

## Problems – Similar figures/solids

How do the quantities in these problems compare? I.e. are they proportional? In what way? Why? Predict possible students' misconceptions/mistakes. How would you address those? What assumptions or clarifications, if any, need to be made to answer these questions?

1. Find all sides of the triangle that has perimeter 100 and is similar to the triangle with sides 3, 5, and 7.
2. Two prisms are similar. The first prism has surface area 28 square units and volume 4 cubic units. The second prism has surface area 63 square units. Find its volume.
3. Suppose you are helping your aunt paint her house. She tells you that one gallon was exactly the amount of paint needed to paint a 12 feet  $\times$  10 feet room. Next, a 20 feet  $\times$  15 feet room needs to be painted. How much paint is needed? If paint can be bought only in containers of 1 gallon,  $\frac{1}{2}$  gallon, and  $\frac{1}{4}$  gallon, how much paint will have to be bought for the second room?
4. Suppose your little sister says that using her whole set of 400 Lego bricks, she made a house that is 10 cm long, 10 cm wide, and 8 cm high. Approximately how many such sets will she need to make a house that is 30 cm long, 20 cm wide, and 20 cm high?