
Just under a quarter of all energy is produced by coal.

Note: It is generally not necessary to give precise figures when discussing a graph or table. For example instead of saying:

The world's GDP per capita in 1995 was \$US 5,990,
 it is better to say:

The world's GDP per capita in 1995 was about / around / nearly \$US 6000.

***Note:** You are unlikely to need to use *several* since it means *more than a few, but not many* and is so imprecise that it is not likely to be used when describing graphs or tables.

Common Error!

Note that it is a common mistake to write

**Some of waste comes from agriculture.*

Some, many, most and all should generally be used **without** the word *of*:

Some energy is supplied by wind generators.

Most waste comes from industry.

Many students make this mistake.

All countries have increased their use of fossil fuels.

To use these words with *of* it is necessary to write *of the* because the meaning is that *all, many or most of a particular and known amount* is / are being described, and so the definite article is necessary. For example, if we refer to *most of the students* then it must be clear that a specific group of students is meant.

4.1.3 Making Predictions.

Occasionally a graph showing trends predicts what may happen in future. In that case you cannot say that something *will* happen, only that it *may* or *could*.

The modals, *may, might* or *could* are generally too vague and uncertain to be used, however.

The most common expressions for discussing possible future trends are:

it is predicted / forecast / expected / suggested / likely / probable that...

If these are used, then the future tense should also be used, rather than *may* or *could* because the combination would be too weak. In other words, **It is predicted that the population may increase to 6 billion* is too uncertain, and should be written as:

It is predicted that the population will increase to 6 billion.

Another possible structure is:

An increase in the population to 6 billion is expected.

4.1.4 Idiomatic Phrases

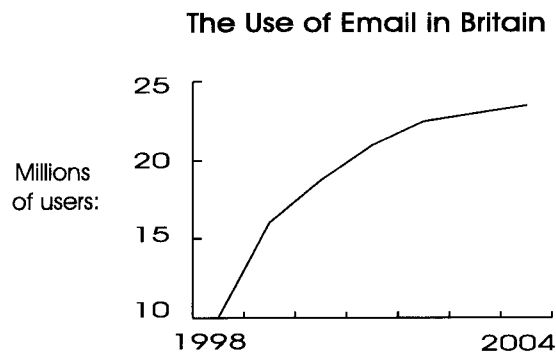
As we noted at the beginning, it is important to learn complete and common phrases. The best way to do this is to collect examples from your general reading, and from models provided in this and other similar books. Here are a few examples to help you:

- a large percentage (NOT big)
- a slight increase (NOT little)
- a significant rise (NOT great / big etc.)
- remain constant
- remain relatively steady etc.

Two of the most common errors made by students when using modifiers are a) using the wrong part of speech (e.g. using adjectives instead of adverbs and vice versa) and b) using exaggerated or inappropriate expressions (e.g. describing a slight increase as a dramatic one). The next tasks will test you in both these areas.

TASK 22

Insert the appropriate expressions from the list given below (more than one may be correct), changing it to the correct part of speech where necessary, for each of the following gaps:



1. The graph shows
 - a) a / an _____ rise in the use of email between 1998 and 2004.
 - b) that email use would have risen _____ between 1998 and 2004.
 - c) the number of email users to have increased _____ between 1998 and 2004.
 - d) the increase in email use between 1998 and 2002 to be _____ .

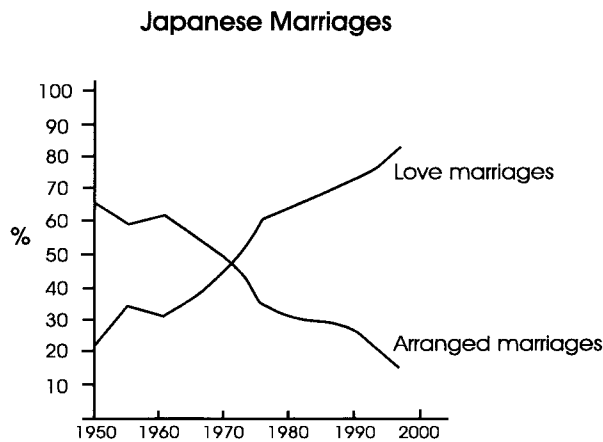
a great deal enormous significant

2. In fact the number of adult users has _____
doubled in that time.
dramatic more than significant steady
3. After the year 2002 it is expected that the growth rate will decline
_____.
a bit large significant steady

• Answer Key

TASK 23

Select the best words from the list below to enter into the gaps in the description that follows this graph, changing the parts of speech where necessary.



There was a _____ change in the type of marriage common in Japan between 1950 and the 1990s. While in 1950 the number of love marriages was only _____ 22%, by 1965 the number of such marriages had increased _____ to 50% and by the 1990s there was an even more _____ trend away from arranged marriages, which had declined to _____ less than 15%.

about dramatically nearly noticeably rather remarkably

Now replace the words used above with other from the lists that would be just as suitable.

(You will need a teacher or native speaker to check your work as there are too many variations possible to put in an Answer Key.)

TASK 24

Internet-connected computers worldwide, 1981-1999	
1981	213
1982	235
1983	562
1984	1,024
1985	1,961
1986	5,089
1987	28,174
1988	56,000
1989	159,000
1990	313,000
1991	617,000
1992	1,136,000
1993	2,056,000
1994	3,864,000
1995	6,642,000
1996	12,881,000
1997	19,540,000
1998	36,739,000
1999	56,218,000

Supply any suitable expressions for the gaps.

The number of Internet-connected computers has risen _____ since 1981. Although the number more than doubled from 1981 to 1983, the figures at that stage were _____ small, going from 213 to 562. However, as the rate continued to double, or even more than double in the following years, the growth rate was _____ rapid. Only after 1996 was there a _____ slower rate of expansion as the growth rate no longer doubled each year. Nevertheless, by 1999 the number of Internet-connected computers in the world had risen, within a period of less than 20 years, from _____ 200 to _____ 56 million.

☛ Answer Key

Note: Many students overuse and misuse modifiers. Remember that **not every** noun or verb needs to be modified, only those where the modifier is really meaningful. Another common problem is exaggeration. Students sometimes like to use the word *dramatic*, for example, even when the change they are describing is not very striking at all, and the word *significant* would be more suitable.

4.2 Using the Correct Style and Avoiding Common Errors.

There are a number of common problems with style, vocabulary and grammar that we will discuss in this section.

First there are a number of stylistic errors to avoid: informality, narrative style, redundancy and repetition.

4.2.1 Avoiding Informality

Here's a good example of what a lot of students do. And what they shouldn't do. A big number don't realise there's a problem.

The above is a typical example of a style which contains a number of informal usages. Can you identify them?

- a) **abbreviations:** *here's; shouldn't; don't; there's*. These should not be used. Write *here is; should not; do not; there is*.
- b) **a lot of:** This is a very common, informal expression. For countable nouns, use *many (what many students do...)* and for uncountable nouns use *a great deal of (there was great deal of expansion in the 1990s)*.
- c) **a sentence beginning with *And*:** You should also avoid starting sentences with *But* and *So*.
- d) **an incomplete sentence:** The last sentence is not a complete sentence, since there is no main clause.
- e) ***big*** is not a formal word: *large* is. Similarly, **A little number of students* should be *A small number of students*.

An improvement of the above two sentences would read: *This is a typical example of a style which many students use, and which should be avoided. A large number of students do not realise that there is a problem.*

Can you see the additional improvements as well as the corrections?

- f) The repetition of *do* is avoided. (See section below)
- g) The personal pronoun (*they*) is avoided and the passive is used. This is a way of making the style more formal, but you need to be careful not to use the passive if the result sounds awkward.
- h) The weak adjective *good* is replaced by a more exact one: *typical*.

Note: It is better to be a little informal and *correct* than to attempt to be very formal and make bad errors. Remember: walk before you try to run.

4.2.2 Avoiding a Narrative Style.

A report is not a story, and so you should not use a story-telling style. Here is an example of what to avoid:

Here are two graphs. They show that there were many changes in the kinds of jobs the people of Alia mostly did in the last century. In the 1920s most people worked in agriculture, as farmers, and they continued in this way for many years. Later, however, a change gradually happened in the workforce.

4.2.3 Avoiding Redundancy

Redundant means more than is necessary.

Students often use both redundancy and repetition either because they are translating from a language where these forms are commonly used, or to fill up space, because they fear that they cannot produce 150 words about a graph or table, as the test question requires. However, it is better to write down more about *details* than to fill up your paper with statements that contain no real information.

There are two important reasons to avoid using more words than necessary:

- a) it produces an unacademic style, being more suited to story-telling or literature; and
- b) because there is no real information for the reader (or examiner) to focus on, any grammatical or vocabulary errors in your writing become very noticeable.

Redundant statements include the following:

- a) those that provide information that is so obvious it is not worth stating. Here is an example:

Twenty percent of car accidents happen after dark, while the other 80% happen during daylight hours.

(Only the first half of the sentence is necessary.)

- b) those that make a contrast explicit, when it is not necessary (see 3.1).

Comparisons (p. 25). Here is an example:

In contrast, the position of women was just the opposite to that of men.

(Omit the introductory phrase, *in contrast*).

c) those that are used like topic sentences, but are actually empty of content. Here are some examples:

There are some differences between these two countries.

The trends are not the same.

From the graph we can see the various rates of change.

(Such sentences should simply be omitted.)

In other words, you should aim to use the fewest number of words necessary to convey your meaning. If you feel that you are not writing enough (150 words for the IELTS exam) you should add more detail.

Avoiding Repetition.

Repetition is another very common form of redundancy and should be avoided for the same reasons: it is not academic in style. Moreover, if you have a mistake in a phrase you are using, and you continue to use that same phrase repeatedly, your work will look bad. Even if you use a phrase correctly, you cannot gain good marks in a test if you do not show your ability to use a **variety** of expressions.

There are examples of repetition in the task given below. First, however, let us look at some ways to avoid redundancy and repetition.

4.2.4 Using a Compact Style

Present Participle clauses are extremely useful for a compact style. For example:

Between 1860 and 1900 the temperature remained steady. During that time the temperature rose and fell by no more than 0.1° Centigrade.

This can be written as:

Between 1860 and 1900 the temperature remained steady, rising and falling by no more than 0.1° Centigrade.

Another typical expression is seen in this sentence:

The US had by far the greatest share of the information technology market, accounting for 44% of Internet connections.

It is important to note that the present participle, ending in *ing* is **active** in meaning. It does not indicate the present tense at all, and can be used for any tense. The past participle (ending in *ed* or *en*) is used for the **passive** and is very useful in academic writing, but is not very likely to be needed in describing graphs and tables.

Present participle clauses are also often used with prepositions and can include nouns and adverbs:

The developing countries of Africa, Asia and Latin America experienced the most dramatic growth, with Africa having around 5% per annum.

Other parts of speech, such as prepositions, and even punctuation can also be used to make your style compact.

When you are describing a graph or table, you need to make a general statement (e.g. *carbon emissions increased significantly*) and also give the specific details to support that statement (e.g. *carbon emissions increased to 6000 million tons*). There are a number of simple ways to combine this information. Here are some examples:

(See also section 2.4.7 under **Measurements**, for other examples of common phrases.)

Note the use of the comma in the following:

Carbon emissions increased significantly, to 6000 million tons.

Carbon emissions increased by 600%, from 1000 million to 6000 million tons.

Carbon emission increased to 6000 million tons, an increase of 600%.

The prepositions *at* and *with* are also useful.

By far the greatest proportion of electricity was generated by oil, at 59%.

Australia came next, with a total of 42,215 students.

Indonesia was responsible for about one third of that amount of rice production, at just over 46 million tonnes.

Between 1920 and 1970 the business sector remained constant at around 10% of the workforce.

Parentheses, either by using brackets or commas, are also very common:

Europe, with the greatest consumption per head of cigarettes (over 2000) was...

The greatest proportion of electricity, 59%, was generated by oil.

It is also useful to give details by using *namely* and *that is* or *i.e.*:

The region with the second highest consumption of cigarettes was the Western Pacific, with nearly 2000 per head, and it also recorded the second highest number of tobacco related deaths, namely 1.185 million. etc.

Bangladesh and Viet Nam and Thailand had similar levels of production, i.e. between 20 and 30 million tonnes each.

Less than half as much, namely 26%, was produced from brown coal.

Note: A very common error is the use of *such as* instead of *namely*. The expression *such as* introduces examples, NOT a complete list. For a complete list, use *namely*.

Look at the following examples:

There are a number of ways of avoiding redundancy, such as using participle clauses and phrases beginning with at.

There are four types of renewable energy, namely solar, hydro, wind and biomass energy.

TASK 25

Improve the following statements by removing the redundancy in any suitable way. You will need to reduce the number of sentences.

1. *From the graphs we can see that there has been a change in the rate of use of email in the UK. The rate of change of email use is shown from the year 1998 to the year 2004. Email was used by few people in the UK in 1998 but it was used by many people in 1999 and the number kept increasing. In 1998 the number of people using email in the UK was about 10 million and by the year 2000 the number had doubled to become about 20 million. The graph shows this trend continuing until 2002 and then a slight reduction in growth rate to 2004.*

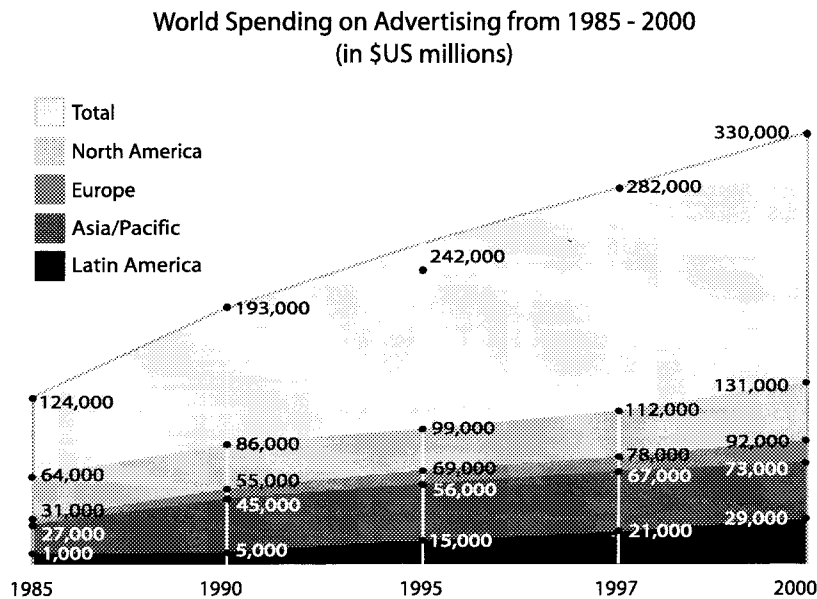
2. *The graph shows the trend in two types of marriages in Japan between 1950 and 1990. The two types of marriages are love marriages and arranged marriages. The percentage of arranged marriages decreased and at the same time the percentage of love marriages increased dramatically between 1950 and 1990. In 1950 only 22% of the population had love marriages, while 65% were in arranged marriages, but by 1990 this proportion was inverted, with 83% being in love marriages and only 15% having arranged marriages.*

☛ Answer Key

4.2.5 Focus.

Having considered what to avoid, we will now look at some suggestions for ways of making your style both academic and varied by considering your focus.

Look at the following graph:



You could focus on different aspects of the graph in a number of ways, including:

- *North America has been responsible for far more expenditure in advertising than any other area in the world.*
- *Over \$333,000 million was spent on advertising in the world in the year 2000.*
- *Between 1995 and 2000 the amount spent on advertising in the world has more than doubled.*

However, you need to be careful about using an abstract term as the subject of your sentence. This is because both the grammar and the logic of your sentence can easily become incorrect if your command of English is limited. The problem usually lies in making the subject (the abstract term, such as *expenditure*) fit with the verb.

TASK 26

Test yourself by identifying which of the following are not correct:

1. *A great change in advertising expenditure in the world took place between 1985 and 2000.*
2. *The amount of expenditure for advertising increased sharply between 1985 and 2000.*
3. *The highest expenditure for advertising was in North America.*
4. *North America had the highest expenditure on advertising in the world.*
5. *Advertising expenditure had an increase in the years between 1985 and 2000.*
6. *There was a sharp increase in expenditure on advertising in the world after 1985.*
7. *The lowest expenditure on advertising happened in Latin America.*
8. *The lowest expenditure on advertising was spent by Latin America.*
9. *North America performed the highest amount spent on advertising.*
10. *The lowest amount of advertising was spent \$956 million by Latin America.*

☛ *Answer Key*

4.2.6 Avoiding Grammatical Errors: Editing

Before finishing your work, read what you have written carefully and look for errors in basic grammar, particularly those involving parts of speech and verb forms.

Many students approach English writing incorrectly by focusing on vocabulary but ignoring the need to use the correct parts of speech. When speaking it is easy to communicate without too much attention to grammar, but errors with parts of speech are very noticeable in writing and quite unacceptable for academic work. Many words can appear as nouns, verbs, adjectives and adverbs. For example:

<i>compare</i>	<i>comparison</i>	<i>comparative</i>	<i>comparatively</i>
<i>distinguish</i>	<i>distinction</i>	<i>distinct</i>	<i>distinctly</i>

Often, however, there are no other parts of speech available for a particular word. For example, *urban* is an adjective, and there is no noun form.

Another very common error is to use the passive form when this is incorrect. Sentence 10 in Task 26 above is an example of this kind of error. Usually the passive is not needed in describing graphs and tables.

Students of all nationalities often forget the s ending on plural nouns in English. Try to take the time to check all your nouns.

Finally, you should also check all your verbs to make sure that you have the correct tense.



Diagrams

Diagrams occur infrequently in IELTS Academic Writing Task 1, and as there is very little vocabulary and grammar that covers all types of diagrams this section is very short. It includes three practice tasks with model answers.

The purpose of a diagram is normally to show a process, how a piece of equipment works, or the operational structure of a system.

5.1 Vocabulary and Grammar

The vocabulary will mostly be closely related to the special subject matter being shown, and so you cannot prepare for that. There are, however, two aspects of the language that you will require for describing most diagrams and you should make sure that you know how to use them well:

- a) The verbs will normally be in the present tense and the passive form.
- b) Where a process or structure is being presented, you will need a variety of connectors showing stages or time.

5.2 Using a good style

- Do not attempt to describe the diagram in colourful or 'interesting' language. There is no need for adjectives or adverbs.
- Avoid repetition (see previous section) and try to vary your language.
- Do not simply use *firstly*, *secondly*, *thirdly* etc. or *then* to link different stages.

Here are some other possibilities:

In the first/ second / etc. stage

Next

The process continues with

After this

You can also use *then* after the subject of your sentence, instead of at the beginning; e.g. *The water is then transported.*

- Vary the use of nouns and verbs: e.g. instead of :

The water is then purified

write:

The purification of water is the next stage etc.

TASK 27

The diagram below shows career paths in the travel industry. Write a report for a university lecturer describing the information shown below.

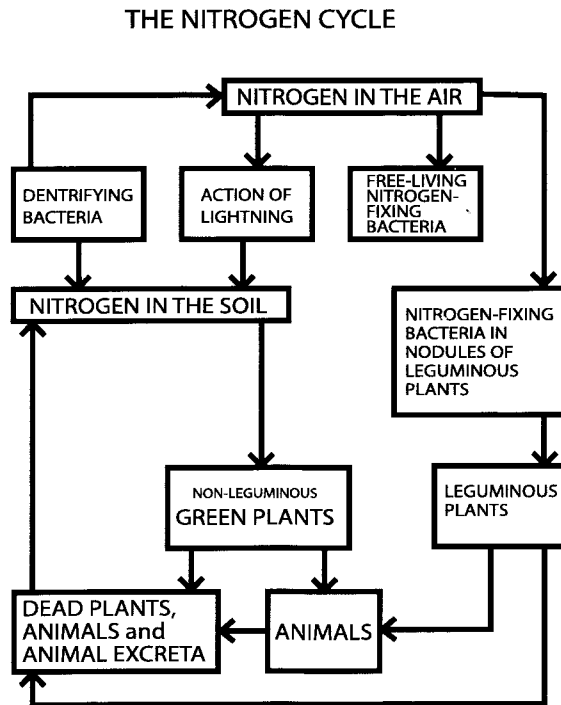


Answer Key

TASK 28

The diagram below shows the nitrogen cycle.

Write a report for a university lecturer describing the information shown below.



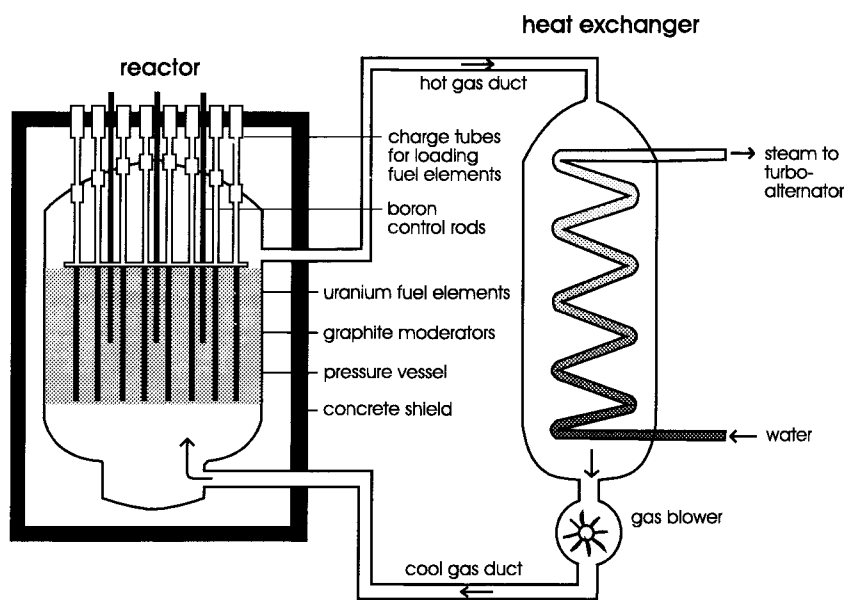
☛ Answer Key

TASK 29

The diagram below shows the production of steam using a gas cooled nuclear reactor.

Write a report for a university lecturer describing the information shown below.

A Gas Cooled Nuclear Reactor



• Answer Key

Note: Many text books for English learners deal with the writing of descriptions of processes and you should refer to these if you need more practice.

Answer Key

Part 1

1. c) and e). Generally, a visual is used to assist in making a concept clearer, but often, especially with tables, the purpose is to give more details. Actually, a), b) and d) are also correct!

2. c) and d). Since the purpose of a graph or table is to make the text easier to understand, a) cannot be correct. Giving exactly the same information (b) is definitely not the purpose. However, sometimes further explanations are given (c), and it is always necessary to comment on the significance of the visual (d).

3. c) is the correct answer, because it gives a summary of the significance of the graph. In text a) the figures are simply expressed in words, which are much more difficult to understand than the graph itself, while b) was written by someone who is going well beyond what is in the graph and is discussing causes.

4. 1) Over 1000 million tons; 2) Too small to identify; 3) Just under 1000 million tons; 4) More (\$31,000 million, against \$27,187 million; 5) Less (\$29,815 against \$92,000 million).

Part 2.

5. 1 goes with a) and b). Although c) is possible, it is more common in spoken English, and it is better to use *that* in front of the clause.

2, 3 and 7 all go with a). Again, c) is possible, but it is better to insert *that* in written English.

4, 5 and 6 all go with c) only.

6. c)

7. The following are not the only possible answers, but are the most likely ones:

1. *between 1950 and 1990 / from 1950 to 1990*

2. *After 1960 / From 1960 (on / onwards)*

3. *between 1950 and 1970 / from 1950 to 1970 / for 20 years after 1950, and then / after that rose dramatically,*

4. *throughout the 40 years from 1950 / from 1950 to 1990 / from 1950 for the next 40 years.*

8. In this task there are three kinds of answers: a) those which are completely correct and which are, in fact, the most common expressions; b) those which are not quite wrong, but not very usual –they sound rather odd to native speakers of English; and c) those which are completely wrong. The following are the most commonly used combinations:

<i>the number of</i>	<i>employees; smokers; years</i>
<i>the amount of</i>	<i>GDP; unemployment; production; growth; arms sales; cigarette consumption; income; expenditure</i>
<i>the size of</i>	<i>the population</i>
<i>the degree of</i>	<i>unemployment; literacy; cigarette consumption</i>
<i>the quantity of</i>	<i>production; arms sales; cigarette consumption</i>
<i>the rate of</i>	<i>unemployment; literacy; production; growth; cigarette consumption; expenditure. (Better is: the unemployment rate, the literacy rate, the growth rate).</i>
<i>the level of</i>	<i>GDP; unemployment; literacy; income; expenditure.</i>

9. 1. a) and b) 2. a) and c) 3. a) and d) 4. a)
 5. a) and c) 6. b) 7. b) and c) and d)

Part 3.

12. a) and b) and d) are all too vague, and in a) the phrase ‘per 1000 inhabitants’ is not necessary. The best sentence is c). While e) is OK, it is rather too formal.

13. Conjunctions, within sentences are: *but, while, whereas, although, even though.*

New sentences must be started with: *However, Nevertheless, Yet, On the other hand, By contrast.*

Prepositions are: *unlike, as opposed to, in contrast to, instead of, apart from, except for.* These must be followed by nouns, not clauses.

14. The following are not necessarily the only correct answers, but they are the most likely ones:

<i>while</i>	<i>both _____ and _____</i>	<i>except for / apart from</i>	<i>However</i>
<i>While / Whereas</i>	<i>as well as</i>	<i>Similarly</i>	<i>change / difference</i>
<i>while</i>			

15. The following are not necessarily the only correct answers, but they are the most likely ones:

<i>except for / apart from</i>	<i>but</i>	<i>similar</i>	<i>However</i>
<i>Meanwhile / On the other hand.</i>			

17. 1. *increased* 2. *expanded* 3. *grew* 4. *rose*
 5. *has steadily decreased* 6. *remained* 7. *was reduced*

18. These are the most idiomatic combinations. Others may occur which are not necessarily wrong, but are unusual or odd.

the number of + *workers* + all the verbs except: *shrank*; *dropped*; *reduced*

the quantity of + *consumption* + all the verbs except *reduced*

the proportion + *the workforce*; *the banking sector*; (*the*) *workers*; *consumption*; *production*; + all the verbs except *dropped*; *reduced*

the rate of + *consumption*; *production*; *employment* + all verbs except *reduced*

the level of + the same as above for *the rate of*

the percentage of + *the workforce*; *the banking sector*; (*the*) *workers*; *consumption*; *production* + *rose*; *fell*; *increased*; *decreased*; *declined*; *grew*; *dropped*; *fluctuated*

the size of + *the workforce*; *the banking sector* + *increased*; *decreased*; *declined*; *grew*; *expanded*; *shrank*; *fluctuated*

the amount of + *consumption*; *production*; *employment* + all the verbs except *reduced*

Note: *reduced* cannot be used in any of the above because it is a transitive verb and must have an object! It is possible to use it in the passive; e.g. *the number of workers was reduced after the business shrank*.

20. This is one possible model answer:

There is a clear correlation between the level of female literacy and the level of population growth in the world. The graph shows figures from selected countries between 1998 and 2000. The highest percentage of female literacy was found in Thailand and Colombia, which also had amongst the lowest population growth rates, namely 1.4% and 1.8% respectively. The other countries named with high literacy rates are Sri Lanka, Jamaica and the Dominican Republic, each with over 80% female literacy, and in each case the population growth rate is under 2%. By contrast, those countries with very low levels of female literacy show extremely high figures for population growth. Afghanistan, with only 9% of women being literate, has an enormous growth rate, namely 4.5% and the Yemen Arab Republic, with an even lower number of literate women (8%), is second on the list, with 3.3% population growth. The other countries listed show a similar pattern.

It seems very likely that this correlation is not accidental, and that higher female literacy leads to greater use of family planning methods.

21. 1. The top ten spenders and top ten earners are nearly the same.
2. All except for Japan, UK, Germany, Canada and Netherlands earned more than they spent.
3. The top destinations in terms of numbers of visitors did not completely coincide with the top earnings.

Here is a possible model answer.

There is a strong correlation between the countries that were the top 10 spenders and those who were the top 10 earners in tourism in 1998. All the top spenders except Japan and the Netherlands were also among the top 10 earners, although UK, Germany and Canada earned less than they spent.

Interestingly, the correlation between the top earners and the most popular destinations is not so direct. While the US earned more than twice as much as France (\$74 billion as against \$29.7 billion), France actually had 70 million arrivals as opposed to 47.1 million for the US. However, in the case of Italy and Spain the earnings and number of arrivals were more closely correlated. Nevertheless, the cost of tourism in some countries is clearly much higher than in others, so that while Mexico and Poland received around 19 million visitors each (placing them above Canada and Austria), they do not appear among the top earners, while Australia, which earned \$8.6 billion, does not appear among the top ten destinations for arrivals.

Part 4.

22. 1. a) *significant; an enormous* b) *significantly; enormously; a great deal*
c) *a great deal; significantly; enormously* d) *significant; enormous*
2. *more than*
3. *significantly; steadily*

23.

dramatic / (noticeable) / (remarkable); about
(dramatically) / remarkably; noticeable; rather

24. The following are suggested answers only:

enormously / dramatically; relatively / quite; very / extremely;
slightly; just over; more than / well over

25. Here are two suggested versions. Note that in the first case the last sentence of the original is kept, and in the second case it is only slightly modified, since there is no redundancy there.

1. *The graph shows an enormous increase in the rate of email use in the UK between 1998 and 2004. In 1998 there were about 10 million email users and by 2000 this figure had doubled. The graph shows this trend continuing until 2002 and then a slight reduction in growth rate to 2004.*

2. *The graph shows that between 1950 and 1990 there was a dramatic change in the rate of arranged marriages in Japan. While at the beginning of this period about 65% of the population were in arranged marriages, and only around 22% had love marriages, by 1990 this proportion was inverted, with 83% being in love marriages and only 15% involved in arranged marriages.*

26. The incorrect sentences are:

1. This is not an incorrect sentence, but it is an 'empty' one: it conveys not real information.

2, 3, and 4 are correct but 3 is not very good in style.

5. Expenditure cannot *have an increase*. It can, however, increase as in sentence 2.

6. is correct.

7. Here the verb *happen* is inappropriate. You can replace it by *was found*.

8. You cannot *spend expenditure* - the noun and verb do not go together.

9. The verb *perform* is incorrect here. *You could say North America was responsible for the highest amount of expenditure on advertising.*

10. The verb *spend* is in the passive here, so it cannot have an object! A correct version would be: *The lowest amount that was spent was \$956 million, by Latin America. Or: \$956 was spent by Latin America, and this was the lowest amount.*

Part 5. Diagrams.

The following are suggested model answers:

27.

Nitrogen moves in a cycle through the air, plants and animals and the soil, and back into the air. The action of lightning and of free-living nitrogen-fixing bacteria carries the nitrogen into the soil. At the same time some nitrogen-fixing bacteria in the nodules of leguminous plants take the nitrogen directly from the air. The nitrogen in the soil is taken up by non-leguminous green plants, while leguminous plants derive (get) nitrogen directly from the bacteria in their nodules. Both types of plants are consumed by animals. Then, when the animals and plants die, or the animals excrete their food, the nitrogen is returned to the soil, where it is acted on by denitrifying bacteria. These cause the nitrogen to be returned to the air, and the cycle continues.

28.

To progress in the travel industry there are two career paths that can be followed. Beginning as either a travel sales assistant or a travel clerk, an employee can first become a travel consultant for domestic operations and then be promoted to international operations. From there it is possible to move in three directions. Travel consultants can become senior travel consultants, but from that position there is no further direct promotion. They can also choose to move either in the direction of the commercial private sector, or tourism and the public or specialised domestic sector. In the private sector the next step is to travel sales supervisor and from there to small agency manager or branch manager. In the tourism sector one can either be promoted to travel administration manager or marketing manager. While both small agency managers and marketing managers can move up to CEO level directly, for branch managers and travel administration managers there is still another stage, that of senior manager, to go through before reaching the top.

29.

A gas-cooled nuclear reactor consists of the reactor itself and a heat exchanger. The reactor contains uranium fuel elements which are surrounded by graphite moderators and topped by charge tubes for loading fuel elements, and boron control rods. The whole reactor is contained in a pressure vessel surrounded by a concrete shield.

From the reactor the hot gas flows through a duct into the heat exchanger. There a pipe brings in water which is heated to steam, and this then flows out to the turbo-alternator. Meanwhile the hot gas sinks to the bottom of the heat exchanger and passes through a gas blower which pushes it into a cool gas duct and back to the reactor.