



# SERVICE POOL CONTRACTORS GENERAL TRADE KNOWLEDGE EXAMINATION CONTENT INFORMATION

Revised September 14

The General Trade Knowledge portion of the examination is administered daily in Computer Based Testing (CBT) format. It will consist of 60 equally weighted questions. (Note: Both parts of the Service Pool examination will be administered on the first day.)

The examination will have questions relating to the following content areas and necessary knowledge for each area includes:

- reading and interpreting plans and specifications
- reading and interpreting codes
- basic mathematics (addition, subtraction, multiplication, division, calculations of area and volume, fractions, decimals, percentages, calculating the sides of triangles, square roots, powers of numbers, and solving simple algebraic equations for unknown variables)

You should be prepared to respond to examination questions on any of the content areas listed. Questions asked and content areas tested on previous examinations should not be assumed to be the only possible questions to be asked or content areas to be tested on this examination.

The percentage of questions shown for each content area may vary by as much as plus or minus three (3) percent. Please refer to the Candidate Information Brochure and the Reference List for additional information.

## **Content Area A** **10%** **Plumbing Work**

- 1. Replacing and repairing recirculating lines**  
knowledge of piping materials and applications  
knowledge of placement  
knowledge of associated fittings  
knowledge of valve requirements  
knowledge of related components

- 2. Pressure testing recirculating lines**  
knowledge of psi  
knowledge of hook-up and placement  
ability to understand pressure test results  
knowledge of dangers of pressure plugs and pressurized lines  
knowledge of open trench hazards  
knowledge of pressure testing techniques
- 3. Replacing and repairing filter equipment**  
knowledge of filtration requirements  
knowledge of type of filters  
knowledge of gauges and valves  
knowledge of placement of pumps  
knowledge of types and capacities of motors  
knowledge of piping requirements  
knowledge of flow rates and piping pressures  
knowledge of inlets and outlets
- 4. Replacing and repairing pumps**  
knowledge of filtration requirements  
knowledge of types of pumps and pump loads  
knowledge of grounding versus bonding  
knowledge of piping techniques and requirements  
knowledge of pressures and flow requirements
- 5. Replacing and repairing skimmers**  
knowledge of filtration requirements  
knowledge of types of skimmers  
knowledge of skimmer housings  
knowledge of strainer baskets  
knowledge of weirs and valves  
knowledge of vacuum cleaning connections  
knowledge of flow rates, pressures, and overflow systems
- 6. Installing solar heaters**  
knowledge of solar heating requirements and practices  
knowledge of state codes  
knowledge of solar collectors  
knowledge of piping techniques and requirements  
knowledge of pipe fittings  
knowledge of control requirements

knowledge of pump requirements

**7. Installing conventional heaters (gas, heat pump, electric)**

knowledge of state codes  
knowledge of additional licensure requirements  
knowledge of location requirements  
knowledge of fire and gas codes  
knowledge of sizing and flow rates  
knowledge of heat exchangers for gas heaters  
knowledge of location of L.P. gas tanks or natural gas line for gas heaters  
knowledge of heat pumps for electric heaters  
knowledge of immersion elements for electric heaters

**8. Installing automatic cleaners**

knowledge of piping requirements  
knowledge of pipe fitting  
knowledge of fittings  
knowledge of pumps  
knowledge of filtration requirements  
knowledge of materials  
knowledge of processes for automatic cleaners

**9. Installing and repairing automatic feeders**

knowledge of piping techniques and requirements  
knowledge of feeder chemical hazards and compatibility  
knowledge of pipe fitting requirements  
knowledge of pipe materials  
knowledge of processes for automatic feeders  
knowledge of ORP sensor and pH adjuster requirements

**10. Calculating proper pipe size**

knowledge of hydraulics  
knowledge of flow rates

**Content Area B  
Deck Work**

**10%**

**1. Repairing and replacing wood decks**

knowledge of pressure treated wood  
knowledge of other wood protection  
knowledge of carpentry  
knowledge of foundations  
knowledge of composite deck materials

**2. Repairing and replacing masonry type decks (concrete, tile, stone, brick, and pavers)**

knowledge of sub-base materials  
knowledge of work requirements  
knowledge of work placement  
knowledge of drainage and slope  
knowledge of drains and plumbing  
knowledge of form work  
knowledge of expansion and contraction protection  
knowledge of deck finishes  
knowledge of reinforcement materials  
knowledge of bonding new material to old  
knowledge of cleaning in preparation for repair  
knowledge of safety requirements  
knowledge of expansion joints  
knowledge of state codes  
knowledge of maintaining strength of the deck  
knowledge of soil conditions  
knowledge of compaction  
knowledge of concrete placement

**Content Area C**

**10%**

**Tile, Coping and Trim Work**

**1. Replacing and repairing tile and trim work**

knowledge of code requirements  
knowledge of material properties  
knowledge of specific handling requirements  
knowledge of measurements  
knowledge of measuring equipment  
knowledge of types of grouts and requirements  
knowledge of adhesive requirements  
knowledge of mortar requirements  
knowledge of cleaning  
knowledge of leveling techniques and requirements  
knowledge of architectural effects  
knowledge of mitering

**2. Checking for level placement of materials**

knowledge of code requirements  
knowledge of leveling equipment  
knowledge of leveling techniques and requirements

**3. Replacing and repairing gutters**

knowledge of code requirements  
knowledge of leveling  
knowledge of slopes  
knowledge of concrete  
knowledge of finishes

knowledge of tile  
knowledge of plumbing  
knowledge of inlets and outlets  
knowledge of form work

**Content Area D**  
**Accessory Work**

**10%**

- 1. Replacing and repairing electrical components**  
knowledge of state codes  
knowledge of automatic timers  
knowledge of lights  
knowledge of electrical connections to chlorinating generators  
knowledge of electrical connections to heaters  
knowledge of electrical connections to pumps  
knowledge of automation devices
- 2. Installing diving boards and diving platforms**  
knowledge of materials for diving boards  
knowledge of installation requirements  
knowledge of safety requirements  
knowledge of proper placement
- 3. Installing slides**  
knowledge of materials for slides  
knowledge of installation requirements  
knowledge of proper placement  
knowledge of safety requirements
- 4. Installing ladders and rails**  
knowledge of state codes  
knowledge of safety requirements  
knowledge of water balancing  
knowledge of installation requirements  
knowledge of electrical bonding  
knowledge of anchoring
- 5. Installing auxiliary lighting**  
knowledge of fiber optic lighting  
knowledge of low voltage accent lighting
- 6. Installing pool and spa safety barriers**  
knowledge of installation procedures  
knowledge of state codes  
knowledge of safety requirements  
knowledge of gate requirements
- 7. Utilizing pool blankets and covers**  
knowledge of materials and types

knowledge of the properties of materials  
knowledge of safety requirements  
knowledge of installation  
knowledge of securing installation  
knowledge of chemical balance effects

**Content Area E**  
**Interior Surface Preparation and Finishing**

**10%**

- 1. Performing interior pool and spa clean-ups**  
knowledge of drawdown  
knowledge of complete pool draining  
knowledge of possible uplift and dewatering  
knowledge of chemicals  
knowledge of cleaning solutions  
knowledge of cleaning procedures  
knowledge of safety requirements  
knowledge of disposal requirements
- 2. Performing interior pool and spa plastering of pneumatically placed or poured concrete pools**  
knowledge of gunite materials, procedures, and requirements  
knowledge of shotcrete materials and procedures  
knowledge of concrete requirements  
knowledge of concrete testing  
knowledge of concrete properties  
knowledge of form work  
knowledge of finishing and brazing  
knowledge of surface preparation  
knowledge of state codes  
knowledge of dewatering procedures  
knowledge of plastering materials
- 3. Resurfacing fiberglass pools and spas**  
knowledge of materials  
knowledge of fiberglass resurfacing practices  
knowledge of soils  
knowledge of coping  
knowledge of leveling and installing  
knowledge of fiberglass pool shell construction
- 4. Installing lining in vinyl-lined pools**  
knowledge of materials  
knowledge of methods  
knowledge of soils  
knowledge of pool wall construction  
knowledge of coping  
knowledge of leveling and installing  
knowledge of anchoring and bracing

**Content Area F**  
**Start Up**

**10%**

**1. Pre-testing and balancing fill water**

knowledge of water chemistry  
knowledge of testing procedures and requirements  
knowledge of reagents  
knowledge of saturation index  
knowledge of pH  
knowledge of total alkalinity  
knowledge of hardness  
knowledge of metals  
knowledge of phosphates

**2. Testing filters and filtration**

knowledge of differences between pressure and vacuum filtration  
knowledge of turnover rates  
knowledge of pumps  
knowledge of testing procedures

**3. Balancing pool and spa water**

knowledge of saturation index  
knowledge of water chemistry  
knowledge of testing procedures and requirements  
knowledge of solutions  
knowledge of reagents  
knowledge of pH  
knowledge of total alkalinity  
knowledge of hardness  
knowledge of disinfecting  
knowledge of sanitizing  
knowledge of safety requirements  
knowledge of chemical hazards

**4. Perform equipment startup**

knowledge of equipment specifications  
knowledge of system design  
knowledge of heating equipment  
knowledge of filtration equipment  
knowledge of auxiliary equipment  
knowledge of pumps

**Content Area G**  
**Service and Maintenance**

**35%**

**1. Demonstrating pool operation to the operator**

knowledge of mechanical and hydraulic systems

knowledge of chemical systems  
knowledge of general pool care requirements  
knowledge of safety requirements  
knowledge of equipment  
knowledge of daily reports (commercial pools)

**2. Sanitizing pools and spas through chlorination**

knowledge of water chemistry  
knowledge of chlorinating feeder types  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of practices of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements  
knowledge of chlorinating procedures  
knowledge of chemical balancing techniques and requirements  
knowledge of testing techniques and requirements  
knowledge of reagents  
knowledge of adjusting techniques and requirements

**3. Performing shock treatment or super-chlorination**

knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements  
knowledge of chlorinating procedures and techniques  
knowledge of chemical balancing  
knowledge of testing techniques and requirements  
knowledge of reagents  
knowledge of adjusting techniques and requirements  
knowledge of turbidity

**4. Determining breakpoint chlorination**

knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of practices of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements

knowledge of chlorinating procedures  
knowledge of chemical balancing techniques  
and requirements  
knowledge of testing techniques and  
requirements  
knowledge of reagents  
knowledge of adjusting techniques and  
requirements

**5. Sanitizing pools and spas through chlorine**

generating salt system  
knowledge of electrolysis  
knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of practices of pool chemicals  
knowledge of safety requirements  
knowledge of salt system requirements  
knowledge of salt system procedures  
knowledge of chemical balancing techniques  
and requirements  
knowledge of testing techniques and  
requirements  
knowledge of reagents  
knowledge of adjusting techniques and  
requirements  
knowledge of salt system equipment  
maintenance

**6. Sanitizing pools and spas through oxidation**

knowledge of effects of pool chemicals  
knowledge of practices of pool chemicals  
knowledge of safety requirements  
knowledge of chemical balancing techniques  
and requirements  
knowledge of testing techniques and  
requirements  
knowledge of reagents  
knowledge of adjusting techniques and  
requirements

**7. Testing and adjusting pH values**

knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements  
knowledge of chlorinating procedures  
knowledge of chemical balancing techniques  
and requirements

knowledge of testing techniques and  
requirements  
knowledge of reagents  
knowledge of adjusting techniques and  
requirements

**8. Testing and adjusting water hardness**

knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of practices of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements  
knowledge of chlorinating procedures  
knowledge of chemical balancing techniques  
and requirements  
knowledge of testing techniques and  
requirements  
knowledge of reagents  
knowledge of adjusting techniques and  
requirements

**9. Testing and adjusting total alkalinity**

knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements  
knowledge of chlorinating procedures  
knowledge of chemical balancing techniques  
and requirements  
knowledge of testing techniques and  
requirements  
knowledge of reagents  
knowledge of adjusting techniques and  
requirements

**10. Testing and adjusting cyanuric acid**

knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating requirements  
knowledge of chlorinating procedures  
knowledge of chemical balancing techniques  
and requirements

knowledge of testing techniques and requirements  
knowledge of reagents  
knowledge of adjusting techniques and requirements

**11. Testing and adjusting metals**

knowledge of water chemistry  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of safety requirements  
knowledge of dangers of chlorinating agents  
knowledge of chlorinating procedures  
knowledge of chemical balancing techniques and requirements  
knowledge of testing techniques and requirements  
knowledge of reagents  
knowledge of adjusting techniques and requirements

**12. Knowledge of the effect of chemical balances on staining**

knowledge of safety requirements  
knowledge of chemicals  
knowledge of chemical properties  
knowledge of mixing procedures  
knowledge of chemical effects  
knowledge of storage procedures and requirements  
knowledge of water balancing  
knowledge of filtration  
knowledge of pool and spa surface finishes

**13. Cleaning D.E. filters by pressure backwashing and jet spraying**

knowledge of system design  
knowledge of pump requirements  
knowledge of flow rates  
knowledge of safety requirements  
knowledge of testing procedures  
knowledge of water clarity  
knowledge of gauges  
knowledge of drainage  
knowledge of valves  
knowledge of filter media

**14. Backwashing sand filters**

knowledge of system design  
knowledge of pump requirements  
knowledge of flow rates  
knowledge of safety requirements

knowledge of testing procedures  
knowledge of water clarity  
knowledge of gauges  
knowledge of drainage  
knowledge of valves  
knowledge of filter media  
knowledge of sand filter alternatives

**15. Cleaning cartridge filters**

knowledge of system design  
knowledge of pump requirements  
knowledge of flow rates  
knowledge of safety requirements  
knowledge of testing procedures  
knowledge of water clarity  
knowledge of gauges  
knowledge of drainage  
knowledge of valves  
knowledge of filter media

**16. Disinfecting and sanitizing decks and locker rooms**

knowledge of sodium hypochlorite  
knowledge of calcium hypochlorite  
knowledge of lithium hypochlorite  
knowledge of safety requirements  
knowledge of chemical properties  
knowledge of mixing procedures  
knowledge of chemical effects  
knowledge of storage procedures and requirements

**17. Using other pool sanitizers (e.g., bromine, iodine, ozone, ultraviolet, ions)**

knowledge of safety requirements  
knowledge of chemicals  
knowledge of chemical properties  
knowledge of mixing procedures  
knowledge of chemical effects  
knowledge of chemical balancing techniques and requirements  
knowledge of storage procedures and requirements  
knowledge of alternate sanitation device installation

**18. Using other pool chemicals (e.g., flocculants, algacides, sequestering agents, phosphate treatments, degreasers and defoamers)**

knowledge of safety requirements

knowledge of chemicals  
knowledge of chemical properties  
knowledge of mixing procedures  
knowledge of filtration requirements  
knowledge of filtration media  
knowledge of chemical effects  
knowledge of chemical balancing techniques  
and requirements  
knowledge of storage procedures and  
requirements

**19. Testing and adjusting saturation index**

knowledge of water chemistry  
knowledge of pH  
knowledge of pool chemicals  
knowledge of effects of pool chemicals  
knowledge of safety requirements  
knowledge of chlorinating techniques and  
procedures  
knowledge of chemical balancing techniques  
and requirements  
knowledge of testing procedures  
knowledge of reagents  
knowledge of adjusting procedures

**20. Replacing light bulbs and underwater lights**

knowledge of different voltage lights  
knowledge of proper safety procedures and  
requirements  
knowledge of importance of GFCI requirements  
knowledge of safe wiring and sealing water out  
knowledge of material specifications  
knowledge of bonding and grounding  
requirements  
knowledge of state codes

**21. Installing markers and signs to notify the public of safety procedures**

knowledge of state codes  
knowledge of safety requirements  
knowledge of placement  
knowledge of location

**22. Maintaining and repairing plumbing equipment**

knowledge of safety requirements  
knowledge of piping requirements  
knowledge of fittings  
knowledge of pipe fittings  
knowledge of piping protection  
knowledge of pressure requirements  
knowledge of gauges

knowledge of pressure testing  
knowledge of flow rates  
knowledge of pumps  
knowledge of leak detection

**23. Maintaining and repairing pool shells**

knowledge of leak detection  
knowledge of leak testing  
knowledge of safety requirements  
knowledge of materials  
knowledge of the properties of materials  
knowledge of crack repair procedures

**24. Evaluating and adjusting system requirements**

knowledge of system design  
knowledge of checking for correct turnover rate  
knowledge of checking for filtering media  
effectiveness  
knowledge of checking flow rate  
knowledge of testing and adjusting water  
chemistry  
knowledge of checking and clearing strainer  
baskets  
knowledge of automatic cleaner strainers  
knowledge of D.E. separation tank cleaning

**25. Performing heater maintenance and repair**

knowledge of heating system efficiency  
knowledge of safety requirements  
knowledge of system design  
knowledge of system capacity  
knowledge of temperature measurements  
knowledge of effects of temperature  
knowledge of changes in temperature  
knowledge of effects of water chemistry on  
heater components  
knowledge of pool chemistry  
knowledge of gas and electric requirements  
knowledge of state codes  
knowledge of additional licensure requirements

**Content Area H  
Safety Procedures**

**5%**

**1. Complying with state and federal requirements**

knowledge of state and federal codes  
knowledge of ADA requirements  
knowledge of VGBA requirements

**2. Implementing a safety program**

knowledge of safety requirements

**3. Utilizing accident prevention techniques**

knowledge of storage procedures

knowledge of safety requirements

knowledge of transportation requirements and procedures

knowledge of pool closure procedures