Filling the compartments-Worksheet

It is clear that the objective of the problem, presented in a family context for adults (filling a luggage compartment), is to work on the concept of equivalent volumes.

What is the total volume of the set of pieces?

In units and if desired, in cm^3.

Tip:

How is the volume of a prism calculated?

How would you calculate the volume of a non-regular figure?

Will all prisms have the same (lateral and total) area?

We can start by measuring the bases and height of each prism and then the lateral and total surface areas.

Tip:

How is the area of a prism calculated?

How would you calculate the area of a non-regular figure?

A simpler case can be proposed using 8 multilinks which can be assembled differently and calculating the area of each shape, regular or non-regular, formed.

Which shape among those examined is the one that, for the same volume, has the smallest area?

Could we generalise the case and say that the sphere is the shape that contains the greatest volume while offering the least surface area?

Tip:

We can find examples of this volume/surface dialectic in nature (intestine and lungs versus snowball) and in technology (radiator versus gas storage).

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