

# ENTRY-LEVEL FIREFIGHTER TEST

## STUDY GUIDE

**Morris and McDaniel, Inc.**  
*Management Consultants*  
117 South Saint Asaph Street  
Alexandria, VA 22314  
(703) 836-3600  
[www.morrisandmcdaniel.com](http://www.morrisandmcdaniel.com)

## INTRODUCTION

This entry-level firefighter ability test measures abilities that are important to successful performance of the job. In fact, the jurisdiction has gone to considerable effort to make sure that the test is a valid predictor and does equally well predicting success for all racial, gender, or ethnic groups.

Even though the test is designed to measure skills and abilities important to the job, the test does not require you to have prior knowledge about fire services work. The test will assess those abilities that are needed, and sometimes the questions are placed in a firefighting context.

The administration of the test is structured in such a way so that you are first presented with a booklet containing material that you must study and remember. You will be allowed forty-five (45) minutes to study and memorize the material. You will be informed that you will be asked questions about the material later.

The material that must be learned and committed to memory typically contains vocabulary words and definitions, hypothetical situations, forms for completion, diagrams, and photographs or drawings of various scenes. After the forty-five (45) minutes of study time has elapsed, the booklet is taken up, and the candidate is handed the exam, which will include some questions that will test how well the candidate was able to memorize the material and includes other questions that address abilities other than memory that are also important to the fire services.

The test that is handed to you has approximately 113 items which sample abilities and skills important for fire service work. There is a time limit (2 hours), but it is usually not a speed test. In other words, you are not time-pressured; the time allotted is considered adequate to read and respond to the questions. However, you should work efficiently. There is no penalty for guessing.

### Abilities Tested

The following are job-related abilities that are assessed by exam:

1. Mathematical Computation
2. Mechanical Reasoning
3. Spatial Scanning
4. Memory for Ideas
5. Reading Comprehension
6. Association Memory
7. Observational Judgment
8. Spatial Orientation

## GENERAL INSTRUCTIONS

The questions on the Entry-Level Firefighter are multiple-choice. For each question, you must decide which ONE of the answers is the BEST answer.

You will be provided an answer sheet on which to mark your answers. You will indicate which answer you have selected by darkening in the bubble on the answer sheet which corresponds to the ONE answer that you think is the BEST answer.

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<u>Questions in Test Booklet</u>	<u>Example</u>	<u>Items on Answer Sheet</u>
1. This is an examination for the job of:		
A. Firefighter.		● B C D
B. Social Worker.		Answer "A" is the best answer,
C. Police Officer.		and bubble "A" has been
D. Truck Driver.		darkened to show this.
2. A major responsibility of firefighters officers is to:		
A. give speeches.		A B C ●
B. repair water leakages.		Answer "D" is the best answer,
C. prevent crime.		and bubble "D" has been
D. fight fires.		darkened to show this.

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When marking your answers on the answer sheet, be sure that the question number is the same as the response number on the answer sheet. Check your answer sheet against the test booklet every few questions to see that you are correctly marking the number on the answer sheet that corresponds with the question.

If you want to change an answer, completely erase the bubble you have darkened. Then, darken the bubble you think represents the best answer. Darken only one bubble for each question. If you darken more than one bubble for a question, you will receive no credit for that question.

**Always assume that one of the responses represents the best choice of the responses given.** Your score on the test will be the number of correct answers. Therefore, it is generally to your advantage to guess if you do not know the answer, rather than leave the question blank.

This test has a total of 113 questions. Before answering items, be sure to read any specific instructions. **DO NOT WRITE IN THIS PRE-TEST BOOKLET.**

You will be allowed a total of 45 minutes to study this pre-test booklet. At that time, the pre-test booklet will be taken up and the test booklet passed out. You will be given two (2) hours to take the test.

## TYPES OF QUESTIONS

### Mathematical Computation Questions

Mathematical computation involves mathematical reasoning as well. Basically, mathematical reasoning is what helps you understand the problem, and mathematical computation is what helps you figure out the answer to the problem. This ability involves using mathematical reasoning to understand a word problem and to figure out what information the word problem is attempting to elicit. After identifying data necessary to solve the problem, you must be able to manipulate the numbers to generate a correct response.

A calculator is not provided for your use during the mathematical computation portion of the exam. Therefore, you should practice developing these skills without the use of a calculator. The mathematical operations that are generally tested in this section of the exam usually involve addition, subtraction, multiplication, division, percentages, decimals, fractions, and simple algebra. Sometimes the exam presents a table of data, and the test taker must perform mathematical computations on the data presented in the table.

Mathematical computation is of extreme importance to firefighters because it helps them figure out necessary formulas, such as what size nozzle tip and what length of hose to use to fight a fire. Firefighters must also use formulas to compute various numbers such as the pounds per square inch of pressure needed to pump enough water onto a fire to extinguish it.

### Examples of Mathematical Computation Questions

1. Assume that, for safety, the base of a ladder must be placed at a distance equal to 25% of its length away from the base of a building. If the ladder is 20 feet tall, how far away from the base of the building should the ladder be placed?

- a. 2 feet
- \* b. 5 feet
- c. 10 feet
- d. 14 feet

2. Friction loss is the reduction of water pressure which occurs as water travels over distance and through any kind of restriction. Following is the formula for friction loss (FL) in a 2 ½ inch fire hose:

$$FL = 2Q^2 + Q \quad \text{where: } Q = \text{GPM}/100$$

Based on the information given above, what is the friction loss of a 2 ½ inch hose when the gallons per minute (GPM) is 185?

- \* a. 8.7
- b. 15.5
- c. 9.3
- d. 10.2

\* indicates the correct answer for all sample questions.

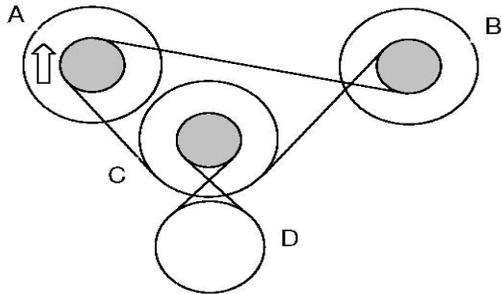
## **Mechanical Reasoning**

Mechanical reasoning, also known as mechanical aptitude, is measured by the degree of familiarity with everyday physical objects, tools, and devices, especially their function, use, size, shape, weight, and appearance. On firefighter exams, mechanical reasoning is commonly tested by asking questions that deal with basic physical and mechanical principles. Common questions that can be found in the mechanical reasoning section of the firefighter exam involve pulleys, gears, energy and power, motion, resistance, equilibrium, and fluidity, to name a few.

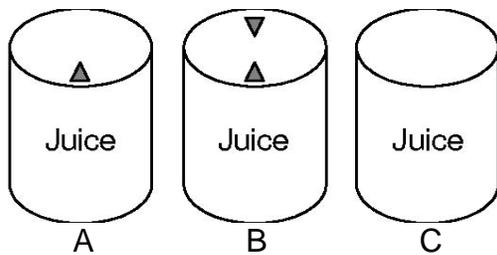
Most of the items that test mechanical reasoning require the use of a little common sense. If you know some of these basic physical and mechanical principles, and you apply some common sense to these basic principles, you should be able to work through most of the questions.

Mechanical reasoning is important to firefighters because they must be able to understand how certain tools and pieces of equipment work. They must be able to operate pumps and other complicated equipment and position ladders.

## Examples of Mechanical Reasoning Questions



1. Which of the following statements is **CORRECT** regarding the picture above?
- a. Wheel B is moving clockwise.
  - b. Wheel D is moving clockwise.
  - c. Wheel C is moving counterclockwise.
  - \* d. Wheel D is moving counterclockwise.



2. Which of the following containers of juice pictured above will pour the most easily?
- a. container A
  - \* b. container B
  - c. container C
  - d. They will all pour equally easily.

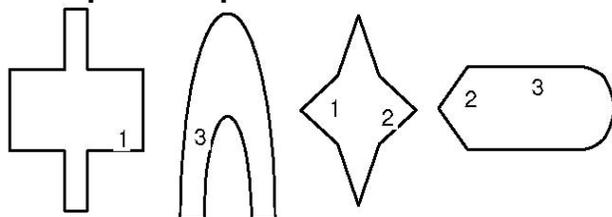
### **Spatial Orientation Questions**

Spatial orientation is important to firefighters because it is necessary for them to be able to keep their orientation when visibility is limited because of smoke. For spatial orientation questions on firefighter exams, frequently, the candidate is presented with various shapes. The candidate is required to mentally rotate and rearrange the shapes according to some given specifications or to fit them into a certain pattern. The objects that are to be mentally assembled appear at the beginning of each item. Commonly, each object is marked with one or more numbers or letters which identify some particular place on the object. There will be four choices of how the objects could be put together. The correct choice is assembled with the matching numbers or letters put together or lined up. The candidate must choose the correct choice from the given arrangements. Only one of the choices is correct. The given objects may need to be flipped, turned, or rotated as appropriate.

When presented with these questions, it is helpful to examine each of the response choices individually, and within each response choice, examine each shape. It may be helpful to compare each shape of the response choices with the matching shape in the given figure. Look at the numbers or letters that label that shape in the figure. Carefully label that shape in the response choice with the same numbers or letters. After you do this for all of the shapes in the response choices, it will be much easier to see if the numbers or letters match. The response choice that has matching numbers or letters is the correct response choice.

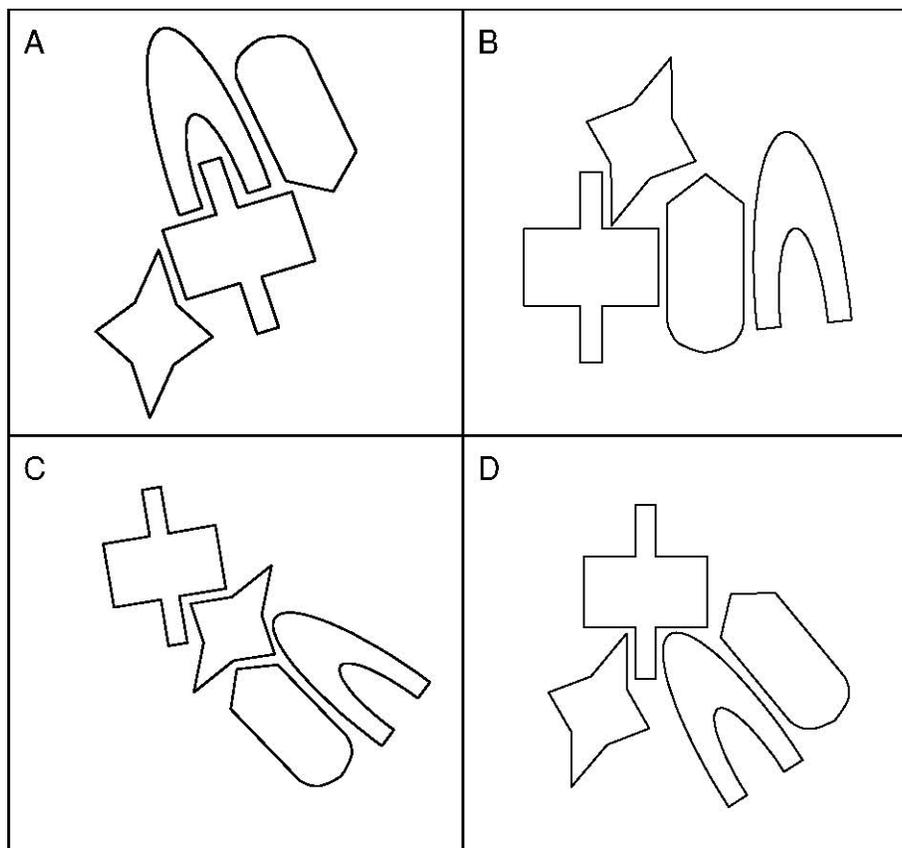
If you come across a response choice that seems to be correct, do not assume that it is in fact the correct choice. Continue this process of labeling the shapes for all of the response choices. It is possible that there is a better response choice. Also, if you continue to label the figures, you may discover an error that was made in labeling a previous response choice.

### Examples of Spatial Orientation Questions



Which of the choices below represents the parts above correctly assembled?

- a. A
- b. B
- \* c. C
- d. D



### **Memorization Questions**

According to behavioral scientists there are several types of memory: memory for relationships, paired associate memory, memory for ideas, visual memory, and short term memory, to mention a few. Regardless of the technical breakdowns of memory, it is usually tested in three ways or some combination of the three ways. What did you see? What did you read? What did you hear?

Being able to remember details of what you see, hear, and read has long been the hallmark of good firefighters. These skills are in constant use by effective firefighters in fire suppression. A firefighter must be able to remember the proper arrangement of equipment. They must be able to remember the routes in their assigned areas. They must be able to remember departmental procedures to prevent mishandling important duties or emergencies. The firefighter must have a good memory in order to perform effectively and efficiently.

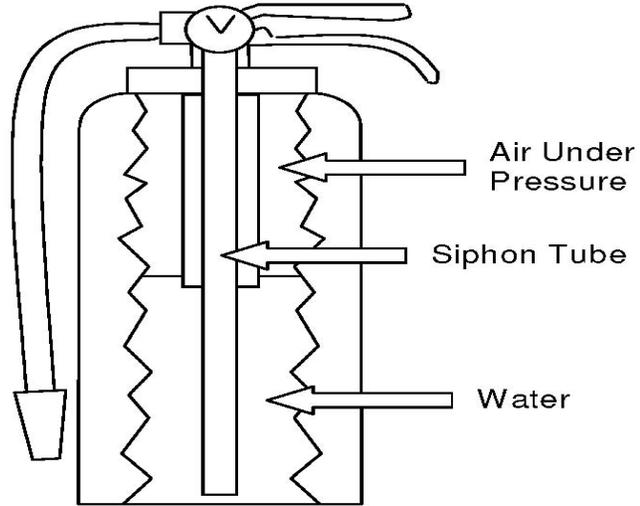
Even though most candidates know that memory is important, they do not know how to make it happen. Many candidates will stare at materials presented on a test with all the intensity of Superman looking at Lois Lane, all the time believing that there is a correlation between how hard they are staring and how well their mind is recording the facts. It just does not happen that way. Anyone who has ever made it through the first year of a military officers' training school, where one has to memorize lots of material, knows that he/she must have a plan or procedure, must stay focused, and must practice with the plan or procedure.

The simple statement above—that you must use a method or plan; you must stay focused, be attentive, or concentrate; and, you must practice—is more important for your success than might be readily apparent. All three elements are important—any two elements without the third one will not result in your maximum performance. And if you implement all three elements, you can not only maximize your performance on the entry level test but also be a valuable asset to the department and community that you serve.

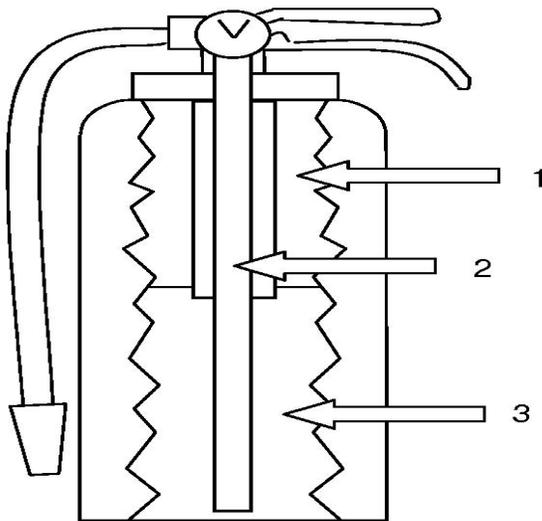
## Memorization Questions

### Diagram I—Stored Pressure Water Extinguisher

Part 1



Part 2



Answer the following question based on Part 2 of Diagram I—Stored Pressure Water Extinguisher.

1. Which of the following does the number 3 represent?

- \* a. water
- b. air
- c. air under pressure
- d. siphon tube

## Reading Comprehension Questions

To assess this ability, written passages sometimes placed in fire suppression context are presented and questions follow the passage. The intent is for you, the candidate, to demonstrate how well you understand what you read.

Reading comprehension, or understanding what you read, is very important to your success both on the test and on the job. On the job as a rookie firefighter and up to the highest rank that you achieve, you will have to read and interpret volumes of information. How well you use this ability will directly relate to how well you do your job.

### Examples of Reading Comprehension Questions

#### Passage

Oftentimes, when one thinks of a firefighter, they immediately visualize a dog in their midst, specifically a Dalmatian. This is appropriate and with good reason. Although they are not as important today, in ages past, when fire trucks were pulled by horse drawn carriages, the Dalmatians' skills were very important. In order to help the fire department run at full strength, dogs were trained and used to help guide and direct the horses where to go when en route to a fire scene. Because of their friendly behavior, ease of being trained, and ability to look after themselves, Dalmatians became the dog of choice. Since fire trucks are now powered by gasoline, the dogs are no longer needed. However, for the sake of tradition, some can still be found in many fire houses across the country. Answer questions 1 -2 based on the Passage above.

1. According to the passage, dogs were often used to:
  - a. provide firefighters with companionship.
  - b. protect the fire house.
  - \* c. guide and direct horses.
  - d. assist in rescues.
  
2. Which one of the following would be the most accurate title for the passage?
  - a. Man's Best Friend
  - b. Traditions
  - \* c. The Firehouse Dog
  - d. Training a Dalmatian

### Observational Judgment Questions

Oftentimes you will be presented with a picture of something related to fire suppression and then given four possible pictures, with three of the four having been slightly altered. You will be asked to identify which of the four pictures is exactly the same as the original given picture. Make sure you begin all questions with a careful reading of the instructions. Your strategy should be to eliminate as many of the four choices as possible by focusing on the details of the given pictures, such as numbers, letters, or any other identifying information. Examine the choices one at a time until you have eliminated three of the four pictures. Double check all of the details of the original picture with the one you have chosen and verify that they are the same.

### Examples of Observational Judgment Questions

Compare the four pictures at the bottom with the following picture. Choose the one picture of the four choices that is exactly the same as the following picture.



1. Which of the following is exactly the same as the picture above?

- a. A
- b. B
- c. C
- \* d. D

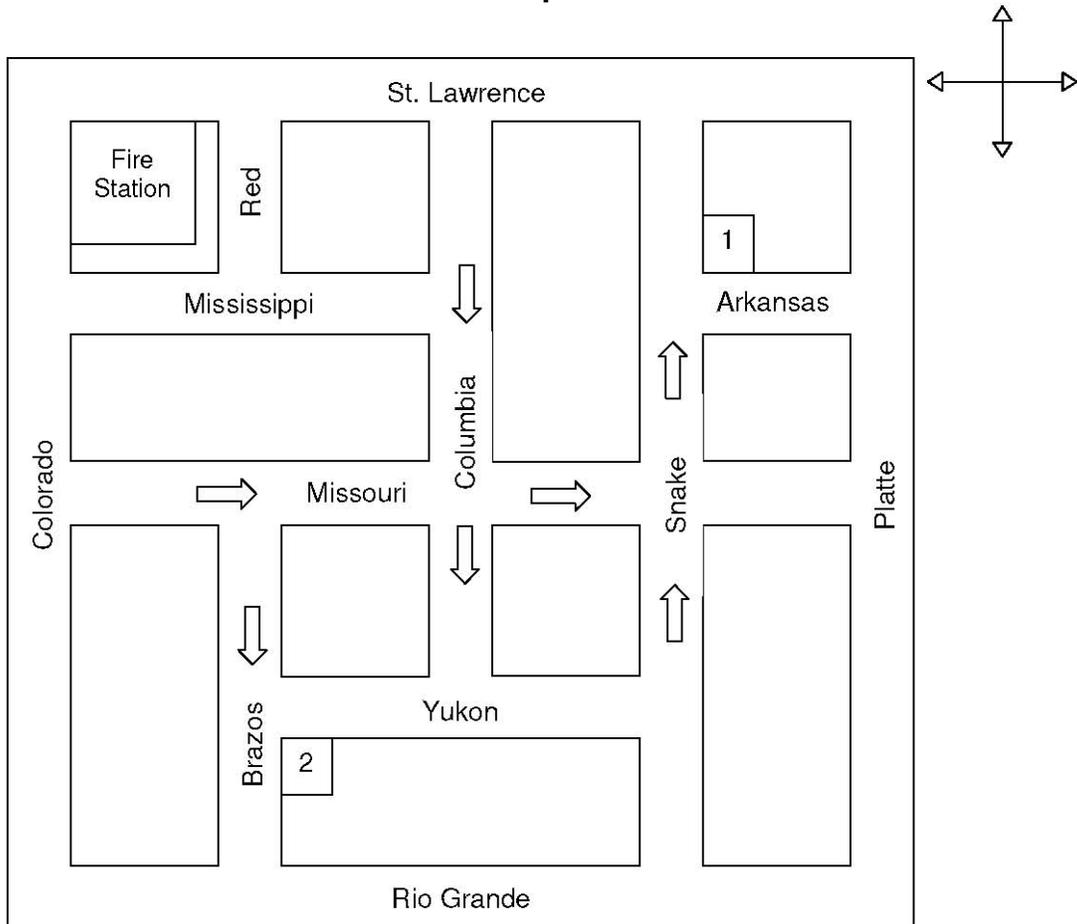


### Spatial Scanning Questions

Directional orientation is a well documented ability for good firefighters. This ability when coupled with other abilities helps firefighters respond to urgent situations and go from one point to another more efficiently. Favorable outcomes in emergency situations are almost always dependent on quick and efficient movement from one point to another.

### Examples of Spatial Scanning Questions

Map 1



Refer to Map 1 to answer questions 1 -2.

1. From the fire station, you are to drive to the northeast corner of Snake and Arkansas (#1). Without violating any traffic laws, which of the following is the shortest and most direct route to the corner?
  - a. east on St. Lawrence, south on Snake
  - b. south on Colorado, east on Missouri, south on Columbia, east on Yukon, north on Snake
  - \*c. south on Colorado, east on Missouri, north on Snake
  - d. east on St. Lawrence, south on Columbia, east on Yukon, north on Snake
  
2. From the fire station, you are to drive to the southeast corner of Brazos and Yukon (#2). Without violating any traffic laws, which of the following is the shortest and most direct route to the corner?
  - \*a. south on Colorado, east on Missouri, south on Brazos
  - b. south on Colorado, east on Rio Grande, north on Brazos
  - c. east on St. Lawrence, south on Columbia, west on Yukon
  - d. east on St. Lawrence, south on Snake, west on Yukon

**NOTES**