Physical and Written
Employment Test Information
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Plumber 1 roles and responsibilities require qualified applicants to pass both a written and a physical skills-based test for employment consideration. The percentage correct (or pass point) is not preset for written tests. The number varies with each recruitment.

Physical testing – There are 5 components to the physical test. Candidates are required to pass all 5 physical test stations in order to proceed to the hiring interview step.

Written testing – There are five subject areas of the written test:

- reading comprehension
- math
- mechanical ability
- safety
- tools, equipment & materials.

The questions below, and attached answer key, are sample items in these subject areas that can be used as a study guide.

Section 1, Reading Comprehension is made up of reading passages that you will interpret, apply or infer in the corresponding question to measure your understanding, application and analysis skills. Success with reading comprehension questions depends on your ability to obtain the answers from the reading selection and ability to distinguish the best answer from several multiple-choice answers.

Use the passage below to answer the corresponding multiple-choice reading comprehension questions:

Passage 1: Ventilation, as used in fire-fighting operations, means opening a building or structure in which a fire is burning to release the accumulated heat, smoke and gases. Lack of knowledge of principles of ventilation on the part of firemen may result in unnecessary accidents due to ventilation being neglected or improperly handled. While ventilation itself extinguishes no fires, when used in an intelligent manner, it allows firemen to get at the fire more quickly, easily and with less danger and hardship.

1. According to the above paragraph, the most important result of failure to apply the principles of ventilation at a fire may be:

   a. loss of public confidence
   b. disciplinary action
   c. excessive use of equipment
   d. injury to firemen

2. It may be inferred from the above paragraph that the chief advantage of ventilation is that it:

   a. eliminates the need for breathing equipment
   b. reduces smoke damage
   c. permits firemen to work
   d. cools the fire

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Section 2, Math is made of problems requiring multiple steps to solve. You may be required to use combinations of mathematical functions to solve a specific problem. Test answers are multiple choice.

Use the math information sheet below and sample math testing questions to answer the math questions below. Use of noiseless calculators are allowed during the testing process.

Units and Conversion Factors
1 inch (in) (”) = 2.54 centimeters (cm) 1 yard = 3 feet (ft) (’) 1 yd^3 = 27 ft^3 1 meter (m) = 100 cm = 1,000 millimeters (mm) = 39.4” 1 acre (a) = 43,560 square feet (ft^2) 1 cubic foot (ft^3) = 7.48 gallons (gal) 1 liter (L) = 1,000 milliliters (ml) 1 gallon = 3.78 L = 3,780 ml 1 quart = .25 gallons 1 pound (lb) = 454 grams (gm) 1 ton = 2,000 lb 1 lb = 7,000 grains (gr) 1 gm = 1,000 milligrams (mg) 1 ppm = 1 part per million

Water Measurements
1 gallon of water weighs 8.34 lb 1 L of water weighs 1,000 gm 1 mg/L = 1 ppm 1 grain per gallon (gpg) = 17.1 ppm 1 atmosphere = 33.9 feet of water = 14.7 pounds/square inch (psi) 1 million gallons per day (MGD) = 1.55 cubic feet per second (cfs) 1 part per billion (ppb) = ppm/1,000 gpm = “gallons per minute”

Formulas for Calculating Angles, Volume and Areas
sides right triangle: $a^2 + b^2 = c^2$ (a = side, b = side, c = long side (hypotenuse) Interior angles of a triangle add up to 180˚ Interior angles of a quadrilateral (square, rectangle, trapezoid, etc.) add up to 360˚ area (A) of a rectangle: A = l·w (l = length, w = width) volume (V) for a box: V = l·w·h (h = height) area of a circle: A = $\pi \cdot r^2$ (π = 3.14, r = radius) volume of a cylinder: V = $\pi \cdot r^2 \cdot h$, and can be expressed in in^3 or ft^3 volume of a cone: V = $\pi \cdot r^2 \cdot 1/3h$, and can be expressed in in^3 or ft^3 π= 3.14; r = radius = diameter/2; h = height

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1. If a customer used 15,200 cubic feet of water, and the District charges $3.00 for every 100 cubic feet, how much will be charged for the water?

   a. $45.60
   b. $456.00
   c. $4,560.00
   d. $45,600.00

2. How many finished parts will a machine make in four hours if it makes six each hour?

   a. 4
   b. 6
   c. 10
   d. 24

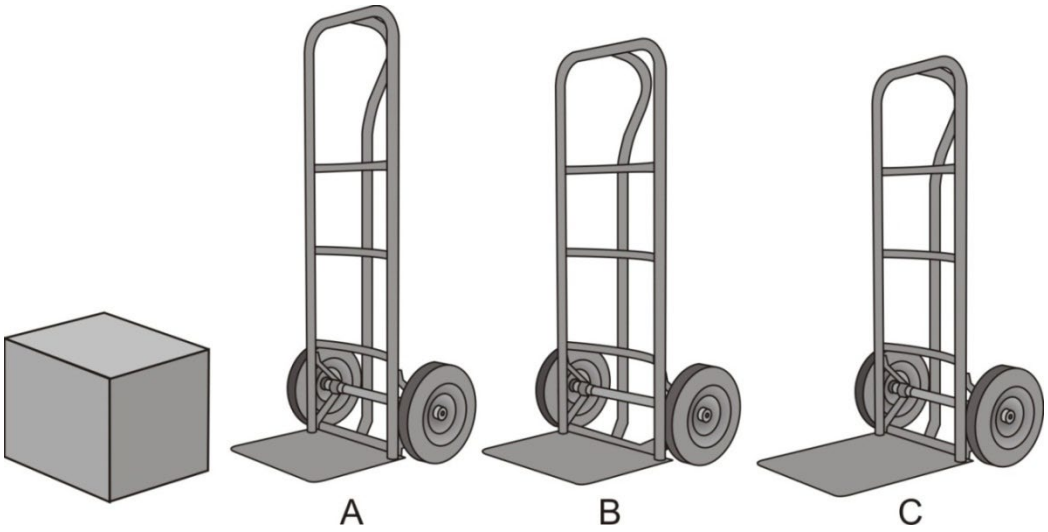
3. What is the volume of a box measuring 10 feet by 80 inches by 1.5 yards?

   a. 1,200 cubic feet
   b. 1,200 cubic yards
   c. 300 cubic feet
   d. 300 cubic yards

Section 3, Mechanical Ability means that you can understand mechanical principles, devices, and tools, spatial relations, and the everyday physics that make them work.

1. Which hand truck will most easily lift the box from the ground?

   a. A
   b. B
   c. C
   d. All three will require the same amount of energy



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Section 4, **Safety** consists of multiple-choice questions designed to assess your understanding of basic safety practices and procedures on a construction site. These questions evaluate your ability to recognize safe behaviors, identify potential hazards, and apply fundamental safety principles in common workplace scenarios. Success in this section depends on your knowledge of construction safety guidelines.

1. What is the purpose of wearing high-visibility clothing on a construction site?

   a. To keep warm
   b. To protect against falls
   c. To be easily seen by others
   d. To protect against rain

2. Which of the following is a safe practice when using a ladder?

   a. Standing on the top rung
   b. Carrying heavy tools while climbing
   c. Ensuring the ladder is stable and on level ground
   d. Leaning the ladder against a window

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Section 5, **Tools, Materials & Equipment,** consists of multiple-choice questions designed to evaluate your knowledge of common tools, equipment, and materials used on a construction site. These questions may assess your ability to identify their purposes, proper usage, and safe handling practices in typical construction scenarios.

1. Which piece of equipment is commonly used to excavate soil for laying underground pipelines?

   a. Concrete mixer
   b. Backhoe loader
   c. Tower crane
   d. Forklift

2. What is the primary use of concrete in construction?

   a. Insulating walls
   b. Covering electrical wires
   c. Sealing windows
   d. Forming strong foundations or structures

3. What type of pliers are pictured below?

   a. Diagonal cutting pliers
   b. Groove joint pliers
   c. Slip-joint pliers
   d. Locking pliers

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Answer Key for Sample Questions

Answers to Reading Comprehension:

1. d.
2. c.

Answers to Math Problems:

1. b.
2. d.
3. c.

Answers to Mechanical Ability:

1. a.

Answers to Safety:

1. c.
2. c.

Answers to Tools, Equipment & Materials:

1. b.
2. d.
3. b.