Springfield, Missouri Fire Department
Written Exam Prep Resource

Below are sample questions to help guide candidates as they prepare for the Firefighter written examination. Because the Fire Department does not create its own test, the sample questions may not be representative of the actual test given in any particular year.

Reading Comprehension:

Answer the following questions based solely upon the information in the reading.

Understanding building construction is an essential part of a firefighter's job in order to ensure the safety of themselves, their crew, and the general public. Building construction will affect the behavior of fires. The most common type of construction is wood framed. This is the type of construction commonly used in home construction. This type of construction consists of the structural components being all wooden members and has void spaces between them. The void spaces allow smoke, fire, and products of combustion to spread within the hidden spaces. Additionally, wood framed construction can be subdivided into two types: conventional and lightweight. Conventional construction is made from "dimensional" lumber of at least 2"x4" and use nails to join them. This type of constructions is more resistant to failure during a fire than lightweight construction. Lightweight construction uses geometric design principles to create a strong structural system during normal use. However, this type of construction is subject to early and catastrophic failure when exposed to fire.

A second type of construction is called "ordinary". Ordinary construction consists of masonry exterior walls with wooden interior components. Ordinary construction is generally used in commercial construction and was used extensively before the 1950's. The brick buildings located in downtown commercial districts from the early 1900's are examples of ordinary construction. They frequently had commercial occupancies on the first floor and residential occupancies above them and were called "taxpayers". Some commercial buildings today are still constructed of ordinary construction. For example, many convenience stores have masonry block walls with lightweight wood trusses for the interior. Because the walls are solid masonry, fire does not tend to spread in hidden spaces; however, the wood members may be open and exposed to fires. Except in lightweight construction, the wood members are typically full size dimensional lumber of solid oak, thus being more resistant to fire than wood-framed construction.

1. The main purpose of this reading is:
    a. Ordinary construction is safer than wood-framed construction.
    b. Construction methods have changed over the years, which has changed the impact on firefighting.
    c. Understanding construction is essential for safety.
    d. Lightweight construction increases the risks to firefighter safety.
2. Which of the following statements would the author most likely agree?
    a. Firefighters should search for hidden fire in lightweight construction.
    b. Firefighters should search for hidden fire in ordinary construction.
    c. Firefighters should search for hidden fire wood framed construction.
    d. Firefighters should search for hidden fire in conventional construction.
3. According the reading,
    a. Lightweight construction uses geometric shapes.
    b. Conventional construction uses geometric shapes.
    c. Ordinary construction uses geometric shapes.
    d. Wood framed construction uses geometric shapes.

Listening Comprehension

This section is similar to the previous section, only the passage will be read aloud to all candidates at once, rather than being printed for each to read individually.

Firefighter Bill Smith is assigned to the Rescue/Engine at Station 1. His most recent shift began the same as all of the previous ones. First, he reported to duty at 0700 hours and goes out to the vehicle to place his gear on the apparatus. He checked his breathing airpack and his medical safety equipment. After completing his checks he began doing his daily chores which included vacuuming the carpets, sweeping and moping the tile floors, cleaning the toilets, replacing paper towels and toilet paper. After completing chores, he reported to the office at 0800 hours to begin his online training. He needed to complete his firefighting ceu's, his EMT ceu's, his Haz Mat ceu's, and his technical rescue ceu's; however he only had time for one, so he completed his EMT ceu's. As he was finishing up, they received a call for a motor vehicle accident at 1027 South Walnut.

At 0900, Captain Jose Salvador asked all crew members to report to the training room. Roll call was taken, which included Engineer Ron Edmonds, Firefighter Tom Peterson, Rescue Specialists Henry Knetsch, Art Bolling, Jerry Benson and Greg Akers. Captain Salvador advised they would be working on extrication techniques and they drove to a salvage yard with multiple vehicles lined up for practice. Before working on the vehicles, the crews were instructed to stabilize the vehicles through the use of cribbing. Cribbing places 16" length sections of 2"x4" and 4"x4"

wood between the vehicle and the ground. The first layer consists of 4 pieces of 4"x4" cribbing placed side-by-side directly in front of the left rear tire. This layer of cribbing is horizontal to the side of the car. The next layer of 4"x4" cribbing is placed directly on top of the first only at 90 degrees, making it perpendicular to the first layer. The next layer of 4"x4" cribbing is placed directly on top of the second only at 90 degrees, making it horizontal to the first layer. The last layer consists of 2"x4" cribbing laid directly on top of the previous layer, where it is perpendicular to the car body and touches the underside of the vehicle.

The first extrication technique they tried was a dash roll-up, where hydraulic rams are used to spread the dash from the front seat. The second technique was to do a dash roll-up with hydraulic spreaders. The third technique was the use of the spreaders to pop open a door beginning at the hinge side of the door. The fourth technique was the use of the spreaders to pop open a door beginning at the Nader pin side of the door. The Nader pin is the latching side of the door and is opposite the hinges. When doing this, it is important to control the door as it comes open. The last technique that the crew practiced was a roof removal. The hydraulic cutters were used to cut each of the four columns that support the roof. Each cut should be made as close to the base of the post as possible to avoid sharp protrusions. The training ended when a call came in for a house fire at 4238 West Kinsington. However, the unit was returned to service prior to arriving.

After being returned to service, the crew stopped by the grocery store to pick up the items for the noon meal. It was 11:00 hours. Firefighter Peterson was cooking and decided on hot dogs, baked beans, potato salad and ice tea. Henry Knetsch requested potato chips because he is allergic to beans. Upon returning to the station, the meal was prepared and as the crew sat down to eat, they were dispatched to a call for a diabetic emergency at 333 South Hampton. Firefighter Smith became ill after eating lunch and was granted sick leave for the remainder of the shift.

1. Which direction was the first layer of cribbing?
    a. Horizontal to the side of the vehicle.
    b. Perpendicular to the side of the vehicle.
    c. Vertical to the side of the vehicle.
    d. Adjacent to the side of the vehicle.
2. How many Rescue Specialists were on the vehicle?
    a. 1
    b. 2
    c. 3
    d. 4

3. What type of CEU's did Firefighter Smith complete?
   a. EMT
   b. Technical rescue
   c. Firefighting
   d. Haz Mat
4. Who was allergic to the beans?
   a. Bill Smith
   b. Henry Knetsch
   c. Jose Salvador
   d. Tom Peterson

Mathematics

1. Which room has the greatest perimeter?
   a. A square room 12 feet by 12 feet
   b. A rectangular room 20 feet by 7 feet
   c. A rectangular room 17 feet by 8 feet
   d. A rectangular room 15 feet by 9 feet
2. A patient weighs 138 pounds, what is his approximate weight in kilograms? (1 kilogram = 2.2 pounds)
   a. 63
   b. 74
   c. 280
   d. 304
3. The nozzle reaction pressure is found by the following formula: NP psi = $[(gpm/(29.71xD^2)]^2$, where gallons per minute (gpm) = 400, bore diameter (D) = 1.25 in
   a. 56 psi
   b. 75 psi
   c. 127 psi
   d. 192 psi

Mechanics

1. How many pounds of force would be required to lift a 200-pound box in illustration 1?
   a. 50 pounds
   b. 100 pounds
   c. 200 pounds
   d. 800 pounds
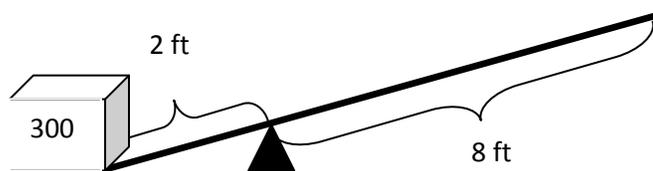
2 ft

300

8 ft

Illustration 1

2. How many pounds of pull must be exerted on the rope to raise the object in illustration 2?
   a. 125
   b. 250
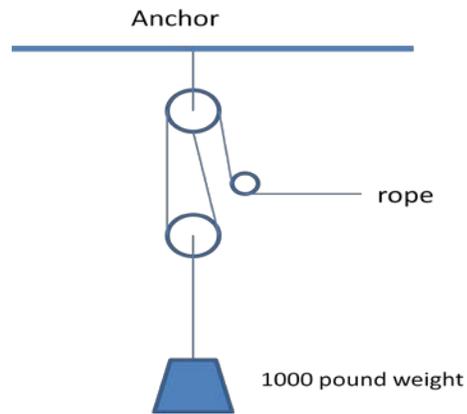   c. 500
   d. 1000

Anchor

rope

1000 pound weight

Illustration 2

3. In illustration 3, which direction will gear E turn if gear A is turning in a clockwise motion?
   a. Also turn clockwise
   b. Also turn counterclockwise
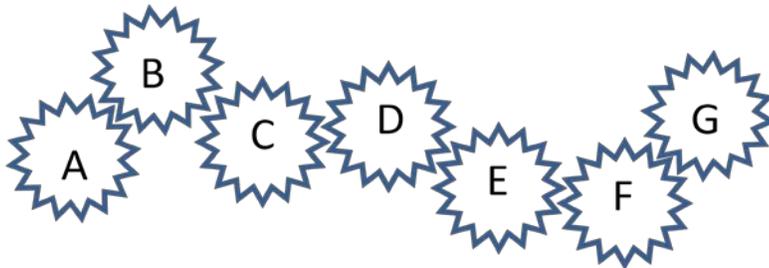   c. Unable to turn
   d. The same direction as B

Illustration 3

4. In illustration 4, if gear A is turned 1 revolution, approximately how many revolutions will gear B turn if gear A has a 3 inch diameter and gear B has a 9 inch diameter?
   a. 1/9 of a revolution
   b. 1/3 of a revolution

c. 3 revolutions

d. 9 revolutions
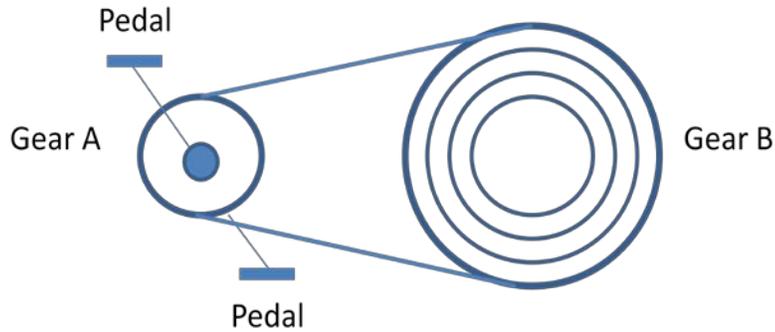
Pedal

Gear A

Gear B

Pedal

Illustration 4

5. What is the mechanical advantage in illustration 5 where the height to raise the object is 2 feet and the length of the inclined plane is 10?

a. .5

b. 2

c. 5

d. There is no mechanical advantage.

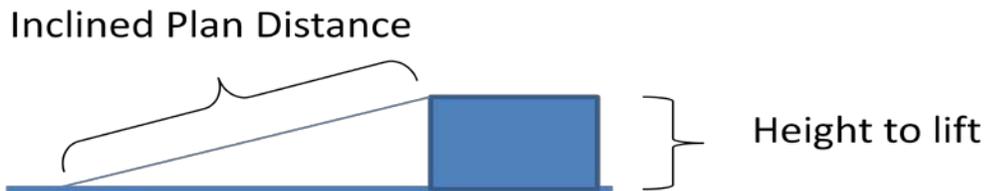Inclined Plan Distance

Height to lift

Illustration 5

Spatial Orientation

Use the following diagram to answer the next two questions. Arrows indicate the direction of travel on one-way roadways. Roads without a directional arrow are two-way. Road repairs are being made to 2nd Street, so it is closed between Illinois Avenue and Missouri Avenue.

1. You are at the Fire Station which is located on Missouri Ave between 1st and 2nd Streets. You receive a call on the Southside of 4th Street between Kansas Avenue and Missouri Avenue. What is the shortest route to the call without breaking any laws?
    a. Go north on Missouri Avenue to 1st Street. Turn west and go Arkansas Ave. Turn South on Arkansas Avenue to 4th Street. Turn east and go until you reach the call.
    b. Go north on Missouri Avenue to 1st Street. Turn east and go to Oklahoma Avenue. Turn south and go to 4th Street. Turn west and go until you reach the call.
    c. Go south on Missouri to 4th Avenue. Turn west and go until you reach the call.

2. You are at the call on 4th Street and need to transport the patient to the hospital located on Arkansas Avenue between 3rd and 4th Streets. What is the shortest route to the hospital without breaking any laws?
    a. Go west on 4th Street to Illinois Avenue. Turn north and go to 3rd Street. Turn west and go to Arkansas Avenue. Turn south and go until you reach the hospital.

b. Go west on 4th Street to Arkansas Avenue. Turn north and go until you reach the hospital.

c. Go east on 4th Street to Missouri Avenue. Turn north and go to 1st Street. Turn west and go to Arkansas Avenue. Turn south and go until you reach the hospital.

3. You are leaving the hospital and returning to the fire station. What is the shortest route without breaking any laws?

a. Go south on Arkansas to 4th Street. Turn east onto 4th street and go to Missouri Ave. Turn north and go until you reach the fire station.

b. Go south on Arkansas to 4th Street. Turn east onto 4th street and go to Illinois Ave. Turn north and go to 2nd Street. Turn east and go to Missouri Ave. Turn north and go until you reach the fire station.

c. Both a and b are correct.