

# Business English

## 1. Write five major differences between active and passive listening.

Basis for Comparison	Active Listening	Passive Listening
Meaning	Active Listening is a process of transforming the thought or statement into a clear message, with full-fledged involvement from the listener's side.	Passive Listening is a process of simply consuming the message, however, there is no involvement from the listener's side.
Process	Interactive	Mechanical
Role of Listener	Listener stimulates the speaker to speak up his ideas willingly, by displaying his/her interest, in the conversation.	Listener dispirits the speaker by showing boredom and disinterest, on his face.
Involves	Reacting while listening	Listening without reacting
Communication	Two-way Communication	One-way Communication
Feedback and Question	Present	Not present
Listener	Concentrates understands, responds and remembers the statement spoken by the speaker.	Thinks about other topics, while showing that he/she is listening.
Non-verbal clues shown by the listener	Change in facial expression, Rolling of eyes, showing interest by questioning or smiling, etc.	Yawning, looking here and there, showing boredom, being silent etc.

## 2. Write a note on classification of listening skills in 200 words.

### CLASSIFICATION OF LISTENING

All listening is not of the same intensity. Good listening is that which passes all the five steps of the process of listening with positive results. Depending upon the extent to which listening becomes effective, it can be classified into three types. They are, active listening, passive listening and selective listening

- ♣ Active Listening
- ♣ Passive Listening ♣ Selective Listening

Active Listening:

Active listening is the most desirable type of listening. In this case, the listener makes conscious efforts to listen attentively, decode the message and absorb it through a participative process.

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The receiver of the messages shows regard for the speaker, concentrates on what is being conveyed, motivates and prompts the speaker, shows empathy and makes it easy for the speaker to meaningfully deliver the message. In order to do this you must pay attention to the other person very carefully. You cannot allow yourself to become distracted by whatever else may be going on around you, or by forming counter arguments while the other person is still speaking. Nor can you
allow yourself to get bored, and lose focus on what the other person is saying.
When we talk of listening skills, it is important to listen effectively. When one listens actively, one not only comprehends the message, but is also in a position to remember and recall the same as and when required. If it becomes difficult to concentrate on what someone is saying, try repeating their words mentally as they say them. This will reinforce their message and help you to stay focused.

To enhance the listening skills, you need to let the other person know that you are listening to what they're saying. To understand the importance of this, ask yourself if you've ever been engaged in a conversation when you wondered if the other person was listening to what you were saying. You wonder if your message is getting across, or if it's even worthwhile continuing to speak. It feels like talking to a brick wall and it's something you want to avoid

Acknowledgement can be something as simple as a nod of the head or a simple "uh huh." You aren't necessarily agreeing with the person, you are simply indicating that you are listening. Using body language and other signs to acknowledge you are listening can also help you to pay attention.

Try to respond to the speaker in a way that will encourage them to continue speaking, so that you can get the information that you need. While nodding and "uh huhing" says you're

interested, an occasional question or comment to recap what has been said also communicates that you are listening and understanding his message.

There are five key factor which must be followed to become an active listener

- | Pay attention
- | Show that you are listening | Provide feedback
- | Defer judgement
- | Respond appropriately

Passive Listening:

Passive listening refers to inert or indifferent listening. There is no conscious effort to receive and absorb the message. The meaning of passive listening is to listen without asking questions or interrupting the speaker. It may even mean that you don't really understand what's being said. Quite often, passive listening stops at hearing and there is no effort to further process the message. The listener is physically present but is not participating actively in the process of communication. Listening in this instance is insufficient. The message is not absorbed and the passive listener will not be in a position to remember and recall the message at a future date.

It's typically fairly one-sided communication with little to no feedback is given to what's being said or listened to. It requires very little effort other than hearing what is being said and even then, the passive listener can miss parts of the conversation because they aren't fully paying attention. Typically, a passive listener won't even nod his or her head in agreement, maintain eye contact, or give much of an indication that he or she is listening. We tend to slip into passive listening quite often and in many instances, that's fine.

Passive listening takes place when the listener or receiver is constrained by various physiological and psychological factors. It may be fatigue, ill health, disregard for the speaker or lack of interest in the subject. It also occurs when the speaker fails to meet the receiver's wavelength. Passive listening leads to misunderstanding on the part of the communicator who would be under the impression that the receiver has grasped the message as intended.

Some other suitable situations include things like:

Passive listening is just fine for a wide variety of situations. Think of it as perfectly suitable most

of the time when you are in multi-task mode.

- • Listening to music or news while working out
- • Watching television while catching up on work emails

- • Checking your phone while listening to a speaker at a conference you aren't that interested in
- • Listening in on a several-hours-long all company product meeting update
- • Letting your spouse unload a lengthy diatribe to you regarding how horrible their day at work was
- • Hearing your kid ask for ice cream for the 6th time in a minute

### Selective Listening:

Another type of listening that is quite common is selective listening. Listening is done partially or selectively. People listen to only that which they want to listen to. Under this type of listening, the receiver keeps tuning in and out.

It is the phenomenon that occurs when we only see what we want to see and hear what we want to hear. It's a type of mental filtering in which we tune out someone's opinions or ideas when they don't line up with ours. This isn't just a bad habit or rude behavior. It is part of a big problem which results when you are unable to hear what someone has to say because you are refusing to submit yourself to the underlying confrontation. That potential fight is the real reason we often stop hearing what someone has to say; we've already decided they're wrong because we are right.

Attention is not focused. The listener lets the mind wander and the message is not thoroughly processed. Selective listening takes place when the receiver is not in a position to concentrate, or considers the speaker to be not so well informed on certain matters, or the receiver considers himself to be better informed than the communicator or such other reason which hinders active listening.

Whether we are fully aware of it or not, we are always selectively listening. Science has proven that our brains are able to determine which conversations to tune out (no matter how many are happening around us simultaneously), but our brains also give us the ability to focus on specific conversations individually while multiple conversations compete for our attention.

Though choosing not to hear the request to take out the garbage can seem petty, selective hearing as a whole is a big deal. It completely closes you off to accepting, or even entertaining, different ideas. This ultimately impacts the things you may choose to believe and learn.

More so, the partner who is sick of you "not hearing" them ask you to wash the dishes or fold the laundry may not stick around to see what else your ears ignore. Relationships only work if communication is strong, and selective hearing makes it hard to understand the needs and wants of others. In fact, some people may view your refusal to truly listen as a sign that you are manipulating the relationship and making it completely one-sided.

Choosing to be less selective in your listening does not mean you have to be less selective in your opinions and ideas. Instead, it's a matter of welcoming differing opinions and allowing yourself to consider them. Even if the end result is the same you aren't open-minded about a new idea, or you will never help unload the dishwasher and dust the shelves in the living room. What matters is that you actively listened and made a decision after weighing the options. Imagine the impact that could have on your communication with everyone you encounter.

# Data Science

## **1.Elaborate on Why Data Science is become important nowadays? And What are the essential requirements to become a data scientist?**

### **I..Elaborate on Why Data Science is become important nowadays?**

In the twenty-first century, data science is regarded as a profitable career. It is simply the study of mathematics, statistics, and computer science to extract information from structured and unstructured data.

The market is shifting in amazing ways today as more people talk about AI and machine learning. Data science, which solves problems by connecting relevant data for later use, aids these emerging technologies. Facebook's facial recognition technology is an example because it collects vast data on current users over time and uses the same techniques to identify new users. As tools progress, data science techniques evolve and become more widely employed by the general public. Although not every professional will be an analytics or data whiz, the abilities will become more accessible to people who are not as technically skilled.

The information acquired generates more data for newly developed financial technology solutions like cloud computing and storage, which are easily shared by all businesses. However, it can be challenging and time-consuming for businesses to comprehend massive amounts of unstructured data for efficient decision-making. Data science has become popular in the modern world to address these inconveniences.

You can enroll in a [Data Science BootCamp course](#) to build and learn analytical skills and programming knowledge from industry experts and launch a career in the domain.

## II..And What are the essential requirements to become a data scientist?

Some of the most important technical data scientist skills are:

- [Statistical analysis and computing](#)
- [Machine Learning](#)
- [Deep Learning](#)
- Processing large data sets
- [Data Visualization](#)
- Data Wrangling
- Mathematics
- Programming
- Statistics
- Big Data

Some data scientists have a Ph.D. or Master's degree in statistics, computer science, or engineering. This educational background provides a strong foundation for any aspiring data scientist and also teaches the essential data scientist skills and Big Data skills needed to succeed in the field, including:

There are some schools that now offer specialized programs tailored to the educational requirements for pursuing a [career in data science](#), giving students the option to focus on the field of study they are most interested in, and in a shorter period of time.

Some of the many options available include Massive Open Online Courses (MOOCs) or bootcamps, such as [Simplilearn's Big Data & Analytics certification courses](#). These types of programs offer practical learning methods that you will not find in the confines of the textbook, including a hands-on approach to learning in-demand data science skills, Capstone projects, and other exercises that help prepare students to become data scientists.

Other technical data scientist skills required include:

### 1. Programming

You need to have knowledge of various programming languages, such as [Python](#), Perl, C/C++, SQL, and Java, with Python being the most common coding language required in data science roles. These [programming languages](#) help data scientists organize unstructured data sets.

# Pro tip: To learn more about the Programming languages, [click here!](#)

## **2. Knowledge of SAS and Other Analytical Tools**

Understanding analytical tools is one of the most helpful data scientist skills for extracting valuable information from an organized data set. SAS, Hadoop, Spark, Hive, Pig, and R are the most popular [data analytical tools](#) that data scientists use. Certifications can help you establish your expertise in these analytical tools and help you gain this valuable data science skill!

## **3. Adept at Working with Unstructured Data**

Data scientists should have experience working with unstructured data that comes from different channels and sources. For example, if a data scientist is working on a project to help the marketing team provide insightful research, the professional should be well adept at handling social media as well.

Some of the other data scientist skills required are Machine Learning, Artificial intelligence, Deep learning, [Probability](#) and Statistics.

Moving forward, let's discuss the non-technical skills.

### **Scale Up Your Data Science Career**

Professional Certificate Course In Data Science [Explore Course](#)

## **4. Web Scraping**

[Web scraping](#) is the automated process of extracting data from webpages.

## **5. ML with AI and DL with NLP:**

[Deep learning](#) (DL) with [natural language processing](#) (NLP) focuses on using neural networks to process and understand human language. Machine learning (ML) and artificial intelligence (AI) are both concerned with teaching computers to learn from data.

## **6. Problem-Solving Skills:**

Skills for Solving Issues the capacity to evaluate challenging issues and develop workable answers.

## **7. Probability and Statistics:**

Statistics and probability is the study of randomness and uncertainty in statistics, and the application of mathematical tools to [decision-making](#).

## **8. Multivariate Calculus and Linear Algebra:**

Advanced mathematical ideas used in machine learning and data analysis include multivariate calculus and linear algebra.

## **9. Database Management:**

The procedure of arranging, saving, and accessing data in a [database](#) system is known as database management.

Learn all about data science with our exclusive [data science career resource page](#)!

## **10. Cloud Computing:**

Utilizing remote servers to store, control, and handle data and applications online is known as cloud computing.

## **11. Microsoft Excel:**

Microsoft Excel is a spreadsheet program used for data display and analysis.

## **12. DevOps:**

A technique of developing software that places a strong emphasis on teamwork and communication between the development and operations teams.

## **13. Data Extraction, Transformation, and Loading:**

[Data collection](#), cleansing, and preparation for analysis is known as data extraction, transformation, and loading.

## **14. Business Intelligence:**

Business intelligence is the process of using tools and techniques for data analysis to acquire knowledge and guide business decisions.

## **15. Neural Networks:**

A data scientist should possess skills in designing, training, and fine-tuning neural networks for various use cases, as well as knowledge of different neural network architectures and frameworks.

## **16. Model Deployment:**



Data scientists need expertise in model deployment, which involves making trained machine-learning models available for use in production environments.

## **17. Data Structures and Algorithms:**

The fundamental ideas in computer science that underpin effective data storage, retrieval, and computational problems are known as data structures and algorithms.

## **Non-Technical Skills Required For Data Scientists**

Along with the technical data scientist skills, we will now shift our focus on non-technical skills that are required to [become a data scientist](#). These refer to personal skills and can be difficult to assess simply by looking at educational qualifications, certifications, and so on. They include:

### **18. A Strong Business Acumen**

The best way to productively channel technical skills is to have strong business acumen. Without it, an aspiring data scientist may not be able to discern the problems and potential challenges that need to be solved in order for an organization to grow. This is essential for helping the organization you're working for explore new business opportunities.

### **19. Strong Communication Skills**

Next on the list of top data scientist skills is communication. Data scientists clearly understand how to extract, understand, and analyze data. However, for you to be successful in your role, and for your organization to benefit from your services, you should be able to successfully communicate your findings with team members who don't have the same professional background as you.

#pro tip, have a look at these resources:

1. [Roles of communication in projects](#)
2. [Effective communication](#)
3. [Importance of good communication](#)

### **20. Great Data Intuition**

This is perhaps one of the most significant non-technical data scientist skills. Valuable data insights are not always apparent in large data sets, and a knowledgeable data scientist has intuition and knows when to look beyond the surface for insightful information. This makes data scientists more efficient in their work, and gaining this skill comes from experience and the right training. However, this data scientist skill comes with experience and bootcamps are a great way of polishing it.

## **Become a Data Scientist With Real-World Experience**

## 21. Analytical Mindset:

The capacity to dissect complicated issues into their component parts, analyze those parts, and derive conclusions from the data.

## 22. "Out-of-the-Box" Thinking:

Using creative and innovative thinking to generate novel ideas and unconventional answers.

## 23. Critical Thinking:

The process of evaluating and analyzing data in order to make a judgment or choice is known as critical thinking.

## 24. Decision Making:

Making decisions entails choosing the best course of action from a range of alternatives after carefully weighing all pertinent information.

# Program for problem solving

## 1. Write C Program to Check Whether a Number is Even or Odd ?

```
#include <stdio.h>
int main() {
    int num;
    printf("Enter an integer: ");
    scanf("%d", &num);

    // true if num is perfectly divisible by 2
    if(num % 2 == 0)
        printf("%d is even.", num);
    else
        printf("%d is odd.", num);

    return 0;
}
```

## Output

```
Enter an integer: -7
-7 is odd.
```

### 2.Which symbol is used for decision making in flowchart?

diamond-shaped symbol can consider it the decision symbol.

### 3.Write an algorithm and draw the flowchart to compute the electricity charges for the consumer as per the following slab:

**Slab rate:**

**Consumed electricity Units from 1 to 199 – Charges is 1.20**

**Consumed electricity Units from 200 to 399 – Charges is 1.50**

**Consumed electricity Units from 400 to 599 – Charges is 1.80**

**Consumed electricity Units from 600 and above – Charges is 2**

**If the charges exceed Rs 500 then an extra charge of 15% will be charged provided minimum bill should be Rs100**

### C Conditional Statement: Exercise-19 with Solution

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Write a program in C to calculate and print the electricity bill of a given customer. The customer ID, name, and unit consumed by the user should be captured from the keyboard to display the total amount to be paid to the customer.

The charge are as follow :

Unit	Charge/unit
upto 199	@1.20

200 and above but less than 400	@1.50
400 and above but less than 600	@1.80
600 and above	@2.00

If bill exceeds Rs. 400 then a surcharge of 15% will be charged and the minimum bill should be of Rs. 100/-

### Sample Solution:

#### C Code:

```
#include <stdio.h>
#include <string.h>
void main()
{
    int custid, conu;
    float chg, surchg=0, gramt,netamt;
    char connm[25];

    printf("Input Customer ID :");
    scanf("%d",&custid);
    printf("Input the name of the customer :");
    scanf("%s",connm);
    printf("Input the unit consumed by the customer : ");
    scanf("%d",&conu);
    if (conu <200 )
        chg = 1.20;
    else if (conu>=200 && conu<400)
        chg = 1.50;
```

```

        else if (conu>=400 && conu<600)
            chg = 1.80;
        else
            chg = 2.00;
    gramt = conu*chg;
    if (gramt>300)
        surchg = gramt*15/100.0;
    netamt = gramt+surchg;
    if (netamt < 100)
        netamt =100;

    printf("\nElectricity Bill\n");
    printf("Customer IDNO                :%d\n",custid);
    printf("Customer Name                  :%s\n",connm);
    printf("unit Consumed                     :%d\n",conu);
    printf("Amount Charges @Rs. %4.2f  per unit :%8.2f\n",chg,gramt);
    printf("Surcharge Amount                   :%8.2f\n",surchg);
    printf("Net Amount Paid By the Customer    :%8.2f\n",netamt);

}

```

### Sample Output:

```

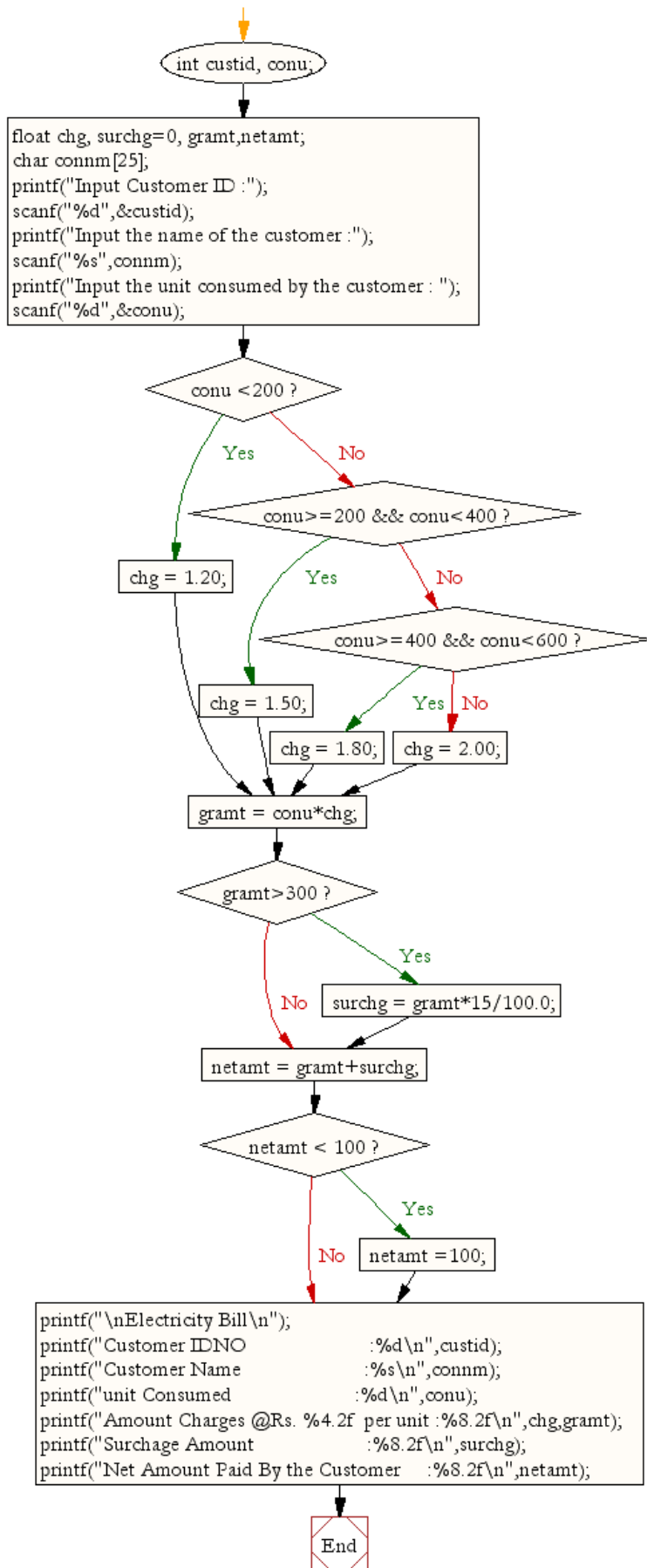
Input Customer ID :10001
Input the name of the customer :James
Input the unit consumed by the customer : 800

Electricity Bill
Customer IDNO                :10001
Customer Name                  :James
unit Consumed                     :800
Amount Charges @Rs. 2.00  per unit : 1600.00
Surcharge Amount                   : 240.00

```

Net Amount Paid By the Customer : 1840.00

**Flowchart:**



# Discrete Mathematical Structures

**1. In a competition, a school awarded medals in different categories. 36 medals in dance, 12 medals in dramatics and 18 medals in music. If these medals went to a total of 45 persons and only 4 persons got medals in all the three categories, how many received medals in exactly two of these categories?**

**Solution and Explanation:**

**Approach Solution 1:**

The total number of medals:  $36+12+18= 66$ .

So, 66 medals are awarded to 45 persons.

12 of them have been awarded to 4 persons.

The other 54 medals have been awarded to 41 persons.

So, there are  $54-4= 13$  persons with two medals each.

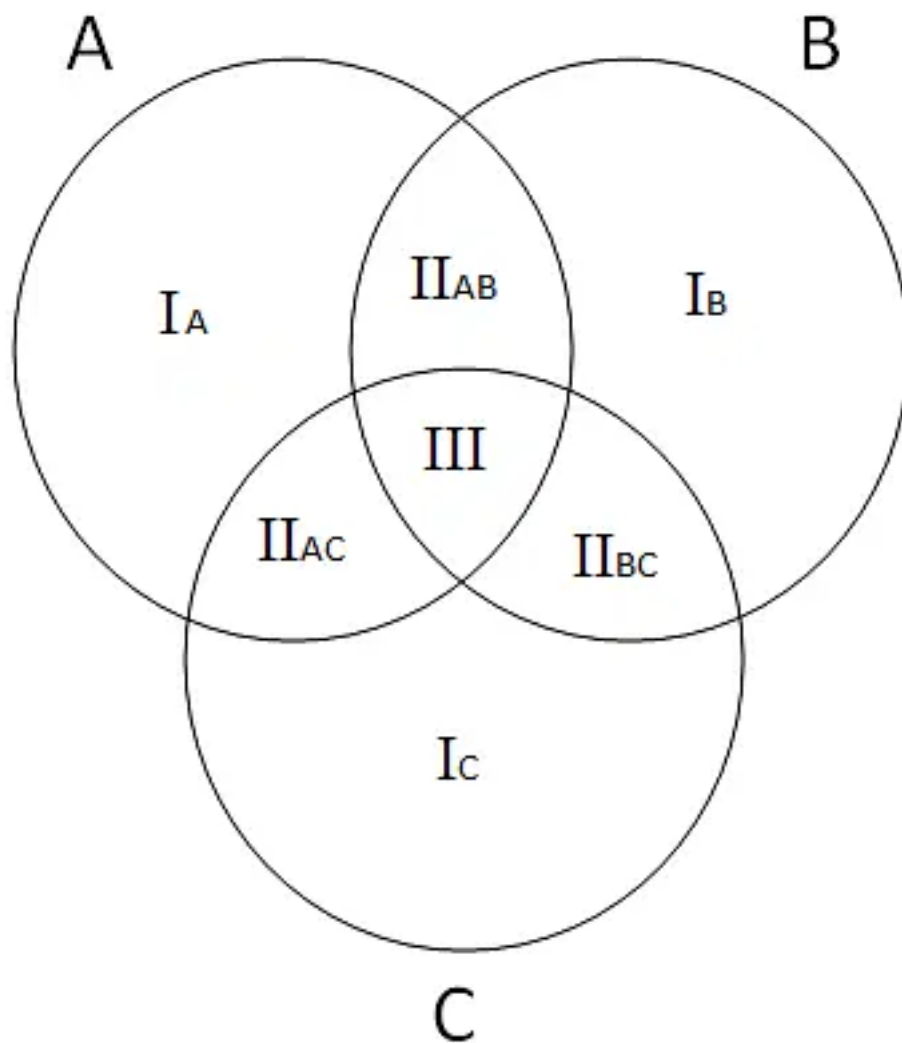
**Approach Solution 2:**

This problem can be solved through Sets and Venn diagrams.

Although most answers below are accurate, they make use of the Venn diagram with linear equations approach, and I would like to solve it with a more simpler method.

In a Three-Set problem, with say, Set A, B and C –





Let  $I$ ,  $II$  and  $III$  be the total number of persons who received exactly one, two and three medals each respectively.

Let  $S$  be the total number of medals given in the competition.  
Clearly, total number of participants =  $I + II + III$  = let's name it  $X$

So needless to say, overall,  $S$  number of medals were distributed among  $X$  number of individuals where every person can only get one, two or three medals each, and hence  $S > X$

Now for ANY Three-Set Venn diagram we can say that –  
 $S - X = (2 \cdot III) + II$

The above statement denotes the total number of participants who received more than one medal each, meaning who got two or three medals each, given

by  $S - X$

In the given problem statement,  $III = 4$ ,  $S = 36 + 12 + 18 = 66$  and  $X = 45$  and we need to find  $II$

Using the relation we can find  $II = 66 - 45 - 8 = 13$

Therefore, 13 participants received exactly two medals.

### Approach Solution 3:

Let  $A$  = set of persons who got medals in dance.

$B$  = set of persons who got medals in dramatics.

$C$  = set of persons who got medals in music.

**Given,**

$$n(A) = 36$$

$$n(B) = 12$$

$$n(C) = 18$$

$$n(A \cup B \cup C) = 45$$

$$n(A \cap B \cap C) = 4$$

We know that number of elements belonging to exactly two of the three sets  $A, B, C$

$$= n(A \cap B) + n(B \cap C) + n(A \cap C) - 3n(A \cap B \cap C)$$

$$= n(A \cap B) + n(B \cap C) + n(A \cap C) - 3 \times 4 \dots\dots(i)$$

$$n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C)$$

$$\text{Therefore, } n(A \cap B) + n(B \cap C) + n(A \cap C) = n(A) + n(B) + n(C) + n(A \cap B \cap C) - n(A \cup B \cup C)$$

From (i) required number

$$= n(A) + n(B) + n(C) + n(A \cap B \cap C) - n(A \cup B \cup C) - 12$$

$$= 36 + 12 + 18 + 4 - 45 - 12$$

$$= 70 - 57$$

$$= 13$$

## 2. Which of the following is an equivalence relation?

a) The relation  $R$  on  $Z$  defined by  $aRb$  if  $a^2 - b^2 \leq 7$ .

b) The relation  $R$  on  $Z$  defined by  $aRb$  if  $2a + 5b \equiv 0 \pmod{7}$ .

c) The relation  $R$  on  $Z$  defined by  $aRb$  if  $a + b \equiv 0 \pmod{5}$ .

d) The relation  $R$  on  $Z$  defined by  $aRb$  if  $a^2 + b^2 = 0$ .

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# Data Analysis using Excel

## 1.Explain briefly the different types of data analysis.

### Types of Data Analysis

1. **Descriptive analysis – what happened by summarizing past data, usually in the form of dashboards.**
2. **Exploratory analysis – How to explore data relationships**
3. **Diagnostic analysis- Why it happened?** In this analysis the organizations make use of this type of analytics as it creates more connections between data and identifies patterns of behavior.
4. **Predictive analysis – What will happen or what is likely to happen.** This analytics utilizes previous data to make predictions about future outcomes. It also use predictions to make logic predictions of the outcomes of events. Business applications are,
  - i. Risk Assessment ii. Sales forecasting
  - iii. Using customer segmentation to determine which leads have the best chance of converting
  - iv. Predictive analytics in customer success teams
5. **Prescriptive analysis – How will it happen**

According to the types of Data Analysis the following can be the applications,

- Data Mining
- Business Intelligence
- Statistical Analysis
- Predictive Analytics
- Text Analytics

### Data Mining

Data Mining is the analysis of large quantities of data to extract previously unknown, interesting patterns of data, unusual data and the dependencies. Note that the goal is the extraction of patterns and knowledge from large amounts of data and not the extraction of data itself.

Data mining analysis involves computer science methods at the intersection of the artificial intelligence, machine learning, statistics, and database systems.

The patterns obtained from data mining can be considered as a summary of the input data that can be used in further analysis or to obtain more accurate prediction results by a decision support system.

## Business Intelligence

Business Intelligence techniques and tools are for acquisition and transformation of large amounts of unstructured business data to help identify, develop and create new strategic business opportunities.

The goal of business intelligence is to allow easy interpretation of large volumes of data to identify new opportunities. It helps in implementing an effective strategy based on insights that can provide businesses with a competitive market-advantage and long-term stability.

## Statistical Analysis

Statistics is the study of collection, analysis, interpretation, presentation, and organization of data.

In data analysis, two main statistical methodologies are used –

- Descriptive statistics – In descriptive statistics, data from the entire population or a sample is summarized with numerical descriptors such as –

- Mean, Standard Deviation for Continuous Data

- Frequency, Percentage for Categorical Data

- Inferential statistics – It uses patterns in the sample data to draw inferences about the

represented population or accounting for randomness. These inferences can be –

- answering yes/no questions about the data (hypothesis testing)

- estimating numerical characteristics of the data (estimation)

- describing associations within the data (correlation)

- modeling relationships within the data (E.g. regression analysis) Predictive Analytics

Predictive Analytics use statistical models to analyze current and historical data for forecasting (predictions) about future or otherwise unknown events. In business, predictive analytics is used to identify risks and opportunities that aid in decision-making.

## Text Analytics

Text Analytics, also referred to as Text Mining or as Text Data Mining is the process of deriving high-quality information from text. Text mining usually involves the process of structuring the input text, deriving patterns within the structured data using means such as statistical pattern learning, and finally evaluation and interpretation of the output.

**2.How the data analysis process will be performed in large datasets? With an example explain in brief.**

**3.List the steps how to create range names.**

1. Select the range you want to name, including the row or column labels.
2. Click **Formulas > Create from Selection**.
3. In the **Create Names from Selection** dialog box, select the checkbox (es) depending on the location of your row/column header. If you have only a header row at the top of the table, then just select **Top row**. Suppose you have a top row and left column header, then select **Top row** and **Left column** options, and so on.
4. Click **OK**.