

Task Title: Understanding Calculations in Carpentry

OALCF Cover Sheet – Practitioner Copy

Learner Name: _____

Date Started: _____

Date Completed: _____

Successful Completion: Yes ☐ No ☐

Goal Path: Employment ☒ Apprenticeship ☐

Secondary School ☐ Post Secondary ☐ Independence ☐

Task Description: The learner will make calculations based on carpentry task information.

Main Competency/Task Group/Level Indicator:

- Understand and Use Numbers/Use measures/C3.2

Materials Required:

- Pen/pencil and paper and/or digital device
- Calculator or digital device with calculator function

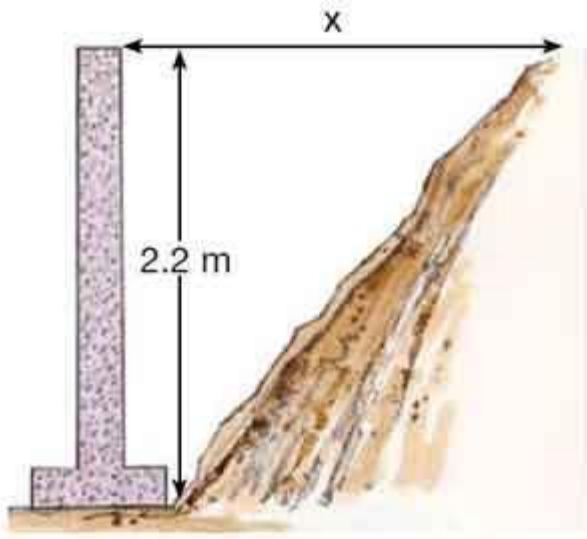
Learner Information

Carpenters make many calculations including determining where structures can be built, or calculating the quantities of materials that are needed.

Worksheet

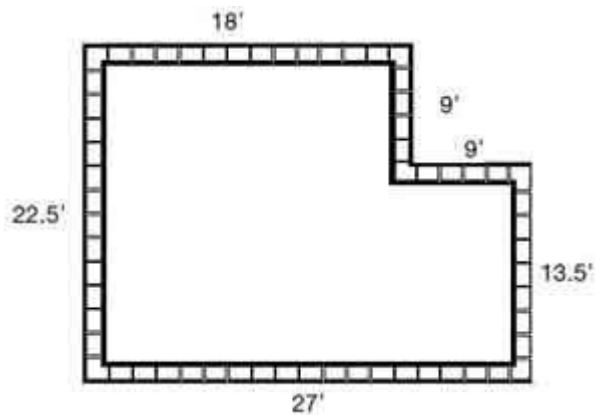
Task 1: Deep excavations need sloping sides to keep loose material from sliding onto anyone working below. There needs to be a 3:4 ratio between the setback (x) and the depth of the excavation.

Calculate the setback needed for a house with a basement that requires an excavation 2.2 m deep. Round your answer to the nearest tenth.



Answer:

Task 2: Cleats need to be placed every three feet. Two stakes are needed for each cleat. One additional stake is placed in each corner. Calculate the number of cleats and stakes needed to build footing ladders for the foundation shown below.



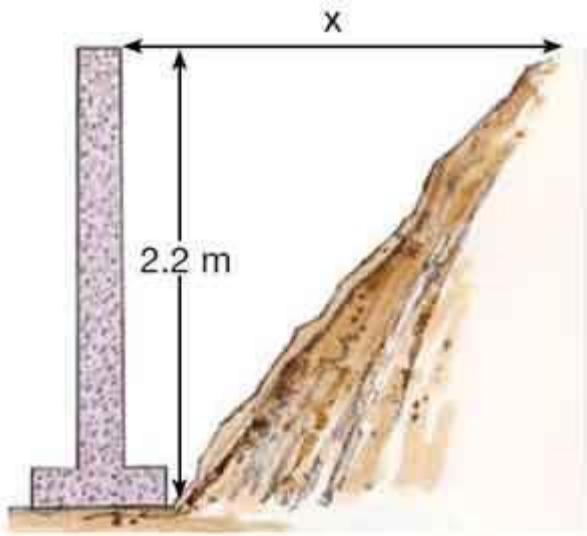
Answer:

Task 3: Cleats are purchased in bundles of 5. Stakes are purchased in bundles of 12. Calculate the number of bundles of each that are needed for this project. You cannot purchase partial bundles.

Answer:

Answers

Task 1: Deep excavations need sloping sides to keep loose material from sliding onto anyone working below. There needs to be a 3:4 ratio between the setback (x) and the depth of the excavation. Calculate the setback needed for a house with a basement that requires an excavation 2.2 m deep. Round your answer to the nearest tenth.



Answer:

$$x : 2.2 = 3 : 4$$

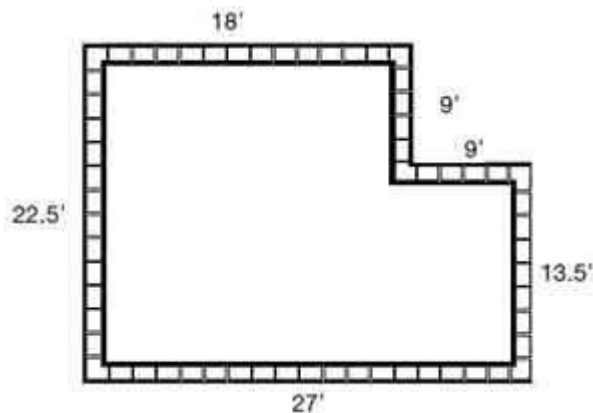
$$4x = 3 \times 2.2$$

$$4x = 6.6$$

$$4x/4 = 6.6/4$$

$$X = 1.65. \text{ The setback will be } 1.7 \text{ m.}$$

Task 2: Cleats need to be placed every three feet. Two stakes are needed for each cleat. One additional stake is placed in each corner. Calculate the number of cleats and stakes needed to build footing ladders for the foundation shown below.



Answer:

Total perimeter of foundation: $22.5 + 18 + 9 + 9 + 13.5 + 27 = 99$ feet

Cleats: $99/3$ (Cleats are placed every 3 feet) = 33 cleats are needed

Stakes:

2 stakes are needed for each cleat: $2 \times 33 = 66$ stakes

Additional stakes are needed in each corner: $6 \text{ corners} \times 1 = 6$ stakes

Total stakes needed: $66 + 6 = 72$ stakes are needed

Task 3: Cleats are purchased in bundles of 5. Stakes are purchased in bundles of 12. Calculate the number of bundles of each that are needed for this project. You cannot purchase partial bundles.

Answer:

33 cleats are needed. $33/5 = 6.6$. 7 bundles need to be purchased.

72 stakes are needed. $72/12 = 6$. 6 bundles need to be purchased.

Performance Descriptors

Levels	Performance Descriptors	Needs Work	Completes task with support from practitioner	Completes task independently
C3.2	calculates using numbers expressed as whole numbers, fractions, decimals, percentages and integers			
	understands and uses ratio and proportion			
	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 reach solutions			
	interprets, represents, and converts measures using whole numbers, decimals, percentages, ratios and simple, common fractions (e.g. $\frac{1}{2}$, $\frac{1}{4}$)			
	uses strategies to check accuracy (e.g. estimating, using a calculator, repeating a calculation, using the reverse operation)			

This task: Was successfully completed ☐ Needs to be tried again ☐

Task Title: UnderstandingCalculationsInCarpentry_EA_C3.2

Learner Comments:

Instructor (print):

Learner (print):