

# ATRF-1080: APPLIED ROOFER'S MATH

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## Cuyahoga Community College

**Viewing: ATRF-1080 : Applied Roofer's Math**

**Board of Trustees:**

January 2025

**Academic Term:**

Spring 2025

**Subject Code**

ATRF - Applied Industrial Technology - Roofing

**Course Number:**

1080

**Title:**

Applied Roofer's Math

**Catalog Description:**

Covers whole numbers, addition, subtraction, division, multiplication, fractions, decimals and area calculations used in roofing. Includes reading a rule/tape measure.

**Credit Hour(s):**

1

**Lecture Hour(s):**

1

## Requisites

**Prerequisite and Corequisite**

Departmental approval: Admission to Roofer's Apprenticeship program.

## Outcomes

**Course Outcome(s):**

Use a rule or tape measure to measure materials and spacing for accurately installing roofing materials.

**Objective(s):**

1. Accurately read a rule/tape measure.
2. Perform basic arithmetic calculations.
3. Describe the difference between the English system and metric system.

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**Course Outcome(s):**

Perform mathematical calculations for roofing using fractions and decimals.

**Objective(s):**

1. Demonstrate how to measure fractions.
  2. Convert fractions to decimals.
  3. Describe how decimals work.
  4. Add and subtract fractions.
  5. Dividing fractions.
  6. Round off decimals.
  7. Convert decimals to fractions.
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**Course Outcome(s):**

Demonstrate how to find and calculate area to determine how much roofing material will be needed.

**Objective(s):**

1. Define a square as used in roofing.
2. Demonstrate how to convert square feet into squares.
3. Discuss the importance of always rounding up not down in roofing in order to ensure sufficient materials.
4. Demonstrate how to find the area of different shaped roofs.
5. Demonstrate how to convert the area to squares.
6. Demonstrate how to determine area for a variety of roof shapes.
7. Demonstrate how to calculate the number of rolls of felt needed.
8. Demonstrate how to calculate perimeter to determine the amount of linear flashing needed.
9. Demonstrate how to calculate curb flashing.
10. Demonstrate calculating total flashing.

**Methods of Evaluation:**

1. Practice problems
2. Quizzes
3. Participation

**Course Content Outline:**

1. Measurements and Numbers
  - a. Reading a rule/tape measure
    - i. Linear
    - ii. Half inch
    - iii. Quarter inch
    - iv. Eighth Inch
    - v. Practice problems
  - b. Whole Numbers
  - c. Even and odd numbers
  - d. Systems of Measurement
    - i. English system
    - ii. Metric system
2. Fractions and Decimals
  - a. Measuring fractions
  - b. Decimal system
  - c. Converting fractions to decimals
  - d. Adding and subtracting fractions
  - e. Dividing fractions
  - f. Rounding decimals
  - g. Converting decimals to fractions
3. Roofer's Math
  - a. Math on the job
  - b. Area
    - i. Squares symbol = 10 X 10/100 square feet
    - ii. Converting Square feet into squares
  - c. Rounding off dimensions
  - d. Finding the area of a roof
    - i. Rectangles
    - ii. Triangle
    - iii. Parallelogram
    - iv. Circle
    - v. Odd-shaped roofs
  - e. Converting area to squares
  - f. Rolls of Felt calculations

- i. Rag felt
  - ii. Fiberglass felt
- g. Flashings
  - i. Perimeter
    - 1. Rectangle
    - 2. Circle
  - ii. Curb flashing
  - iii. Calculating Total flashing

## Resources

*Built Up Roofing Instructor's Guide.* United Union of Roofer's Waterproofers, and Allied Workers National Apprenticeship program, December 2020.

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## Resources Other

<https://www.carlislesyntec.com/> 2024.

<https://firestoneflatroofing.com/> 2024.

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