

Integrated Lesson Plan

Instructor: Nathan Ormsby

Program: Building Trades

Unit: 10

Lesson Title: Concrete Block Estimation

Terminal Objective: Upon completion of this unit, the student will estimate the material needs for a concrete block foundation with 100% accuracy.

Enabling Objectives:

1. Using the information from the plan drawing and text assignment, the student will determine the lineal foot length of the foundation wall. The student will then properly use the block length to lineal foot ratio to determine the number of blocks per course.
2. Using the information from the plan drawing and text assignment, the student will determine the number of courses required. The student will then determine the total number of blocks needed, making the proper deductions for the openings.
3. After determining the total number of blocks needed, the student will use the proper cement bag to block ratio and pounds of sand to cement bag ratio in the determination of the number of bags of cement and tons of sand needed.

Related PA Academic Standards:

Reading, Writing, Speaking and Listening

1. #1.1.11 D Identify, describe, evaluate, and synthesize the essential ideas in the text.
2. #1.2.11 A Read and understand essential content of informational texts and documents.
3. #1.8.11 B Locate information using appropriate sources and strategies.

Mathematics

4. #2.2.11 B Use estimation to solve problems
5. #2.4.11 E Demonstrate mathematical solutions to problems
6. #2.7.11 E Solve problems involving independent simple and compound events
7. #2.5.11 C Present mathematical procedures.

Introduction:

1. This unit will be presented after shop exercises laying various walls
2. The students will have a background in block size dimensions
3. The students will be given information on the importance of estimation.
4. The students must read the text assignment and find the ratios.

Body/Main Content:

1. Add together the length of all the walls.
 - A. 20' x 40' building = 120 lineal feet
 - B. .75 is the length of a block converted into feet
 - C. Multiply the length of the wall by .75
 - D. $120 \times .75 = 90$ blocks per course

Integrated Lesson Plan

2. Convert the height of the wall into the number of courses
 - A. Find the height of the wall
 - B. Convert the height of the wall in feet to inches
 - C. Divide the height of the wall in inches by the height of an 8" block with joint
 - D. $8' = 96''$
 - E. $96''$ divided by $8'' = 12$ courses
3. Determine the deductions for openings using the same method
4. 50 blocks can be placed with one bag of cement
300 pounds of sand are needed for every bag

Summary:

1. Add the length of the walls together
2. Convert the length of the walls into the number of blocks per course.
3. Convert the height of the wall into the number of courses.
4. Deduct for openings
5. Determine bags of cement
6. Determine tons of sand

Materials Needed: References: Masonry Skills, Author: Richard T Kreh