10.0 Integrated Reasoning
The Integrated Reasoning section measures your ability to understand and evaluate multiple sources and types of information—graphic, numeric, and verbal—as they relate to one another; use quantitative and verbal reasoning to solve complex problems; and solve multiple problems in relation to one another. This section includes text passages, tables, graphs, and other visual information from a variety of content areas; however, the materials and questions do not assume detailed knowledge of the topics discussed. The Integrated Reasoning section differs from the Quantitative and Verbal sections in two important ways: 1) It involves both mathematical and verbal reasoning, either separately or in combination, and 2) questions are answered using four different response formats rather than only traditional multiple-choice.

Four types of questions are used in the Integrated Reasoning section:

- Multi-Source Reasoning
- Table Analysis
- Graphics Interpretation
- Two-Part Analysis

Use your unique access code found in the back of this book to access 50 Integrated Reasoning practice questions with full answer explanations.

**10.1 What Is Measured**

Integrated Reasoning questions assess your ability to apply, evaluate, infer, recognize, and strategize.

**Apply concepts presented in the information**

*Apply* questions measure your ability to understand principles, rules, or other concepts in the information provided and apply them to a new context or predict consequences that would follow if new information were incorporated into the context provided. You may be asked to

- decide whether new examples would comply with or violate rules established in the information provided
- determine how a trend present in the information provided would be affected by new scenarios
- use principles established in the information provided to draw conclusions about new data

**Evaluate information qualitatively**

*Evaluate* questions measure your ability to make judgments about the quality of information. For example, you may be asked to

- decide whether a claim made in one source is supported or undermined by information provided in another source
- determine whether the information provided is sufficient to justify a course of action
• judge the strength of evidence offered in support of an argument or plan
• identify errors or gaps in the information provided

**Draw inferences from the information**

*Infer* questions ask about information or ideas that are not explicitly stated in the materials provided but can be derived from them. For example, you may be asked to

• calculate the probability of an outcome on the basis of given data
• indicate whether statements follow logically from the information provided
• determine the meaning of a term within the context in which it is used
• identify the rate of change in data gathered over time

**Recognize parts or relationships in the information**

*Recognize* questions measure your ability to identify information that is directly presented in the materials provided, including specific facts or details and relationships between pieces of information. For example, you may be asked to

• identify areas of agreement and disagreement between sources of information
• determine the strength of correlation between two variables
• indicate which element in a table has a given rank in a combination of categories
• identify facts provided as evidence in an argument

**Make strategic decisions or judgments based on the information**

*Strategize* questions ask about the means of achieving a goal within the context of particular needs or constraints. For example, you may be asked to

• choose a plan of action that minimizes risks and maximizes value
• identify tradeoffs required to reach a goal
• specify the mathematical formula that will yield a desired result
• determine which means of completing a task are consistent within given constraints

### 10.2 The Question Types

The four Integrated Reasoning question types are described in detail below.

**Multi-Source Reasoning**

Multi-Source Reasoning questions begin with two or three sources of information, each labeled with a tab, which appear on the left side of a split computer screen. One or more of the sources will contain a written passage. The other sources may be tables, graphs, diagrams, or other types of visual information. Only one source of information will be displayed at a time. To view a different source, select its tab from those that appear above the source currently displayed.
The sources of information are accompanied by questions that will ask you to synthesize, compare, interpret, or apply the information presented. As each question associated with the sources appears in turn on the right side of the screen, the initial source will appear again on the left side. You can click on the tabs to view any of the sources as many times as needed. However, you will see only one question at a time and cannot go back to earlier questions.

There are two question formats for Multi-Source Reasoning:

- Multiple-choice questions
- Multiple–dichotomous choice questions

For multiple-choice questions, select the best of the five answer choices given. Read each question and series of answer choices carefully. Make sure you understand exactly what the question is asking and what the answer choices are.

Multiple–dichotomous choice questions provide three phrases, statements, numerical values, or algebraic expressions that require an indication as to whether each meets a certain condition. For example, you may be asked whether

- each statement is true, according to the sources
- each statement or numerical value is consistent with the sources
- each statement or algebraic expression would solve a problem described in the sources
- the value of each algebraic expression can be determined on the basis of the sources

In answering both kinds of Multi-Source Reasoning questions, be aware of the information from each source provided and try to determine the process that works best for you. One strategy is to examine the sources carefully and thoroughly, another is to skim the sources the first time through, or to read the first question before examining the sources. Read each question carefully and make sure you understand exactly what the question is asking. If necessary, go back to the sources to review relevant information.

You will have 30 minutes to complete the Integrated Reasoning section, or an average of 2 minutes and 30 seconds to answer each multiple-choice or multiple–dichotomous choice question. Keep in mind, however, that you will need time to examine the source materials that accompany the questions—and that time must be factored into the per-question average.

**Table Analysis**

Table Analysis questions present a table similar to a spreadsheet. It can be sorted on any of its columns by selecting the column’s title from a drop-down menu. There may be a brief text explaining the table or providing additional information. The question then presents three phrases, statements, numerical values, or algebraic expressions, and you must indicate for each one whether or not it meets a certain condition. For example, you may be asked whether

- each statement is true (yes or no), according to the information in the table
- each statement or numerical value is consistent or inconsistent with the information in the table
- each statement or numerical value can or cannot be determined on the basis of the information in the table
Read the question thoroughly to make sure you understand what is being asked. Then consider each phrase, statement, numerical value, or algebraic expression to learn what information in the table you need to make your decision. In analyzing the table, you may need to, for example,

- determine statistics such as mean, median, mode, or range
- determine ratios, proportions, or probabilities
- identify correlations between two sets of data
- compare an entry’s rank in two or more of the table’s categories

You will have 30 minutes to complete the Integrated Reasoning section, or an average of 2 minutes and 30 seconds to answer each question. Keep in mind, however, that each Table Analysis question has three parts that all need to be answered in the time allowed.

**Graphics Interpretation**

Graphics Interpretation questions present a graph, diagram, or other visual representation of information, followed by one or more statements containing a total of two blanks. The blanks should be filled in with the option from each drop-down menu in order to create the most accurate statement or statements on the basis of the information provided.

Many of the graphs included in Graphics Interpretation questions involve two variables plotted on vertical and horizontal axes. Graphs of this type include **bar graphs**, **line graphs**, **scatterplots**, and **bubble graphs**. To read these graphs, determine what information is represented on each axis. Do this by carefully examining any information that may be provided, including labels on the axes, scales on the axes, the title of the graph, and accompanying text. To find the value of a data point on the graph, determine the corresponding values on the horizontal and vertical axes.

In the simple **bar graph** below, the first bar indicates that 7 units were sold on Monday of Week 1.
The same information is presented below as a line graph. Each point indicates the total number of units sold on a given day. The slope of the line connecting the points shows how the sales changed over time; a positive slope indicates that sales increased from the previous day, and a negative slope indicates that sales decreased.

![Units Sold in Week 1](image)

A third variable can be indicated with an additional vertical axis. In the following graph, the bars indicate the number of units sold on each day, which corresponds to the scale on the left axis. The line graph shows what percent of the total units were sold on each day. The scale for the percentages is shown on the right axis.

![Units Sold in Week 1](image)

In a scatterplot, each dot is a single data point. In the scatterplot at the top of the next page, each dot represents a type of computer product offered for sale. A dot’s position relative to the vertical axis indicates the product’s price, and its position relative to the horizontal axis indicates its weight. Thus, the product that weighs 1.0 kg costs approximately 32,000 rupees.
Some scatterplots include a trend line—usually a least squares regression line—that shows the trend of the data. A trend line with positive slope indicates a positive correlation between the two variables, and a trend line with negative slope indicates a negative correlation. Thus, in the scatterplot below, the trend line indicates a negative correlation between price and weight among the products represented on the graph. The closer the data points are to a trend line, the more strongly the data are correlated.

In a bubble graph, each data point is represented by a circle. The center of the circle indicates the values on the horizontal and vertical axes, as in a scatterplot. The relative size of a circle introduces a third variable, number sold. In the bubble graph below, the relative size of the circles indicates how many of the products were sold. Thus, the number of the lightest product sold was smaller than that of any other product shown, and the number of the heaviest product sold was greater than that of any other product shown.
Other common kinds of graphics do not use vertical and horizontal axes. These include pie charts, flow charts, and organization charts.

A pie chart uses a circle divided into sectors to show what percent of the whole is represented by each component part. The circle represents the whole, and the relative size of each sector indicates its percent of the whole. Since the whole is 100%, the sum of the percentages of all the sectors is 100 (plus or minus a bit to account for rounding). Below is a pie chart created from the data used in the bar graph and line graph shown earlier. In this example, labels indicating the exact percents are not supplied, but it is still possible to gauge the size of the sectors relative to one another: the smallest percent of sales was on Thursday, and the largest was on Tuesday. In addition, the two radii that mark the boundaries of the Tuesday sector form an obtuse angle, which indicates that the sector is greater than one-fourth of the circle. Thus, Tuesday’s sales comprised more than 25% of total sales.

![Week 1 Sales by Day](image)

A flow chart is a diagram that shows the steps in a process. Often, the steps are represented by symbols, which are connected by arrows showing the flow of the process. Flow charts generally progress from top to bottom or from left to right. In the simple flow chart below, rectangles indicate steps to be completed. The diamond shape indicates a decision point: if the consultant is new, the process continues to the next step, Append tax forms. If the consultant is not new, that step is bypassed and the contract is mailed.

![Flow Chart](image)

An organization chart represents the structure of an organization. Often, hierarchical relationships are shown with vertical lines and lateral relationships are shown with horizontal lines. In the organization chart at the top of the next page, each rectangle represents an employee or group of employees at a small restaurant. All the employees in the second row of rectangles report to the restaurant manager. In the third row, the food preparation staff and cleaning staff both report to the kitchen manager, and the serving staff report to the serving staff manager.
For all kinds of Graphics Interpretation questions, be sure to read the question carefully to be sure you understand what is being asked. Then read the statement or statements to determine what information you need to learn from the graphic. Finally, choose the answer from each drop-down menu that best completes the statement or statements.

You will have 30 minutes to complete the Integrated Reasoning section, or an average of 2 minutes and 30 seconds to answer each question. Keep in mind, however, that each Graphics Interpretation question has two blanks to be filled. Both blanks must be filled using the drop-down menus in the time allowed.

Two-Part Analysis

Two-Part Analysis questions present a brief written scenario or problem and ask you to make two choices related to that information. These choices are connected to each other in some way; for example, they might be two steps involved in solving a problem or two components required to successfully complete a task. In Two-Part Analysis questions you may be asked to, for example,

- calculate the proportions of two different components in a mixture
- determine something that would be lost and something that would be gained in a trade-off
- find the maximum number of two different products that could be purchased within a certain budget
- identify a first action and a second action that together would bring a company into compliance with a new rule

The possible answers and your choices will be given in a table format. The possible answers are listed in the third column, on the right side of the table. Your choices for the first part and second part of the question will be recorded in the first and second columns of the table, respectively. Remember that you need to make a choice for each of the first two vertical columns of the table—not one for each horizontal row.

In answering Two-Part Analysis questions, read the scenario or problem carefully. Be sure you understand what the question is asking. Read all the answer options to be sure that your choices are the best of all those available, and be careful to mark your choices in the proper columns.

You will have 30 minutes to complete the Integrated Reasoning section, or an average of 2 minutes and 30 seconds to answer each question. Keep in mind, however, that you must make the two choices for each Two-Part Analysis question within that average amount of time.
10.3 Test-Taking Strategies

Multi-Source Reasoning Questions

1. **Do not expect to be completely familiar with the material presented in Multi-Source Reasoning sets.**
   You may find some graphs, charts, tables, or verbal passages easier to understand than others. All of the material is designed to be challenging, but if you have familiarity with the subject matter, do not let this knowledge influence your answer choices. Answer all questions on the basis of what is given by the various sources of information.

2. **Analyze each source of information carefully, because the questions require a detailed understanding of the information presented.**
   Text passages often build ideas sequentially, so note as you read how each statement adds to the main idea of the passage as a whole. Some of the passages used with Multi-Source Reasoning items will be purely descriptive while others may contain strong opinions.

   Given that the graphic elements of Multi-Source Reasoning items come in various forms—such as tables, graphs, diagrams, or charts—briefly familiarize yourself with the information presented. If scales are provided, note the marked values and labels. Also note the major graphical elements of the information presented.

3. **Read the questions carefully, making sure you understand what is being asked.**
   Some of the questions will require you to recognize discrepancies among different sources of information, others will ask you to draw inferences using information from different sources, while others may require you to determine which one of the information sources is relevant. You can refer back to any of the sources at any time while you are answering the Multi-Source Reasoning questions.

4. **Select the answer choices that have the most support based on the information provided.**
   You may find it helpful to briefly familiarize yourself with the overall information given in the sources and then to focus more closely on the specific information needed to answer the question.

Table Analysis Questions

1. **Examine the table and accompanying text to determine the type of information provided.**
   Orienting yourself to the data at the outset will make it easier to locate the information necessary for completing the question.

2. **Read the question carefully.**
   The question will contain the condition that each phrase, statement, numerical value, or algebraic expression does or does not meet (for example, *is or is not consistent with the information provided*, or *can or cannot be inferred from the information provided*). Clearly understanding the condition will help you to clarify the choice to be made in each case.
3. **Read each phrase, statement, numerical value, or algebraic expression carefully to determine the data analysis required.**
   Often, the phrase, statement, numerical value, or algebraic expression indicates a relationship that can be clarified by sorting the table on one or more of its columns. Careful reading can help you work more efficiently by using table sorts strategically to identify data of interest.

4. **Judge each phrase, statement, numerical value, or algebraic expression carefully on the basis of the condition specified.**
   For each phrase, statement, numerical value, or algebraic expression, the two answer choices (such as *yes* or *no*, *true* or *false*, *consistent* or *inconsistent*) are mutually exclusive. Thus, you can focus your attention on whether or not the given condition has been met.

**Graphics Interpretation Questions**

1. **Read the graphic carefully.**
   Quickly familiarize yourself with the information presented in the graphic. If scales are provided (on the axes, for example), make note of the marked values. If there are labels, be sure to note any discrepancy between the units in the graph and the units discussed in the text.

2. **Read any accompanying text carefully.**
   If there is accompanying text, it may clarify the meaning of the graphic. Text might also present information that is not contained in the graphic but that is needed for answering the question.

3. **Scan the choices in the drop-down menu before you do any work.**
   Some statements could be completed equally well with very general responses as with very specific responses. Checking the menu options gives you additional information about the task involved.

4. **Choose the option that best completes the statement.**
   More than one option in a drop-down menu may seem plausible to you; in each menu choose the one that makes the statement most accurate or logical. If the drop-down menu is preceded by a phrase such as “nearest to” or “closest to,” choose the option that is closest to the exact answer you compute. You may find that reading the entire statement again with your answer choice in place is a helpful way to check your work.

**Two-Part Analysis Questions**

1. **Read the information given carefully.**
   All of the material presented is designed to be challenging, but if you have familiarity with the subject matter, do not let this knowledge influence your answer choices. Answer the question only on the basis of what is given.

2. **Determine exactly what the question is asking.**
   Do not assume that the headings in the two response columns are complete descriptions of the tasks to be performed. Pay close attention to how the question describes the tasks. Often the headings in the two response columns are shorthand references to the tasks and may lack some details that could help you to better understand what you are supposed to do.

3. **Remember that only two choices are to be made.**
   Select one answer in each of the first two columns of the response table. You do not need to make a choice for each *row* of the table. The third column contains possible answers for the two choices to be made.
4. Do not choose an answer before reviewing all of the available answer choices.
   Do not assume that you have chosen the best answers in the two columns without reading all of the available options.

5. Determine whether tasks are dependent or independent.
   Some Two-Part Analysis questions pose two independent tasks that can be carried out individually, and others pose one task with two dependent parts, each of which must be carried out correctly to create a single correct response. With questions of the dependent type, the question asked cannot be answered coherently without making both choices, so be sure to examine your answers in relation to one another.

6. Keep in mind that one answer choice can be the correct response for both columns.
   If the tasks associated with the two response columns are not mutually exclusive, it is possible that one answer choice satisfies the conditions associated with both response columns.

10.4 The Directions

These directions are similar to the directions given for the four question types in the Integrated Reasoning section of the GMAT exam. Understanding them clearly before taking the test will save you time during the test.

- **Multi-Source Reasoning.** Click on the tabs and examine all the relevant information from text, charts, and tables to answer the questions.

- **Table Analysis.** Analyze the table, sorting on columns as needed, to determine whether each of the options presented meets the given criterion or not.

- **Graphics Interpretation.** Interpret the graph or graphical image and select from each drop-down menu the option that creates the most accurate statement based on the information provided.

- **Two-Part Analysis.** Read the information provided, review the options presented in the table, and indicate which option meets the criterion presented in the first column and which option meets the criterion presented in the second column. Make only two selections, one in each column.

For the Integrated Reasoning section, an onscreen calculator is available. To access the calculator, click “Calculator” on the blue bar at the upper left of the screen. Note that the calculator can be dragged to any part of the screen.

You can view explanations of the format of the specific Integrated Reasoning questions anytime while working through this section by clicking on HELP.