

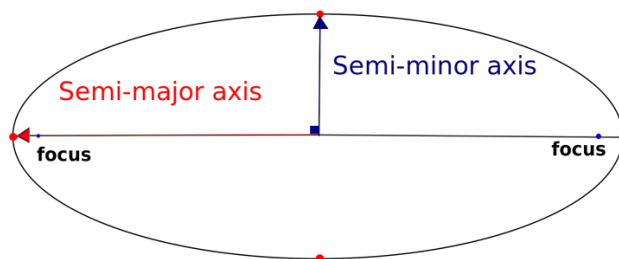
Question 2.

In this question, you have been tasked with developing a software application for a flooring business to estimate the cost of flooring and wood trim needed to update every room in a customer's home.

Each room in a customer's home can be one of four shapes: 1) Square, 2) Rectangle, 3) Oval, or 4) Triangle. The flooring will cover the entire **area** of the room, while the wood trim runs along its entire **perimeter**. The table below provides the formulas for **area** and **perimeter** for each of the above mentioned room shapes.

Shape	Area Formula	Perimeter Formula
Square	length^2	$\text{length} * 4$
Rectangle	$\text{length} * \text{width}$	$\text{length} * 2 + \text{width} * 2$
Oval	$\text{semimajorAxis} * \text{semiminorAxis} * \pi$ Where $\text{semimajorAxis} > \text{semiminorAxis}$	$2\pi \sqrt{\frac{\text{semimajorAxis} + \text{semiminorAxis}}{2}}$ Where $\text{semimajorAxis} > \text{semiminorAxis}$
Triangle	$\sqrt{p * (p - \text{side1}) * (p - \text{side2}) * (p - \text{side3})}$ where $p = \frac{\text{side1} + \text{side2} + \text{side3}}{2}$	$\text{side1} + \text{side2} + \text{side3}$

The program should start by asking how many floors are in their home and then the number of rooms on each floor as the program progresses. For each **room** in the house, the program should ask the user the shape of the room as well as its dimensions; for example if the user specifies the room is a "Oval" you will need to ask for its semimajor axis and semiminor axis values; however, if they specify the room is a "Triangle" the program should instead request the 3 side lengths of the room in feet.



Additionally, for each **room** in the house, the program must ask the user the type of flooring they want from the following list of options : Carpet, Tile, Laminate, or Wood. The cost per foot of each type of flooring option is displayed in the table below.

Flooring Type	Cost Per Square Foot
Carpet	\$3.00
Tile	\$5.00
Laminate	\$4.25
Wood	\$7.00

Note: The cost of wood trim is constant at a rate of \$1.50 per foot.

Based on the user choice of flooring of option, the room's perimeter, and its area your program should display the cost of wood trim, the cost of flooring, and the room total cost for each room in the home.

Finally, at the end of the program, the **total** cost of flooring and trim required to complete the entire home should be displayed.

Welcome to Handyman's Flooring Calculator!

Please enter the number of floors in your home: 2

Please enter the number of rooms on floor 1: 2

Floor 1, Room 1

Please enter the shape of the room [Square/Rectangle/Oval/Triangle]: Square

Please enter the length of one side of the room in feet: 15

Which flooring option would you like for floor 1, room 1 [Carpet/Tile/Laminate/Wood]: Carpet

Cost – Floor 1, Room 1: \$765.00

Wood Trim: \$90.00

Flooring: \$675.00

Floor 1, Room 2

Please enter the shape of the room [Square/Rectangle/Oval/Triangle]: Rectangle

Please enter the length of room in feet: 15

Please enter the width of room in feet: 20

Which flooring option would you like for floor 1, room 1 [Carpet/Tile/Laminate/Wood]: Tile

Cost Breakdown – Floor 1, Room 2: \$1605.00

Wood Trim: \$105

Flooring: \$1500.00

Please enter the number of rooms on floor 2: 2

Floor 2, Room 1

Please enter the shape of the room [Square/Rectangle/Oval/Triangle]: Oval

Please enter the length of semimajor axis: 10

Please enter the length of semiminor axis: 5

Which flooring option would you like for floor 1, room 1 [Carpet/Tile/Laminate/Wood]: Laminate

Cost – Floor 2, Room 1: \$744.12

Wood Trim: \$37.26

Flooring: \$706.86

Floor 2, Room 2

Please enter the shape of the room [Square/Rectangle/Oval/Triangle]: Triangle

Please enter the length of side 1: 30

Please enter the length of side 2: 25

Please enter the length of side 3: 20

Which flooring option would you like for floor 1, room 1 [Carpet/Tile/Laminate/Wood]: Wood

Cost – Floor 2, Room 1: \$1848.78

Wood Trim: \$112.50

Flooring: \$1736.28

Total Cost For Entire Home: \$4962.90

Total Wood Trim: \$344.76

Total Flooring: \$4618.14

Thank-you for using our flooring cost estimator!