



## The Big Question: How can we effectively develop and use analytical skills?

Can you solve the puzzles below?

### 1) **Mystery Weight Loss:**

A man enters a room and presses a button. Within seconds he instantly loses 20 pounds. How did he lose the weight?

### 2) **Writing a Little a Lot:**

Every two weeks a man sits down and writes two words on 60 sheets of paper. Why does he do this?

### 3) **Life After Free Fall:**

A man residing in a fifty-story building decides to jump out the window. He survives the fall with no injuries. How did he do this?

**Challenge: Explain how you solved one of the puzzles above.**





## Answers

### 1) Mystery Weight Loss:

The room that the man enters is an elevator. When he presses the button, the elevator begins to accelerate downward. This acceleration temporarily changes his apparent weight effectively helping him lose 20 pounds in seconds.

### 2) Writing a Little a Lot:

The man owns a small business with 60 employees. He is signing his name on their payroll checks.

### 3) Life After Free Fall:

The man jumped out of the first-floor window, which was only three feet off of the ground.



# Analysing

There are three ACPs under the analysing heading	Examples of analysing in action
<p><b>Critical or logical thinking:</b> I can reason and look deeper into something.</p>	<ul style="list-style-type: none"> <li>• Let me think again....</li> <li>• I want to take a closer look...</li> <li>• Am I sure this is right?</li> <li>• Why do I think...?</li> <li>• Is there another way to do this?</li> </ul>
<p><b>Precision:</b> I can apply the right process to a particular task.</p>	
<p><b>Complex and multi-step problem solving:</b> I can break down a task and work through it step by step.</p>	



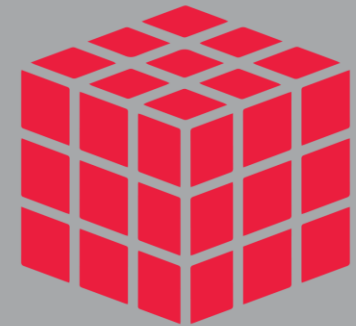
## CRITICAL OR LOGICAL THINKING

The ability to deduct, hypothesise, reason, seek supporting evidence.



## PRECISION

The ability to work effectively within the rules of a domain.



## COMPLEX AND MULTI-STEP PROBLEM SOLVING

The ability to break down a task, decide on a suitable approach, and then act.

## How do I effectively analyse?



1. Decide what you want to achieve before you start.
2. Think about topics or issues in an objective and critical way.
3. Identify the various different arguments there are in relation to a particular issue.
4. Clarify and seek to understand any points that seem confusing.
5. If possible prioritise some points as being of more significance than others and create a rank order.
6. Evaluate any point of view expressed to determine how strong or valid it is.
7. Recognise any weaknesses or negative points that there are in the evidence or argument.
8. Notice what implications there might be behind a statement or argument.
9. When creating your own argument make sure your reasoning is logical and structured.
10. If the way forward is not immediately obvious, break down the task into smaller pieces.
11. Take your time, don't rush and jump to conclusions!



# Critical and Logical Thinking





## Task One: Critical or Logical Thinking

Complete the first task on the handout by selecting the correct word. The words in the bottom row are related in the same way as the words in the top row. For each item, find the word that completes the bottom row of words.



### CRITICAL OR LOGICAL THINKING

The ability to deduct, hypothesise, reason,  
seek supporting evidence.

I will use the evidence in front of me to work out the pattern in the puzzle and be able to explain my choices clearly and logically.

### Example:

apples	fruit	supermarket
novel	book	?

- A. bookstore
- B. magazine
- C. vegetable
- D. shopping

### Answer: Option A

### Explanation:

The relationship above the line is as follows; apples are a kind of fruit; fruit is sold in a supermarket. Below the line, the relationship is: a novel is a kind of book; books are sold in a bookstore.

### Task One - Logical Reasoning

- 1) daisy flower plant  
bungalow house ?
- A. building  
B. cottage  
C. apartment  
D. city
- 2) candle lamp floodlight  
hut cottage ?
- A. tent  
B. city  
C. dwelling  
D. house
- 3) palette easel brush  
textbook lesson plan ?
- A. artist  
B. teacher  
C. report card  
D. paint

### Task Two – Sudoku

Sudoku is a puzzle based on a small number of very simple rules: Once the puzzle is solved, this means that **every row, column, and 3×3 box will contain every number from 1 to 9 exactly once**. In other words, no number can be repeated in any 3×3 box, row, or column.

			2	6		7		1
6	8			7			9	
1	9				4	5		
8	2		1				4	
		4	6		2	9		
	5				3		2	8
		9	3				7	4
	4			5			3	6
7		3		1	8			

### Task Three- The Mystery Hat Puzzle

There is a dark closet with five hats in it. There are **three blue**, and **two red ones**.

Three men go into the closet and each selects a hat at random in the dark and places it on their head. Once outside the closet, each man is unable to tell what colour their own hat is.

The first man looks at the others and says "I cannot tell what colour my hat is!". The second hears this, looks at the other two and declares "I cannot tell what colour my hat is either!".

The third man, who is blind, confidently declares "I know exactly what colour mine is!".

**What colour is the blind man's hat?**

**Explain below:**

How challenging was this task? Explain  
1 = easy and 5=very challenging

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Which skills did you use to solve this puzzle? Explain

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## Task One – Logical Reasoning Answers

1) daisy flower plant  
bungalowhouse ?

- A. building
- B. cottage
- C. apartment
- D. City

**Answer: Option A**

Explanation

Above the line, the relationship is as follows: A daisy is a type of flower, and a flower is a type of plant. Below the line, the relationship is as follows: A bungalow is a type of house, and a house is a type of building.

2) candle lamp floodlight  
hut cottage ?

- A. tent
- B. city
- C. dwelling
- D. house

**Answer: Option D**

Explanation:

Above the line, the relationship shows a progression of sources of light. The relationship below the line shows a progression of types of housing, from smallest to largest. (Choice a) is incorrect because a tent is smaller than a house. Choices b and c are wrong because they are not part of the progression.

3) palette easel brush  
textbook lesson plan ?

- A. artist
- B. teacher
- C. report card
- D. Paint

**Answer: Option C**

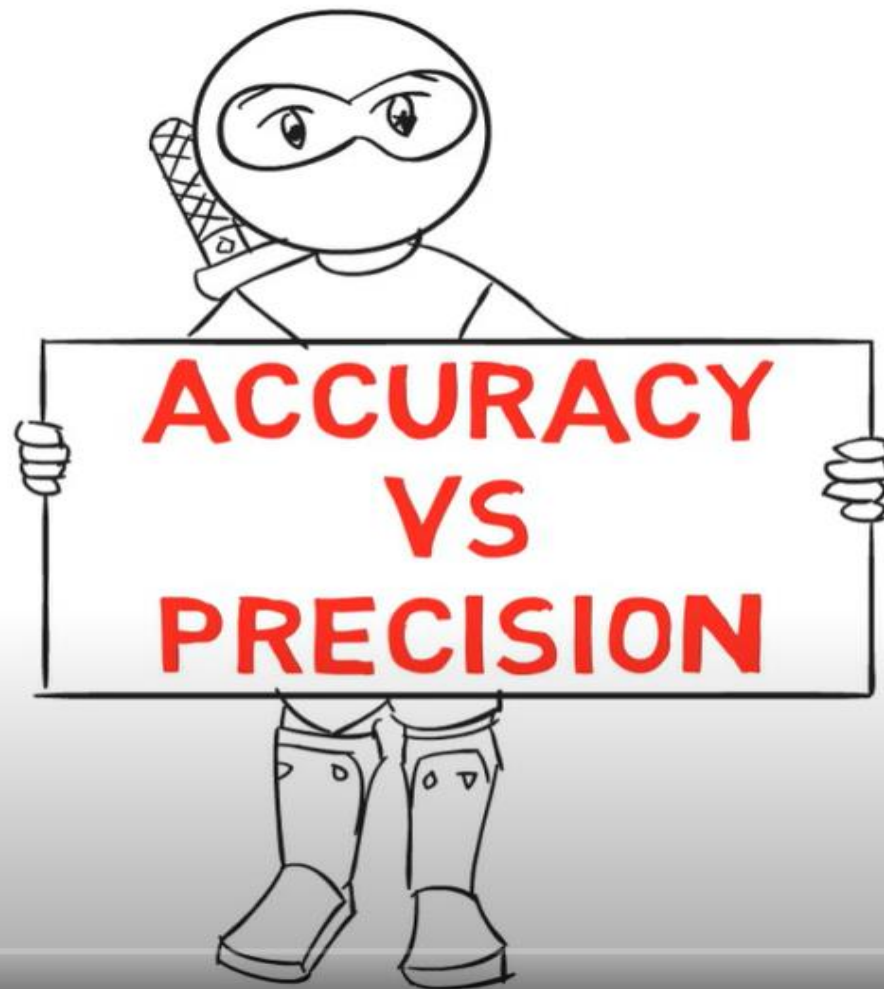
Explanation:

The objects above the line are all things used by an artist. The objects below the line are all things used by a teacher.





# Precision



2MC

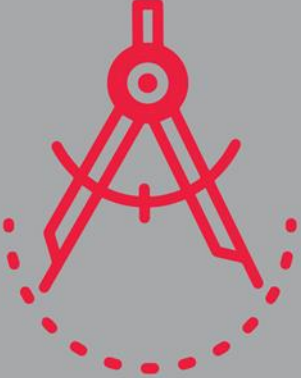
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## Task Two - Precision

Sudoku is a puzzle based on a small number of very simple rules: Once the puzzle is solved, this means that every row, column, and 3x3 box will contain every number from 1 to 9 exactly once. In other words, no number can be repeated in any 3x3 box, row, or column.



**PRECISION**

The ability to work effectively within the rules of a domain.

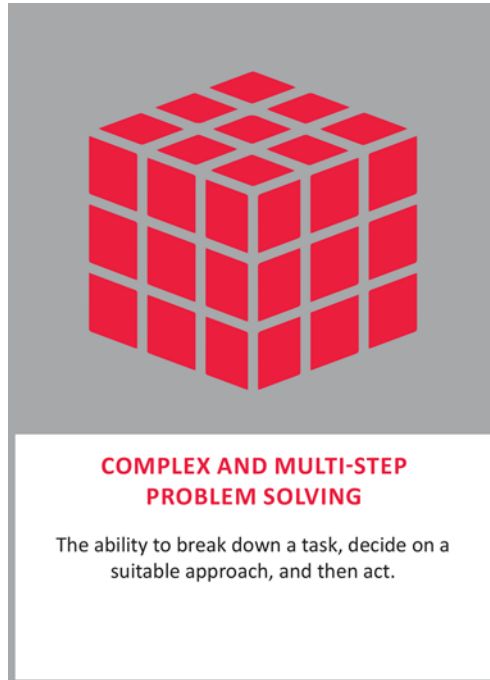
I will use the rules of sudoku in order to work out the missing numbers.

			2	6		7		1
6	8			7			9	
1	9				4	5		
8	2		1				4	
		4	6		2	9		
	5				3		2	8
		9	3				7	4
	4			5			3	6
7		3		1	8			

## Task Two – Sudoku Answers

4	3	5	2	6	9	7	8	1
6	8	2	5	7	1	4	9	3
1	9	7	8	3	4	5	6	2
8	2	6	1	9	5	3	4	7
3	7	4	6	8	2	9	1	5
9	5	1	7	4	3	6	2	8
5	1	9	3	2	6	8	7	4
2	4	8	9	5	7	1	3	6
7	6	3	4	1	8	2	5	9

## Task Three – Complex and Multi-Step Problem Solving



I will be able to solve the problem by breaking down the task and determine how the blind man knows the colour of his hat.

Figure out the puzzle below:

There is a dark closet with five hats in it. There are three blue, and two red ones.

Three men go into the closet and each selects a hat at random in the dark and places it on their head. Once outside the closet, each man is unable to tell what colour their own hat is.

The first man looks at the others and says, "I cannot tell what colour my hat is!". The second hears this, looks at the other two and declares "I cannot tell what colour my hat is either!".

The third man, who is blind, confidently declares "I know exactly what colour mine is!".

What colour is the blind man's hat?

## Task Three – The Mystery Hat Puzzle Answer

We will call the people A, B & C in the order that they speak.

A does not know what colour hat he is wearing. A would only know what colour hat he was wearing if he could see that B & C were both wearing red hats, (as there were only two red hats in the cupboard.) This is not the case so either:-

B & C are both wearing blue hats

OR

one of B & C is wearing red and the other is wearing blue

When B speaks we obviously assume he has thought of all of this. When B looks at C if C were wearing red then he (B) would know that he (B) must be wearing blue as they can't both be wearing red. But this does not happen so C must be wearing blue, causing B not to know if he is wearing red or blue:

The third person (C) must be wearing a **BLUE** hat.

## How do I effectively analyse?



What are the steps of effective analysis?	When or where have I demonstrated this step?
1. Decide what you want to achieve before you start.	
2. Think about topics or issues in an objective and critical way.	
3. Identify the various different arguments there are in relation to a particular issue.	
4. Clarify and seek to understand any points that seem confusing.	
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