

PROBLEM SOLVING

EXAMPLE 6

on p. 356
for Exs. 58–63

58. **ARCHAEOLOGY** At the ruins of Caesarea, archaeologists discovered a huge hydraulic concrete block with a volume of 945 cubic meters. The block's dimensions are x meters high by $12x - 15$ meters long by $12x - 21$ meters wide. What is the height of the block?

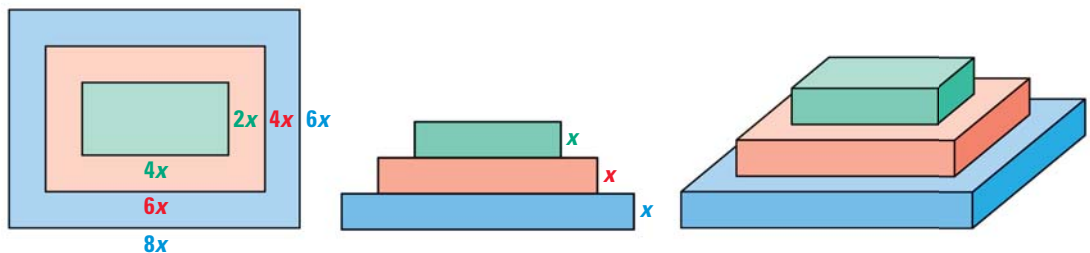
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59. **CHOCOLATE MOLD** You are designing a chocolate mold shaped like a hollow rectangular prism for a candy manufacturer. The mold must have a thickness of 1 centimeter in all dimensions. The mold's outer dimensions should also be in the ratio 1:3:6. What should the outer dimensions of the mold be if it is to hold 112 cubic centimeters of chocolate?

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60. **MULTI-STEP PROBLEM** A production crew is assembling a three-level platform inside a stadium for a performance. The platform has the dimensions shown in the diagrams, and has a total volume of 1250 cubic feet.



- Write Expressions** What is the volume, in terms of x , of each of the three levels of the platform?
 - Write an Equation** Use what you know about the total volume to write an equation involving x .
 - Solve** Solve the equation from part (b). Use your solution to calculate the dimensions of each of the three levels of the platform.
61. **SCULPTURE** Suppose you have 250 cubic inches of clay with which to make a sculpture shaped as a rectangular prism. You want the height and width each to be 5 inches less than the length. What should the dimensions of the prism be?
62. **MANUFACTURING** A manufacturer wants to build a rectangular stainless steel tank with a holding capacity of 670 gallons, or about 89.58 cubic feet. The tank's walls will be one half inch thick, and about 6.42 cubic feet of steel will be used for the tank. The manufacturer wants the outer dimensions of the tank to be related as follows:
- The width should be 2 feet less than the length.
 - The height should be 8 feet more than the length.
- What should the outer dimensions of the tank be?

