

Section 5

INTRODUCTION TO PROBLEM SOLVING

Key Points

- 1 Army Decision Making
- 2 The Seven Problem Solving Steps
- 3 The Leader's Role

A good leader must sometimes be stubborn. Armed with the courage of his convictions, he must often fight to defend them. When he has come to a decision after thorough analysis—and when he is sure he is right—he must stick to it even to the point of stubbornness.

General of the Army Omar Bradley

Introduction

As an Army leader, you will be involved in problem solving daily. Some problems are simple and only require you to use your intuition, experience, and best judgment. At other times, however, you will face problems that are more complex. These require you to follow a systematic approach to define and analyze the problem, develop and analyze possible solutions, choose the best solution, and implement a plan of action. The amount of time and resources you apply to any given problem depends on its complexity, the amount of time available, and your experience as a leader.

In this section, you will learn about the Army problem solving process—a systematic, logical approach to problem solving and decision making designed to help leaders make better decisions. As a junior officer, you may not face a decision on the scale of that facing BG John Buford on 30 June 1863. But using this systematic approach to problem solving can help you make decisions as solid as the one he made that day.

Buford Decides to Stand and Fight

Immediately south of Gettysburg the topography was considerably more striking [Figure 5.1]. As John Ropes put it, “Round Top Hill is quite an anomaly, and looks as if dropped down from New England.” This distinctive and soon-to-be-famous topography actually contained what could be regarded as four anomalies for that region. Jutting up at the northern end of the formation likened in shape to a giant fishhook were rugged Culp’s Hill and Cemetery Hill, three-quarters and one-half mile respectively from Gettysburg. From Evergreen Cemetery atop 100-foot-high Cemetery Hill the terrain sloped southward and downward forming Cemetery Ridge—the mile-and-a-half shank of the fishhook—to reach almost ground level. At this point, rising up abruptly to form the fishhook’s eye, were the other two anomalies, Little Round Top and the taller Round Top. Militarily speaking, in addition to its road network, Gettysburg offered the sort of high ground much sought after by generals.

Just then the one Union general who knew the most about Gettysburg—and also knew the most about the Confederates’ immediate proximity to Gettysburg—was [BG] John Buford. As such, Buford was the only general in either Army to be certain beyond any doubt that the next day, Wednesday, July 1, 1863, was going to bring fighting down upon Gettysburg.

Ever since he and his troopers rode into the town late on the morning of June 30, cavalryman Buford had been carefully reconnoitering the nearby terrain and pondering the reports of his scouts. It became evident that [Confederate LTG] A. P. Hill’s corps was on his immediate front to the west, at Cashtown, and that perhaps [Confederate LTG Richard] Ewell’s corps

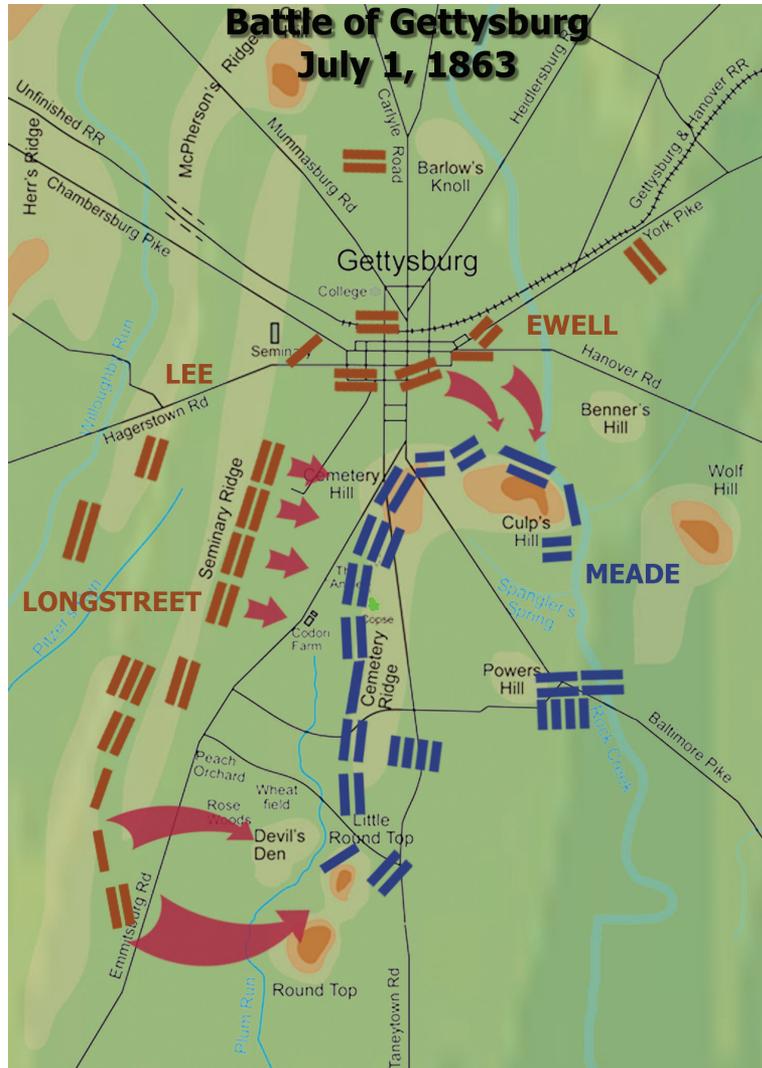


Figure 5.1 Battle of Gettysburg

was not too distant to the north. As yet Buford had precious little guidance from headquarters. At day's end on June 30 his operative orders were still those from [Union] cavalry chief [MG Alfred] Pleasonton, on the 29th, to "cover and protect the front" at Gettysburg.

John Buford was a hard man and a hard fighter, and with Pleasonton's instructions in mind he determined not to give up the town without a fight. At the least, he could promise a vigorous delaying action by his horse Soldiers. At the most, should [MG John] Reynolds or [MG George] Meade choose to support him with infantry, there was the promise of a battle. General Buford's experienced Soldier's eye told him if it came to that, Gettysburg would not be a bad place to make a fight.

Stephen W. Sears, *Gettysburg*

Army Decision Making

A **problem** is an existing condition or situation in which what you want to happen is different from what actually is happening. Problem solving begins with **decision making**—the process through which you select a line of action you believe will most likely lead to successfully completing your mission. Decision making involves sound judgment, logical reasoning, and wise use of the resources available to you.

Most Army leaders use one of two decision making processes. Lieutenants and others at the company level and below use the **troop leading procedures** (TLP), which you will learn about in the next section. Leaders at higher levels use the military decision making process (MDMP), which you will study later in your ROTC career.

The Seven Problem Solving Steps

Both the TLP and the MDMP are based on the Army problem solving process. Army problem solving includes seven steps to help you reach well-reasoned solutions.

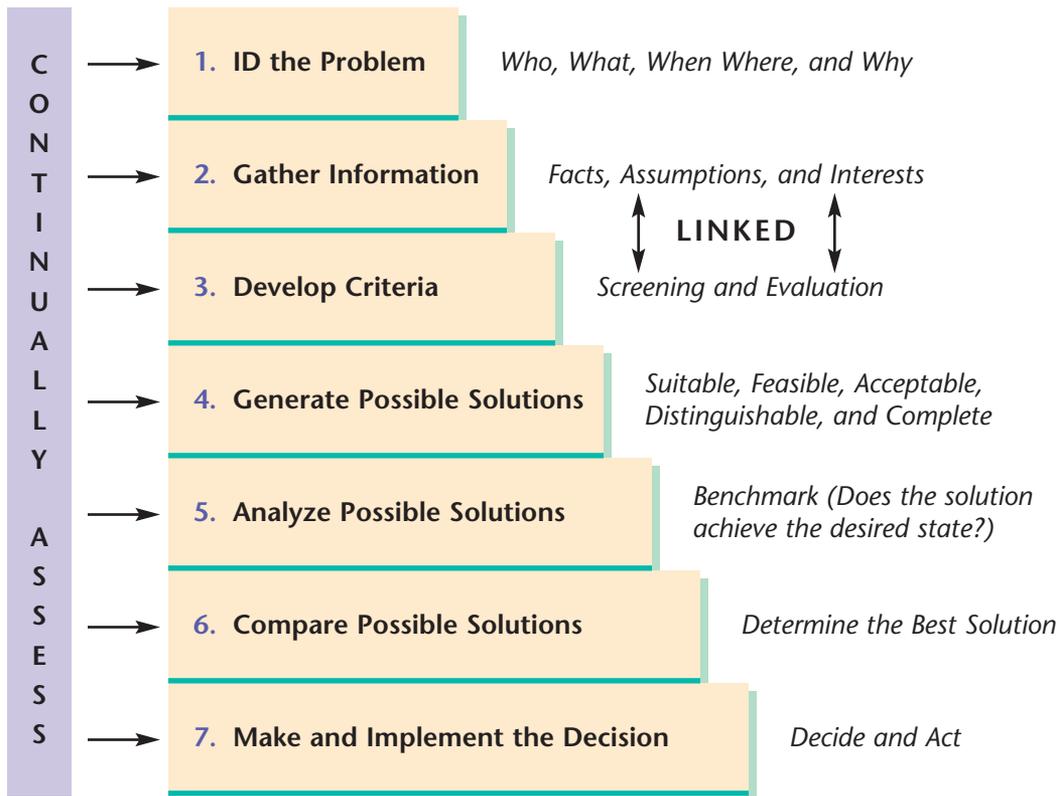


Figure 5.2 Seven-Step Problem Solving Model

problem

an existing condition or situation that presents perplexity or difficulty

decision making

a process through which you select a line of action you believe will most likely lead to the successful completion of your mission

troop leading procedures

a collection of analytical processes, tactics, techniques, and procedures a leader uses to plan and prepare his or her unit to accomplish a tactical mission

The problem solving steps may be stated differently in various Army field manuals. The version printed here is taken from FM 5-0, published in 2005.

Critical Thinking

Why is it important to determine the root cause of a problem before trying to find a solution?

Identify the Problem

The first step in problem solving is recognizing and defining the problem. To determine the problem, you must define both its scope and limitations. It's important that you give enough time to this step before continuing with the problem solving process.

To identify a problem effectively, look beneath the surface to its root cause. You can do this by asking:

1. Whom does the problem affect?
2. What is affected?
3. When did the problem occur?
4. Where is the problem?
5. Why did the problem occur?

Once you identify the root cause, write a concise statement of the problem using an infinitive phrase—a verb (action word) with “to” in front of it. Some examples of problems you might face as a student and Cadet: “To find the best route to the airport.” “To make the dean’s list.” “To improve my physical fitness to meet the Army standard.”

Gather Information

Once you’ve identified the problem, you need to begin gathering the information you need to come up with a solution.

Distinguish Between Facts and Assumptions

You will find that information gathering begins with defining the problem and continues throughout the problem solving process. You should make every effort to gather as much information as possible from primary sources, including interviews and letters of request for specific information, regulations, and policies. From these resources, you will obtain **facts**, which are verifiable pieces of information. You also will gather **assumptions**, information that you accept as true, but cannot verify. If an assumption turns out to be both a) valid, and b) necessary to solving the problem, you can treat it as a fact and use it in your decision making. But you should always continue to try to confirm or deny the validity of your assumptions throughout the problem solving process.

facts

verifiable or objectively real information

assumptions

information you accept as true, but cannot verify

Organizing Information

First, you must confirm the accuracy of your facts. Next, you should share information with others on the problem solving team. You can learn a lot by listening to team members. What you learn may lead to a solution or help you in future decision making.

Good decisions are not made in a vacuum. That's why you must coordinate with other leaders or organizations that the problem or solution may affect. You can sometimes achieve this informally, through a meeting or phone call. If the problem is very complex and affects a lot of people, however, you may want to communicate in a more formal manner.

Develop Criteria

A *criterion* (plural: *criteria*) is a standard, rule, or test by which you can judge something. Criteria are based on facts or assumptions. To be an effective leader, you should use screening criteria to ensure that the solution you are considering will solve the problem.

Appropriate *screening criteria* consider whether the solution is:

- suitable—whether the solution solves the problem and is legal and ethical
- feasible—whether it fits into the constraints of available resources
- acceptable—whether it is worth the cost or risk
- distinguishable—whether it differs significantly from other solutions offered
- complete—whether it contains all the critical elements of solving the problem from start to finish.

After developing screening criteria, you may develop *evaluating criteria* to differentiate among possible solutions. The following are included in evaluating criteria:

- Short title—the criterion name
- Definition—the feature you are evaluating
- Unit of measure—objective value such as dollars or miles per gallon
- Benchmark—a value that defines the desired goal, which can be based on:
 - *reasoning*—personal experience
 - *historical precedent*—examples of past success
 - *current example*—an existing condition you consider desirable
 - *averaging*—the mathematical average of the solutions you are considering
 - *formula*—how the change in the value of the criterion affects the desirability of the possible solution, stated in comparative terms (more is better; high gas mileage is better than low gas mileage).

Since the criteria are rarely of equal importance, for each problem you should assign a weight to each criterion to show how important it is in determining the solution.

Critical Thinking

Why it is important to share information with those affected by the problem or solution?

Generate Possible Solutions

During this phase of problem solving, you may benefit from brainstorming, in which you seek the ideas for solutions from your team. After stating the problem, be open to as many options as possible. It's critical that you withhold judgment as you listen to team members. By engaging in this nonjudgmental listening, you will encourage creativity and independent thinking, which are valuable attributes for Army leaders. After hearing various solutions, you can disregard those that don't meet the standards you previously established.

At this point, you should summarize the potential solution. A simple solution will require only a single sentence; a more complicated solution may require more detail, including a concept plan or sketch.

Analyze Possible Solutions

Analyze each solution to determine its merits and shortcomings. What are the pros? What are the cons? Use your screening criteria to make sure the proposed solution meets your minimum requirements. Then use your benchmarks to decide whether the proposed solution will result in the desired state.

Compare Possible Solutions

Determine the best solution by comparing each possible solution against the others. Select the solution that best solves the problem based on your evaluation criteria. Army leaders often use a *decision matrix*, like that in Table 5.1, to help them compare solutions.

TABLE 5.1

Decision Matrix

Problem: To buy a good used car. Weighting: 1 is highest priority; 4 is lowest

MODEL	COST	ODOMETER	GAS MILEAGE	SEATING
Criterion Weight	1	3	1	4
Economy	\$ 5,000	50,000 miles	35 mpg	seats 4
Sedan	\$10,000	40,000 miles	24 mpg	seats 5
SUV	\$18,000	30,000 miles	15 mpg	seats 7

Critical Thinking

How could you use the seven problem solving steps to help choose your major or minor in college?

Make and Implement the Decision

Once you identify the preferred solution, you implement it. If the solution is complex, you may need to create a formal plan of action to submit to your superiors. The problem solving process ends only when you solve the problem.

Even though you may go through the problem solving process without a hitch, the solution works only if others find it acceptable. Good leaders must be able to convince others that their ideas are worthy of attention. That's why the writing and briefing skills you are learning in ROTC are as important as your problem solving skills.

The Leader's Role

Decision making and problem solving aren't always routine, however. Often, being able to make the right decision means you must bring your experience, knowledge, intuition, and best judgment to bear. Some leaders rely too much on intuition, or their "gut feeling," about the right solution. While your instincts may be useful, you still need to do research, get the facts, and come up with alternatives. Take as much time as possible to analyze and compare your possible solutions, then decide and act.

Remember also that your decisions must reflect Army Values. Many problems have ethical aspects, even if they are not specifically ethical problems. Other problems may present painful ethical choices.

Part of being a leader is your responsibility to decide what's important and to set priorities. Often your subordinates won't know what is most urgent or what is the higher priority. At other times, they will disagree with you.

What if you can't decide which solution is best? Sometimes you have to wait to see if the best solution becomes clearer. But you can't dawdle while things get worse. You must eventually summon up your courage, set priorities, and make a decision. That's why the Army made you an officer.



Critical Thinking

Relate BG Buford's actions at Gettysburg to the seven problem solving steps. List a few of the consequences of his decision. What might have happened had he decided to evacuate Gettysburg? How did experience, judgment, and knowledge affect his decision?



CONCLUSION

By following the Army problem solving process, you will be able to make better, more-reasoned, and more-logical decisions. You'll be able to base your decisions on fact or tested assumptions; measure possible solutions against previously established criteria; and select the best solutions from a range of options. When you do so, those around you will respect your decision making and you become a more effective Army leader.

Learning Assessment

1. Name the seven steps in the Army problem solving process.
2. Name the five screening criteria.

Key Words

problem

decision making

troop leading procedures (TLP)

facts

assumptions

References

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