

Plumbing Project Essay Outline
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After completing a project in the classroom or out in the field, use your notes and math calculations, articles, your textbook, and knowledge you obtained while completing the project to write a five paragraph essay on the following:

Paragraph One: Introduction

Briefly describe to the “average Joe” the project you completed. Describe how the class was organized (in groups, with one partner, or you worked by yourself)? Did teamwork (working in groups of two or more) help you to complete this job faster or to do a better job? Or, if you worked alone, how did that work? Where in the “real world” is the product you made/fabricated/fixed found? I.E. In houses, commercial buildings, hospitals/schools, malls, and/or other places?

Paragraph Two: Equipment

Describe, using up-to-date industry terminology, the equipment, materials and other resources (internet article, text book, video, teacher) you/your group needed/used to complete the task. Was there any equipment you used that made the project go smoothly? Was there equipment that you could have used that was either not available (and you wished it was) or that was available, but didn’t work well or that created problems? What one piece of equipment or what one resources played a vital role in completing the task. Explain.

Paragraph Three: Process

Once you had all of your materials and instructions, explain **step-by-step** what you did? Start from the beginning. Using trade terminology, explain the process. Make sure that the “average Joe” can understand your essay.

Paragraph Four: Math

Identify the mathematical calculations that you did to determine the correct amount of materials needed, or to determine that the size, length, and amount of a material is exactly correct. Explain why it is so important to be exacting when cutting, measuring, and mixing, welding materials.

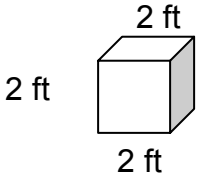
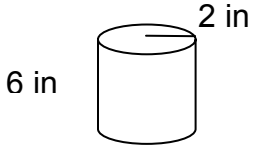
For example: In order to mix the cement, we had to measure out a ratio of three parts water to one part cement. Or, we had to divide in half a 15-½ inch pipe so we had to divide fractions.

Required: Attach your math calculations to your essay. No essay will receive a final grade without your calculations.

Paragraph Five: Conclusion

Describe your final project. How efficient were you in completing the project? What went well? What problems occurred, and how did you correct them? What suggestions would you make to anyone just starting this job? Lastly, what did you learn (techniques, new equipment, process etc.) and how is knowing what you learned important to becoming a knowledgeable, hopefully master tradesman? Explain your answer.

Volume

Figure	Volume Formula	Definition of Terms	Example
Cube	$V = lwh$	$l = \text{length}$ $w = \text{width}$ $h = \text{height}$	 <p>Area = $2 \text{ ft} \times 2 \text{ ft} \times 2 \text{ ft}$ $= 8 \text{ ft}^3$</p>
Cylinder	$V = \pi r^2 h$	$\pi = 3.14$ $r = \text{radius}$ $h = \text{height}$	 <p>Area = $\pi \times (2\text{in})^2 \times 6\text{in}$ $= 3.14 \times 4\text{in}^2 \times 6\text{in}$ $= 75.36\text{in}^3$</p>

Water Weights and Volumes

Water in Cubic Inches

1 Gallon of Water = 231 in³

<i>Gallons to Cubic Inches</i>	<i>Cubic Inches to Gallons</i>
# Gallons x 231	# Cubic Inches ÷ 231

Water in Cubic Feet

1 ft³ = 7.5 Gallons

<i>Gallons to Cubic Feet</i>	<i>Cubic Feet to Gallons</i>
# Gallons ÷ 7.5	# Cubic Feet x 7.5

Water in Pounds

1 Gallon = 8.2 Pounds

<i>Gallons to Pounds</i>	<i>Pounds to Gallons</i>
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Gallons x 8.2

Pounds ÷ 8.2



Plumbing

Name _____

Date _____

Complete the following table:

	VOLUME	GALLONS	WEIGHT IN POUNDS
1	1600 cu in		
2	5000 cu in		
3	18 cu ft		
4	275 cu ft		
5	115.75 cu ft		
6	_____ cu in	7.68 gal	
7	_____ cu ft	600 gal	
8	_____ cu in		35.99 lb

9	_____ <i>cu ft</i>		2000 lb
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Find the **a) volume b) gallons and c) pounds** of the following:

1. A cylindrical water tank 8' 0" in diameter and 12' 0" high. (*volume in cubic feet*).
2. A cylindrical gasoline storage tank 42 inches in diameter and 40 inches high (*volume in cubic inches*).
3. A rectangular flush tank 19" x 10.5" and holds water to a depth of 11 inches (*volume in cubic inches*).
4. A flat roof is 14' x 23' is 4" deep with water (*volume in cubic feet*).