



## Task Title: Duct Installation Calculations

### OALCF Cover Sheet – Learner 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 use a formula to perform calculations related to ductwork installation.

#### 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

Sheet metal workers may install ductwork in buildings. They calculate the appropriate duct size and shape based on the required airflow and air velocity.

Read "Relationship Between Volume Flow Rate (V), Cross Sectional Area (A), and Average Air Velocity (v) in a Duct System".

### **Relationship Between Volume Flow Rate (V), Cross Sectional Area (A), and Average Air Velocity (v) in a Duct System**

$$V = A \times v$$

V (Volume Flow Rate) is the amount of air moving through the ductwork per unit of time. This is typically measured in cubic feet per minute (CFM).

A (Cross-Sectional Area) is the area of the duct's opening, calculated based on the duct's dimensions. Diameter is measured for round ducts; width and height are measured for rectangular ducts.

v (Average Air Velocity) is the speed at which the air is moving within a duct. This is typically measured in feet per minute (FPM).

## Work Sheet

**Task 1: Calculate V (Volume Flow Rate) if A (Cross-Sectional Area) is 2 ft<sup>2</sup> and v (Average Air Velocity) is 12,000 FPM.**

Answer:

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**Task 2: Calculate A (Cross-Sectional Area) if V (Volume Flow Rate) is 11,000 cubic feet per minute and v (Average Air Velocity) is 4,500 FPM.**

Answer:

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**Task 3: Calculate v (Average Air Velocity) if V (Volume Flow Rate) is 52,000 cubic feet per minute and A (Cross-Sectional Area) is 5 ft<sup>2</sup>**

Answer:

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