

Lesson Four: Perimeter and Area Applications

This lesson will apply the skills you learned to find the area of a shape to “real-world” problems. There are two things to remember when working through these problems:

1. Most costs are provided ‘per unit’ (per box, per can, etc.). You are not allowed to purchase part of a box (or can, or...). This means you must round your answers appropriately for the situation.
2. Any question that contains a price “plus tax” or “plus PST” or “plus GST” require you to include the appropriate taxes in your final cost. Recall that (in MB) PST = 7% and GST = 5%.
3. If no tax calculation is required the phrase “taxes included” will be used.

Example 1

You plan to tile a basement floor, shown below, with large ceramic tiles. The tiles that you have chosen are square and measure 2 feet on each side. You will need to buy 10% more tiles than you actually need, to account for waste. Tiles are sold in boxes of 12 for \$65.99 plus tax.

You also plan to install baseboard around the perimeter of the room. Baseboard costs \$0.73 per linear foot. You will also need to purchase 10% more than what is needed to account for waste when cutting.

Determine the total cost for tiles and baseboard for this basement floor.

Area of one tile = 4 ft^2

Area = $40' \times 15' = 600 \text{ ft}^2$

Area = $10' \times 19' = 190 \text{ ft}^2$

Area of one tile = $2 \text{ ft} \times 2 \text{ ft} = 4 \text{ ft}^2$

① Total area of floor = $600 \text{ ft}^2 + 190 \text{ ft}^2 = 790 \text{ ft}^2$

② Total Perimeter = $25' + 40' + 15' + 21' + 10' + 19' = 130 \text{ ft}$

① Cost of tiles = boxes of tiles $\times \$65.99 \times 1.12$
 $= 19 \text{ boxes} \times \65.99×1.12
 $= \$1253.81 \times 1.12$
 Cost of Tiles = $\$1404.27$

② Cost of Baseboard = Perimeter of floor $\times \$0.73 \times 1.12$
 $= (130 \text{ ft} \times 1.10) \times \0.73×1.12
 Cost of Baseboard = $\$116.92$

③ TOTAL COST = $\$1404.27 + \$116.92 = \$1521.19$

Number of tiles =
 Area floor $+10\% \div 4 \text{ ft}^2$
 $(790 \text{ ft}^2 \times 1.10) \div 4 \text{ ft}^2$
 $869 \div 4 = 217.25$
 Roundup = 218 tiles
 Therefore: # of Boxes of tiles
 $= 218 \div 12$
 $= 18.17$
 Roundup = 19 boxes of tiles