McKinsey Problem Solving Game (Solve) Guide

What is McKinsey Solve Game?

McKinsey Solve, previously known as the Problem-Solving Game, Digital Assessment, or informally referred to as the "Imbellus Game," is a gamified assessment developed by Imbellus for McKinsey & Company. (Click to see all screening tests by McKinsey, BCG and Bain!)

Within McKinsey's hiring process, the Solve Game is positioned between the application and the case interviews. Its primary objective remains consistent with the traditional Problem-Solving Test: to efficiently identify suitable candidates and streamline the resource-intensive case interview phase. This approach optimizes both time and resources in the recruitment process.

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What's included:
- Plant Defense Simulation
- Ecosystem Building Simulation
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What does McKinsey Solve Game look like?

The McKinsey Solve Test, also known as the Digital Assessment, is subject to a total time of approximately 71 minutes. Candidates are given 2 out of 6 possible mini-games. The assessment evaluates both the final results and the solving process. If a candidate demonstrates skills and tendencies similar to those of a McKinsey consultant, they may receive an invitation for an interview.

The McKinsey Solve Test includes 6 confirmed mini-games: Ecosystem Building, Red Rock Study, Plant Defense, Disaster Management, Disease Management, and Migration Management. It's worth noting that almost all candidates, nearly 100%, will start with the Ecosystem Building Game as their first challenge. Subsequently, they will encounter either the Red Rock Study (in approximately 80% of cases) or the Plant Defense mini-game (in about 20% of cases) as their second task. There is a strong indication that McKinsey may be phasing out the Plant Defense mini-game in favor of the Redrock Study.

The time allocated for tutorials is not factored into the overall time limit. It's advisable for candidates to maximize this tutorial period by attempting to anticipate the mini-game's objectives and crafting a general approach before initiating the mini-game itself. This time can also be utilized for essential preparations, such as having pen, paper, and excel sheet readily available.

What traits is McKinsey assessing in McKinsey Solve Game?

The McKinsey Solve game assesses five critical cognitive abilities:

1. **Critical Thinking**: Your ability to thoroughly analyze information.
2. **Decision-Making**: Your capacity to take appropriate actions based on your analysis.
3. **Metacognition**: How effectively you implement strategies to achieve the game's objective.
4. **Situational Awareness**: Your capacity to maintain focus on the environment and anticipate future changes.
5. **Systems Thinking**: How well you comprehend the cause-and-effect relationships among the elements within the system.

What does McKinsey Solve Game include?

Game 1: Ecosystem Building
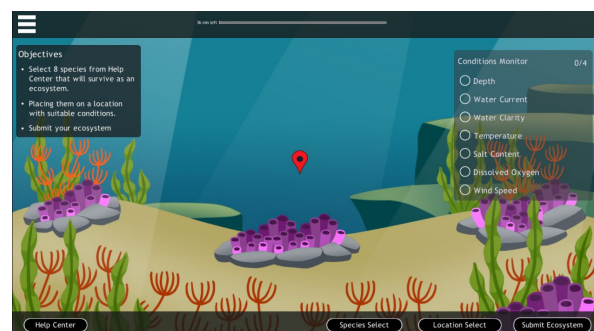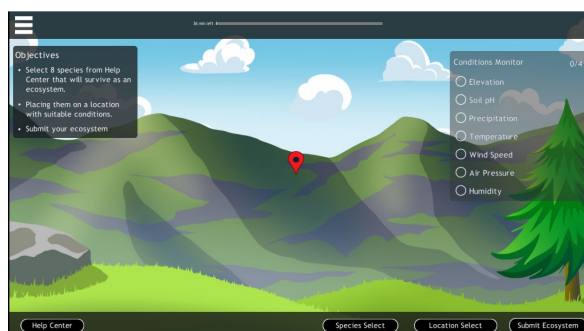
What is Ecosystem Building Game?
This is a 35-minute time limit game. You will be placed randomly into either a mountain or a reef scenario. (Click here to sign up and play the game for FREE!)

Objective:

Your goal is to construct an ecosystem comprising 8 species from a selection of 39. There are three primary objectives to accomplish:

1. The ecosystem should establish a continuous food chain.
2. Ensure a calorie surplus for each predator-prey pair.
3. Align the ecosystem with the terrain specifications of your chosen location

What does Ecosystem Building Game include?

1. Terrain Specifications

Each location within the ecosystem is characterized by seven to eight terrain specifications, which can be selected by pinpointing a location.

In the Mountain scenario, there are 8 terrain specifications: Elevation, Soil pH, Precipitation, Temperature, Wind Speed, Air Pressure, Humidity, and Cloud Height.

In the Reef scenario, you'll find 7 terrain specifications: Depth, Water Current, Water Clarity, Temperature, Salt Content, Dissolved Oxygen, and Wind Speed.

Each species has its own set of required terrain specifications, typically ranging from two to four. Failure to meet these terrain requirements will result in the species dying out. These requirements often come in ranges

2. Food Chain Continuity

In the game, you will be given a total of 39 species, categorized into two main types: producers and consumers.

- **Producers**: These include plants and corals. Their sole source of food is typically sunlight or other natural elements. Consequently, they neither have prey nor consume calories.
- **Consumers:** This category comprises animals, which can further be classified as Herbivores (plant-eating animals), Carnivores (animal-eating animals), or Omnivores (consumers of both plants and animals). Additionally, some consumers hold the status of "apex animals," indicating that they do not have natural predators and are not consumed by any other species within the ecosystem.

3. Calories Balance

Each species in the ecosystem is characterized by two essential figures: **Calories Needed** and **Calories Provided**.

A species can thrive under the following conditions:

1. **Sufficient Energy for Survival**: The species' calorie needed is lower than the total calorie provided by the ecosystem.
2. **Avoiding Extinction by Predation**: The species' calorie provided surpasses the combined calorie consumption by the species that prey upon it.

In essence, for a species to thrive, it must have enough energy to sustain itself and should not be consumed to the point of extinction by its predators.

Main Challenges of Ecosystem Building Game:
1. **Information Overload**: Handling a significant amount of data that requires absorption, calculation, analysis, and prioritization. This encompasses the specifications of 39 species, terrain characteristics of each location, and dietary rules.
2. **Distracting and Irrelevant Information**: Certain details provided may not be relevant and are included to divert your attention or lead you into making assumptions. It's essential to refrain from making any guesses or relying on any prior knowledge related to the environment, ecology, or zoology

How to tackle Ecosystem Building Game:
Here's a breakdown of how to approach the game, following a 3-step process:

Step 1: Location Selection
1. Use a spreadsheet or scratch paper to record the terrain specifications and calorie provided data for the mini-game's producers.
2. Examine the data to identify which terrain specifications remain consistent across all species and which ones change. Focus only on the changing terrain specifications (usually 2 of them), while the others are intended to divert your attention.
3. Calculate the total calories provided for the producers in each group of terrain specifications. The group with the highest calorie provision is likely the easiest to construct the food chain.

Step 2: Food Chain Building
1. Examine the data to list consumers with compatible terrain requirements in your spreadsheet.
2. Select the apex predator with the lowest calorie requirement as the starting point for the food chain.
3. Construct the food chain starting from the apex predators and work your way down, listing the food sources for each top-level predator. Keep progressing in this manner until you reach the lowest tier, which includes corals and plants. Ideally, the food chain should encompass 3-4 levels and encompass 8 species.
4. Alternatively, you can build the food chain from the bottom up by examining the "Eaten By" specifications of each species, working your way up to the top predators.
5. Throughout the process, prioritize species with high calorie provision and low-calorie requirement. This should increase the chances of a calorie surplus in the food chain and allow room for additional species if the initial chain falls short of the required 8 species.
6. If your food chain doesn't reach the necessary 8 species, work from the bottom up to identify gaps of unused surplus calories and fill these gaps with predators or plant-eating animals.

Step 3: Sanity Check
1. Ensure that each species in your food chain aligns with the chosen location.

2. Verify that the food chain is continuous, meaning that the listed food sources match the descriptions of each species.
3. Confirm that each species in the food chain has an adequate calorie supply and isn't consumed to extinction based on the provided eating rules.
4. If any of the three checks are not met, make adjustments to the food chain.

Game 2: Red Rock Study

This is a game with a 35-minute time limit, during which you will complete the Red Rock Study, consisting of both Part 1 and Part 2. ([Click here to sign up and play the game for FREE!](#))

The McKinsey Red Rock Study divides the tasks into 2 parts:
- **Part 1: Study**
- **Part 2: Cases**

In Part 1, you'll get one study with a main goal and some data to support it. This part has three steps:
- Phase 1: Investigation
- Phase 2: Analysis
- Phase 3: Report

In Part 2, you'll receive 10 short cases that are related to the same topic but not directly connected to the Part 1 Study. Each case will come with two different types of questions:
1. Multiple choice questions
2. Numerical answer questions

You need to finish both tasks (Part 1 & Part 2) within a total time limit of 35 minutes. Although there are no specific time constraints for each part, it's advisable to allocate more time to the first part and less to the second part.

Now, let's delve into the specifics of Part 1 and Part 2 of the tasks.

Part 1: Study

Phase 1 – Investigation
Your goal is to read through the case description, recognize the main objective and essential data points, and then gather them in an on-screen Research Journal.

The data and information provided are divided into three sections, with each section containing the necessary information required to complete the study:
1. Objective
2. Exhibits

3. Study Information

How to tackle this phase:
1. Understanding the study
2. Collecting important data points

1. Understanding the study
Your objective here is to identify case's objectives.

Every piece of information displayed on the screen is crucial for comprehending and resolving the case. However, some are more critical than others. Significant data points are highlighted and displayed in boxes on the screen, allowing you to click and drag these boxes to focus on them while working within the case.

The data provided comes in two formats:
1. Text-based data, which is divided into two types:
   - Movable data points: These text-based data points consist of case objectives and calculation instructions. They clarify the case's goal, specify the mathematical formulas to be applied, and outline which numbers need to be gathered. Typically, these are detailed sentences or paragraphs that describe the relationships (such as higher, lower, etc.) between the elements within the case.
   - Non-Movable data points: These text-based data points encompass background information and test instructions. They are not selectable or movable and are intended solely to provide an overview of the case. They do not need to be collected as their purpose is to offer context.

2. Number-based data: These typically consist of movable data points and comprise the majority of the data in the case. They can be found in two locations: within charts, diagrams (such as bar charts, pie charts, tables, etc.), or within the text. It's necessary to gather these numbers into the journal for calculations in the next phase.

2. Collecting important data points
You can drag any movable data point into the Research Journal to collect. In the Research Journal, each collected piece of information will appear as a card, with its own name and description. The data in the Research Journal can then be used in the Calculator or as answers in phase 2.

You have the option to change the labels for all the data yourself. We suggest doing this if the default label doesn't describe the contents well enough. Using the right labels will make your analysis faster because it helps you easily find the important data later on.

After you've collected the data, you can also include your own notes with each piece of information. This can assist you in explaining the information required during the Analysis phase.

Here's a summary of our recommended approach:
1. Determine the objectives of the case.
2. Identify the mathematical formulas needed to address these objectives.
3. Collect in your Research Journal only the essential data points necessary for the calculations during the Analysis phase.

Phase 2 – Analysis
Your objective here is to use the data points gathered during the Investigation phase to answer three quantitative questions using the provided calculator. These answers will be utilized to complete the report in Phase 3.

The three quantitative questions typically consist of 2 to 3 sub-questions, each with an answer input gap that requires a response from the calculator. To address these questions, you need to input the numerical data points you've collected into an on-screen calculator and then transfer the results to the corresponding gaps.

The calculator features a straightforward interface, resembling a digital calculator found on a phone, and includes basic operators such as multiplication (x), addition (+), subtraction (-), and division (÷).

The calculations required for the questions can be categorized into two types:
1. **Basic Operations**: This category includes addition, subtraction, multiplication, and division. While these operations are fundamental, you may need to use them in combination to perform more complex calculations.
2. **Percentages/Ratios/Fractions**: These calculations are used to address questions related to relationships, such as percentage differences, growth rates, and similar concepts.

We advise you to carry out all calculations using the provided calculator since all your actions are documented in a history log. It's safe to assume that the process you follow in arriving at the answers will also impact the final results.

It's crucial to keep in mind that the answers you obtain from these questions are almost always required in the Report phase. Therefore, it's essential to consistently record your answers in the journal.

How to tackle this phase:
1. Carefully read the questions to understand what is being asked.
2. Drag the relevant data points from your Research Journal into the calculator's input screen to perform the necessary calculations to answer the questions.
3. Drag the results and drop them into the empty spaces provided under the questions.
4. Ensure that you collect the answers in your Research Journal for use in the Report Phase.

Phase 3 - Report

Your objective here is to finalize the textual and graphical report. You will have the option to choose one of three types of graphs to include in the report, and these graphs will be based on the results calculated in Phase 2.

The Report phase is the final segment of Part 1 Study and comprises two sections: the **Written Report** and the **Visual Report**.

- **Written Report**: This summary report involves completing the text-format report by filling in the blanks with numbers obtained in the preceding phases, as well as using expressions like "higher," "lower," "equal to," and so on. The blanks in this phase are likely to resemble the answer inputs in the Analysis phase.
- **Visual Report:** This aspect involves data visualization, where you select the appropriate chart type and input the numbers to create a meaningful chart for the report.

Part 2: Cases

Your objective is to answer 10 cases, each featuring a question with instructions, textual information, and data exhibits.

In each of the 10 cases, there is an onscreen tool available to aid you. It's essential to solve the cases in a sequential manner, which means you cannot skip ahead and must address one case before proceeding to the next.

All 10 cases will revolve around the same theme or topic as Part 1 of the study, but they are not interconnected. These cases primarily demand a basic level of quantitative or reasoning skills and do not necessitate advanced mathematical abilities.

However, it can be challenging to solve all 10 questions within a short time limit, so it's important to use your time wisely.

The question types in Part 2 can be grouped into four primary categories:
- **Word problems**: These involve mathematical exercises where candidates must read the text and interpret data to find solutions.
- **Formulae**: These questions are similar to word problems, but candidates only need to identify the formula used for calculation.
- **Verbal Reasoning**: These are single-select multiple-choice questions that ask candidates to determine which statement is true or false.
- **Visualization**: These questions require candidates to choose the appropriate chart type to represent the provided data.

Game 3: Plant Defense

What is Plant Defense Game?

This is a turn-based tower defense game with a time limit of 36 minutes. ([Click here to sign up and play the game for FREE!](#))

The objective of this game is to safeguard a plant positioned at the center of a map and fend off invading pests.

What does Plant Defense Game include?

- The game map is divided into a square grid, ranging in size from 10x10 to 12x12. Right from the beginning of the game, you'll encounter natural obstacles known as Terrain Transformations, which are spread across the game area.
- McKinsey recommends allocating 12 minutes for each map, resulting in a total game time of 36 minutes.
- The game is composed of three maps, and each map has two phases: the planning phase and the fast-forward phase.
- The planning phase is divided into 3 waves each comprising 5 turns. New stacks of Invaders appear at the map's border every 3-5 turns and advance toward the central base to attack. Your task during this phase is to strategize and set up defenses or obstacles to counter them. This phase continues until you've eliminated all the Invaders, survived until the end of the 15th turn, or your base is destroyed.
- The fast-forward phase occurs after the 15th turn of the planning phase. During this phase, all remaining Invaders from the planning phase will persist in their attacks. Your defensive setup remains fixed and cannot be altered. Invaders will continuously spawn and assault your base until it is destroyed.
- After completing the game, the number of turns your base survived becomes the basis for calculating your final score.

Below are the elements and resources in this game:

Base

Your base is represented by the native plant, and your primary objective is to protect it from invaders at all costs. If an invader reaches your base, you will lose the game.

The longer you manage to survive, the higher your score will be.

Invaders

In the game, there are two types of invaders. They both move in the same way on the map, and the only difference between them is the type of terrain that can slow them down.

Once an invader appears on your map, it will select the shortest path to reach your base plant. This path will be indicated by an arrow line.

Terrains

In the game, three types of terrains exist: Forest and Rocky, each of which slows down one type of invader for one turn, and Cliff, which blocks the path of both types of invaders, preventing them from passing through.

Each terrain occupies one grid on the map, and you cannot place terrain on a grid that already has another terrain or a defender on it.

Defenders

In the game, you have access to several defenders that help eliminate invaders by attacking them, though not all of them are available at the same time.

Each defender has two important specifications to consider:
1. **Damage**: Each defender can inflict a specific damage value on an invader's population.
2. **Range**: Each defender can cover a predetermined number of grids on the map. Generally, the higher an invader's damage, the smaller its range is.
3. **Placement**: Some defenders can be placed on the ground, while others can only be placed on trees.

Main Challenges of the Plant Defense Game

In this game, there are 2 main challenges:

- **Limited Information and Unexpected Events**: You must make decisions with incomplete information and adapt to unforeseen circumstances, including new invaders from various directions.
- **Dual Objectives**: You need to simultaneously focus on surviving each turn and maintaining your survival for as long as possible in the game.

Here are few tips to help you overcome these challenges:
- **Ready for Surprises**: Be ready for unforeseen events during the game
- **Strategic Resource Management**: Develop low-risk solutions using your terrains and defenders.
- **Practice**: Get hands-on and practice to better prepare yourself for the real test. (Click here to sign up and enjoy unlimited FREE practices.)

How to tackle Plant Defense Game:
1. **Layered Defense**: Create multiple layers of defenders starting from the base (inside-out approach), using the terrain to your advantage.

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2. **Close Resource Placement**: At first, put your resources near the plant to cover the smaller inner rings of the map better, where paths often come together.
3. **Resource Priority**: Place your strongest resources closest to the plant and gradually expand with weaker, longer-range ones.
4. **Adaptation Plan**: After 15 turns, you can't change or add more resources, so quickly change your strategy based on the invaders' patterns. Experiment during the early turns to figure out what works best for each type of invader.
5. **Smart Resource Use**: Use your resources wisely to create a balanced defense for the plant. Avoid defenses that are too focused in one direction. Remember, the goal in this game is to last as many turns as possible.

The Importance of Practicing McKinsey Solve Games

The McKinsey Solve Game is meant to assess your critical thinking skills. However, if you haven't practiced beforehand, you might not be familiar with these mini-games, including how they work and what you're supposed to do

According to our survey, many candidates were surprised when they took the test, even if they had read guides and watched game walkthroughs. These mini-games have complicated interfaces and various functions. Most candidates, when they first encounter them, need to spend time just figuring out how they work, then what the goals are, and finally start playing the game. Going through all these steps in a very short time can be nearly impossible.

You might have the exact set of thinking skills McKinsey is looking for and still not do well in the mini-game. This could happen because you might not understand how the game works, struggle with time management, or get confused by some aspects of the game.

That's why practicing with the McKinsey Game is so helpful. With our FREE McKinsey PSG Simulation, you can become familiar with these types of mini-games and improve the thinking skills you need to do well.

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