

OALCF Task Cover Sheet

Task Title: Calculating Service Size

Learner Name:				
Date Started:	Date Completed:			
Successful Completion: Voc No				
	J			
Goal Path: Employment ✓ Apprenticeship ✓ S	econdary School Post Secondary Independence			
Task Description:				
Electricians calculate the service size for home	s and other buildings. They take into consideration the size of			
the home and the minimum legal service size.				
Competency:	Competency: Task Group(s):			
A: Find and Use Information	A1: Read continuous text			
B: Communicate Ideas and Information	A2: Interpret documents			
C: Understand and Use Numbers	B2: Write continuous text			
D: Use Digital Technology	D: Use Digital Technology C3: Use measures			
Level Indicators:				
A1.1: Read brief texts to locate specific detail	S			
A1.2: Read texts to locate and connect ideas	A1.2: Read texts to locate and connect ideas and information			
A2.2: Interpret simple documents to locate and connect information				
B2.1: Write brief texts to convey simple ideas and factual information				
B2.2: Write texts to explain and describe information and ideas				
C3.1: Measure and make simple comparisons and calculations				
C3.2: Use measures to make one-step calcula	ations			
D.1: Perform simple digital tasks according t	to a set procedure			
Performance Descriptors: see chart on last page				
Materials Required:				
• Pencil				
Calculator				



Task Title: Calculating Service Size

Electricians calculate the service size for homes. Service size is the amount of electricity (measured in amperes (amps)) that a house requires. The electricity enters the house through a fuse or breaker panel; the panel is rated for the service size calculated (e.g. 60, 100, 120, 150, 200 amps).

Electricians take into consideration the size of the home, the number of plugs, lights and appliances requiring electricity and the minimum legal service size. They also read the Canadian Electrical Code to determine maximum items/load on a circuit.

Service size is based on 2 factors: calculated load and minimum service size.

The calculated load is the sum of all the loads. A load is anything (a resistor) powered by electricity such as plugs, lights, stoves, dryers and furnaces; light switches are not included in the calculation. Minimum lights, switches and plugs are listed in the Canadian Electrical Code and are based on the room type and size as well as the square meters of the house. The basic load for a house (up to 90 m²) is 5,000 watts; other resistors (such as a stove) are added to this to determine the total wattage.

The minimum service size is based on the square meters of the house. It is legal (and sometimes preferred) to have a larger service size than required (so more items requiring electricity can be added later) **but** it is illegal to install a smaller service size than required.

Learner Information and Tasks:

Tuble 1 , and the solution of	Task 1:	a)	Plugs, light switches and furnaces	are considered loads.	True	False
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- b) Service size is measured in amperes. True _____ False _____
- c) The basic load for a small house is _____ watts.

Task 2: Amperes (amps) = Watts (Total)/Volts

- a) Calculate the total amps required for the following service:
 - Basic load = 5,000 watts
 - Range (stove) = 6,000 watts
 - Dryer = 1,000 watts

The service is 240 volts.



b) The area of this house is 84 m². Use the Service Size table (partial) below to determine the minimum legal service size for this house. Write your answer in a full sentence below.

Sq. Meters	Minimum Service Size (amps)	Include basement dimensions in	
		calculation	
Less than 80	60	No	
80 - 90	100	No	
90 - 180	120	Yes (75%)	

Information for Task 3:

Rule 12–4,000: A maximum of 12 outlets may be connected to a circuit. These may be plugs (excluding special ones in the kitchen or for appliances such as a refrigerator) or lights or any combination. It is better to have a circuit contain both lights and plugs. Light switches do not count as part of the 12. It is encouraged that 10 (or even 8) plugs or lights be on any circuit but 12 is the legal maximum.

Count a single or duplex receptacle (plug) as one outlet.

Rule 2-316 and 30-502: The Electrical Code requires at least one light, controlled by a switch for the dining room, den and living room.

Rule 26-712(a)(c) requires that a receptacle (plug) be no further that 1.8 m from an appliance (e.g. lamp, television).

- Task 3:a)A house has a living room, a dining room and a den. The den has 4 receptacles,
the living room has 4 and the dining room has 3. Calculate the number of lights, plugs
and switches required for the three rooms.
 - b) Can the 3 rooms be put on one circuit? Explain your answer.



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Answer Key

Task 1:	a)	False
	b)	True
	c)	5,000
Task 2:	a)	Amperes (amps) = Watts (Total)/Volts
		Calculate the total watts.
		Total watts = 5,000 + 6,000 + 1,000
		Total watts = 12,000
		Amperes (amps) = Watts (Total)/Volts
		Amperes (amps) = 12,000/240
		Amperes (amps) = 50
	b)	84 m ² is more than 80 m ² but less than 90m ² . The minimum legal service size is 100
		amps.
Task 3:	a)	Add the receptacles of the 3 rooms
		4 + 4 + 3 = 11
		Each room must have a light and a switch.
		The three rooms will have 3 lights and 3 switches.
		Add the lights, switches and receptacles.
		3 + 3 + 11 = 17
	b)	The maximum number of outlets on a circuit is 12. Light switches do not count.
		17 – 3 (light switches) = 14
		The 3 rooms cannot be on the same circuit because there are more than 12 outlets.
	Teac	her Note: this answer must be based on the answer the learner gave in 3. a)if that

number was different than 17 then base the result on the number they use.



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	Performance Descriptors	Needs Work	Completes task with support from practitioner	Completes task independently
A1.1	 reads short texts to locate a single piece of information 			
A1.2	scans text to locate information			
	 locates multiple pieces of information in simple texts makes low-level inferences 			
	 makes connections between sentences and between paragraphs in a single text 			
	 reads more complex texts to locate a single piece of information 			
	 follows the main events of descriptive, narrative and informational texts 			
	obtains information from detailed reading			
A2.2	 performs limited searches using one or two search criteria 			
	extracts information from tables and forms			
	uses layout to locate information			
	makes connections between parts of documents			
	makes low-level inferences			
B2.1	writes simple texts to request, remind or inform			



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	 conveys simple ideas and factual information 		
	• uses sentence structure, upper and lower case and basic punctuation		
B2.2	performs limited searches using one or two search criteria		
	extracts information from tables and forms		
	uses layout to locate information		
	makes connections between parts of documents		
	makes low-level inferences		
C3.1	adds and subtracts whole number measurements		
	recognizes values in number and word format		
C3.2	 calculates using numbers expressed as whole numbers, fractions, decimals, percentages and integers 		
	• understands and uses formulas for finding the perimeter, area and volume of simple, common shapes		
	 chooses and performs required operation(s); may make inferences to identify required operation(s) 		
	selects appropriate steps to solutions		
	 interprets, represents and converts measures using whole numbers, decimals, percentages, ratios and simple, common fractions (e.g. ½, ¼) 		
	 uses strategies to check accuracy (e.g. estimating, using a calculator, repeating a calculation, using the reverse operation) 		



D.1	follows simple prompts		
	follows apparent steps to complete tasks		
	interprets brief text and icons		
	locates specific functions and information		

This task: was successfully completed____

needs to be tried again____

Learner Comments

Instructor (print)

Learner Signature