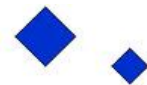
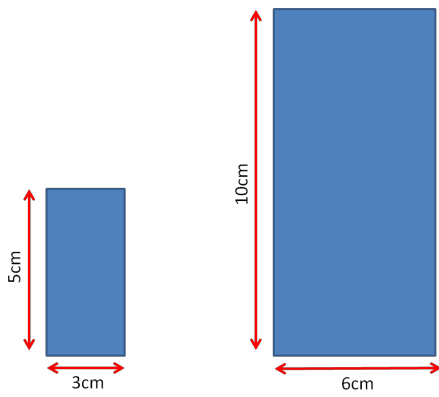
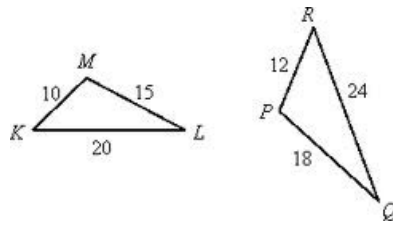
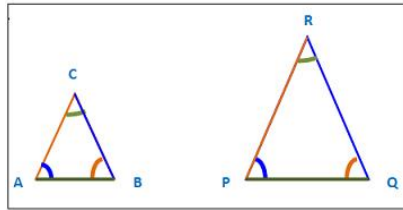
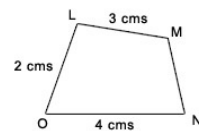
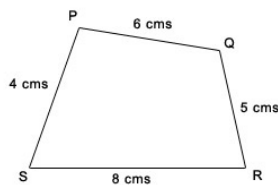
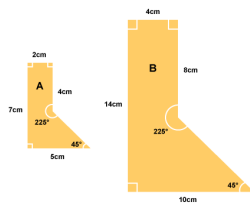
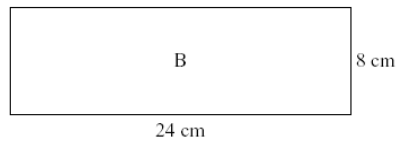
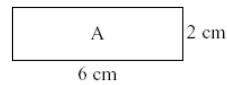
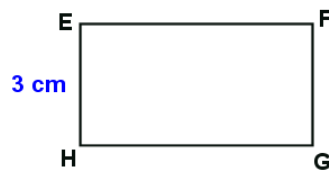
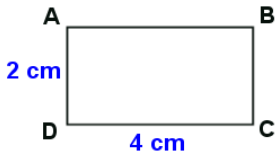


Ratios of Similarity

2-Dimensional Figures

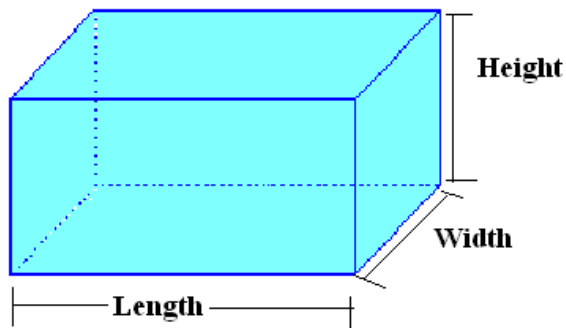
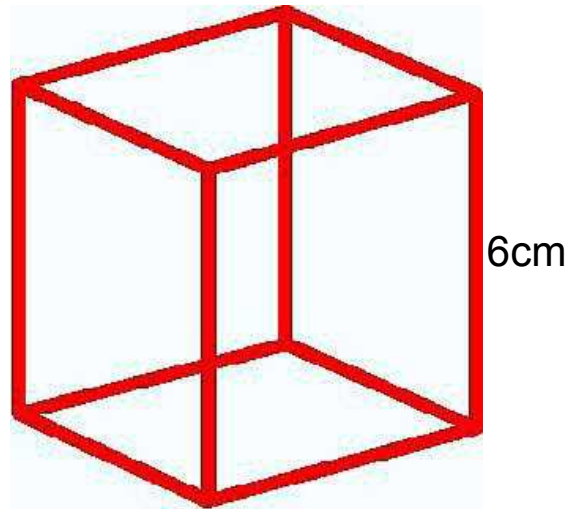
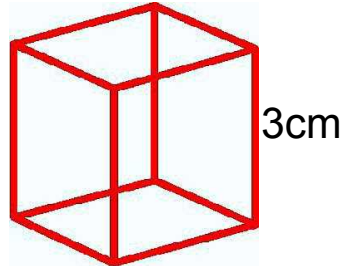


similar figures
same shape
different size

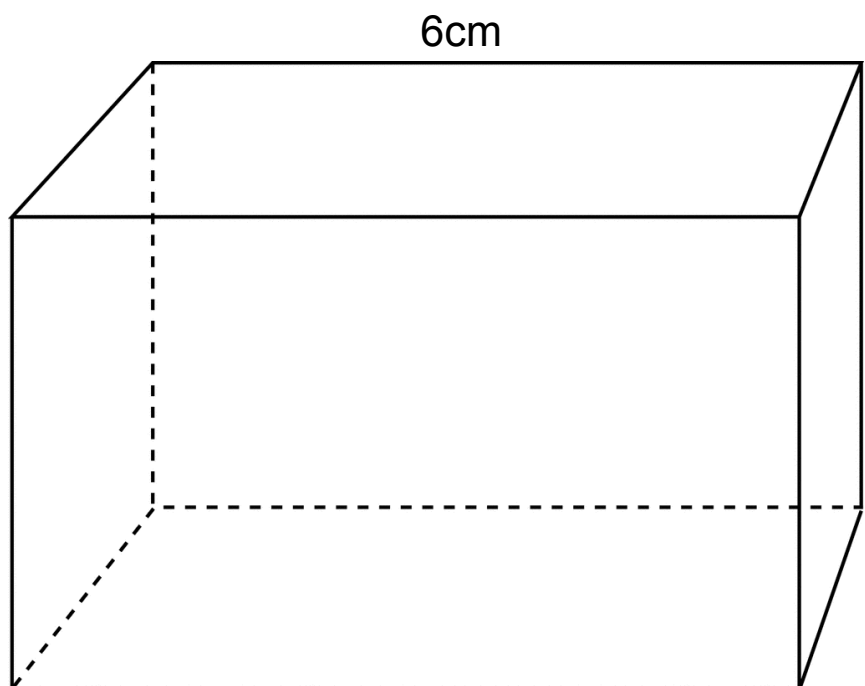
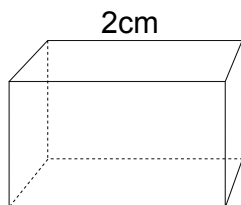


3-Dimensional Figures

2 cubes:



Rectangular Prism



Problems:

1. We want to compare the prices of two toblerone bars. The bars are similar triangular prisms. The price of the larger bar is triple the price of the smaller one.

Given that the length of the smaller bar is 20cm and that the length of the larger one is 30cm, determine whether consumers are better off buying the larger one.



2. Brittany wants to buy some raisin bran. There are two boxes on the store shelf. The boxes are similar rectangular prisms. The height of one box is 30cm, and the height of the other, "Family-Sized" box is 35cm. The smaller box costs \$4.99 and the larger one costs \$6.99. Which is the better deal?



3. Jessica want to stock up on apple juice. The small cans are on sale for \$.80 each. The large can costs \$3.99. The two cans are cylindrical and similar. Given that the height of the small can is 12cm and the height of the large can is 20cm, is Jessica better off buying a bunch of small cans, or one large one? Which can is the better value?



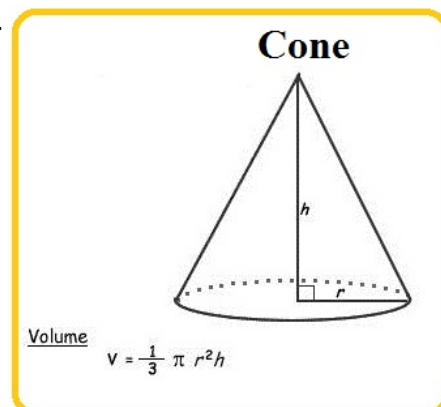
4. The ratio of the areas of two similar rectangles is equal to $\frac{9}{4}$.

What is the perimeter of the large rectangle if the perimeter of the small one is 50cm?

5. The ratio of volumes of two similar prisms is equal to 8. What is the area of the big prism if the area of the small one is 150 cm².

6. Two cone shaped containers are similar. What is the volume of the small container if the large container has a radius of 6cm and a height of 15cm and if the small container has a radius of 4cm?

Give your answer to the nearest hundredth.

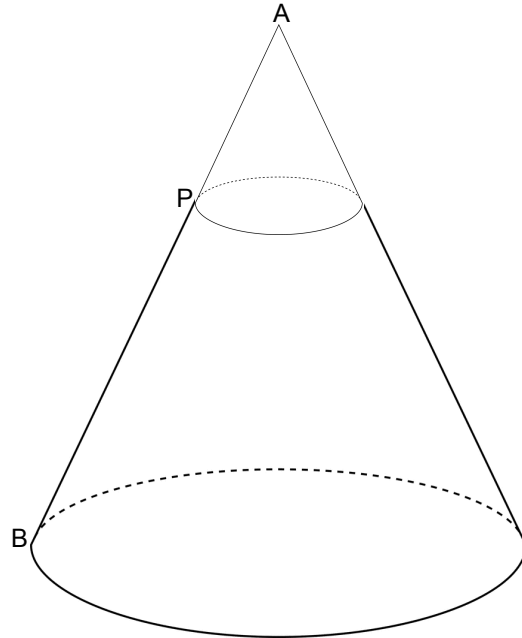


7. A small cone makes up the top of a large cone as depicted below.

The volume of the large cone is 243 cm^3 .

Point P divides side AB in a ratio of 1:2. Determine the volume of the small cone.

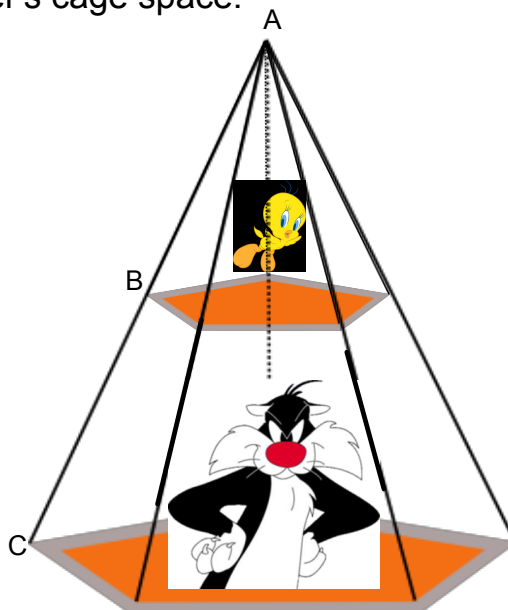
Show all your work.



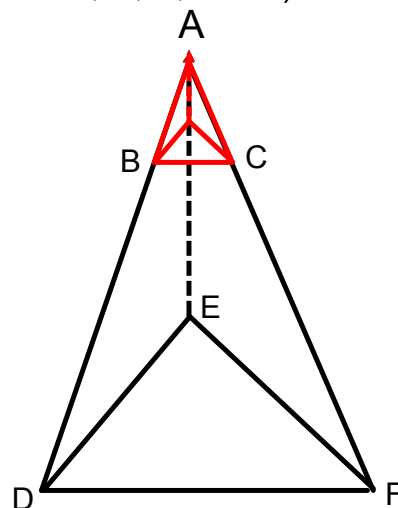
8. The volume of Tweety's cage space is 250 cm^3 .

$$m AB = m BC$$

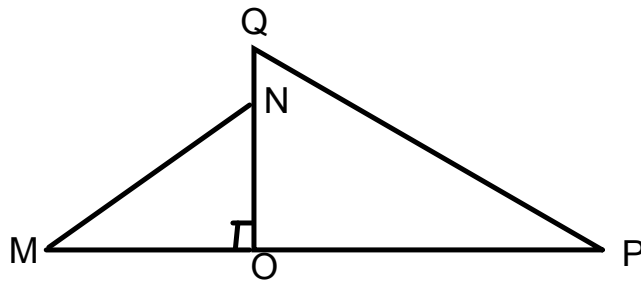
Calculate the volume of Sylvester's cage space.



9. The volume of the small prism below (shown in red) is 10 cubic centimeters. Point B divides segment AD in a ratio of 1:3. Determine the volume of the larger prism (outlined by letters A, D, E, and F).



10. A figure is composed of two similar right triangles MNO and PQO.

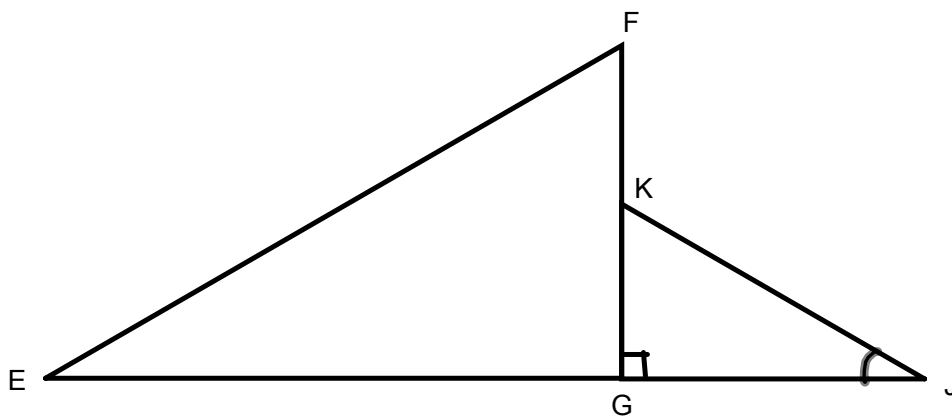


Side NO measures 2.5 cm, segment NQ measures 1.0 cm and angle $\angle NMO$ measures 35° .

Calculate the total area of the figure.

Round off your answer to the nearest tenth. Clearly show the steps in the solution and the geometry principle(s)

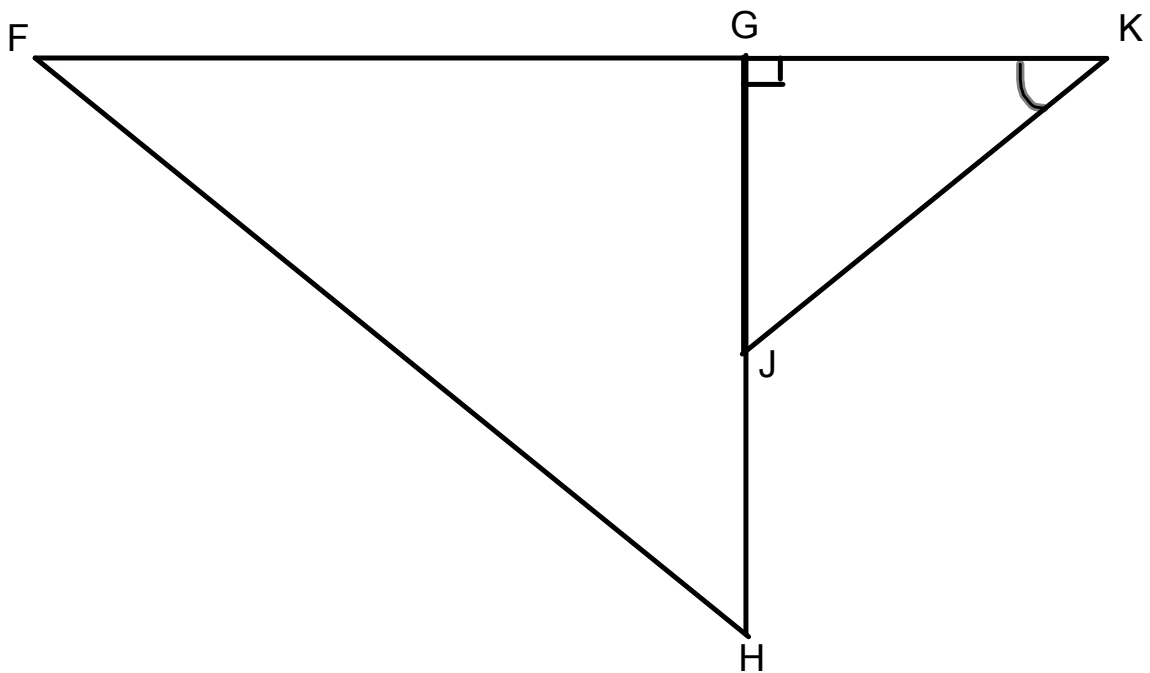
11. A figure is composed of two similar right triangles EFG and JKG.



Side GK measures 4.6 cm, segment FK measures 2.2 cm and angle $\angle GJK$ measures 30° . Calculate the total area of the figure.

Round off your answer to the nearest tenth. Clearly show the steps in the solution and the geometry principle(s) you used.

12. A figure is composed of two similar right triangles FGH and KGJ .



Side GJ measures 5.3 cm, segment JH measures 5.1 cm and angle $\angle GKJ$ measures 40° .

Calculate the total area of this figure.

Round off your answer to the nearest tenth. Clearly show the steps in the solution and the geometry principle(s) you used.

13. A figure is composed of two similar right triangles LMN and QPN.

Side MN measures 1.8 cm.

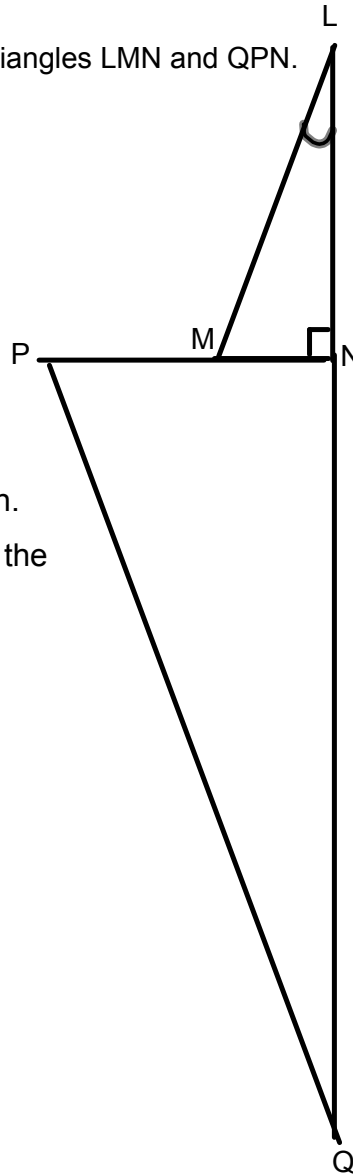
Segment MP measures 2.8 cm.

Angle $\angle MLN$ measures 20° .

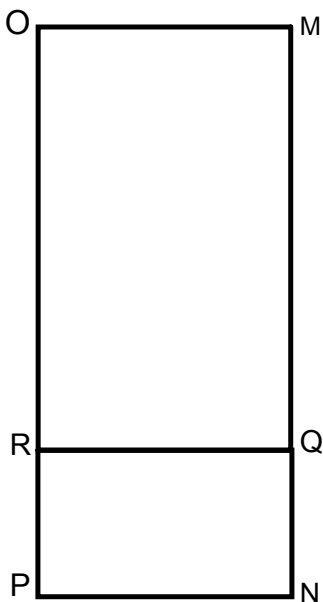
Calculate the total area of the figure.

Round off your answer to the nearest tenth.

Clearly show the steps in the solution and the geometry principle(s) you used.



14. In the figure below, rectangle QNPR is similar to rectangle MNPO.
The ratio of the areas of these two rectangles is equal to $\frac{16}{49}$.



Given that segment RP measures 8cm,
calculate the area of rectangle MNPO.

Answers

1. Consumers are better off buying the larger bar. It is 3.375 times the volume, but only 3 times the price.
2. The larger box is the better deal. It is 1.4 times the price, but 1.59 times the volume.
3. The small cans are the better value. The large can is 4.63 times the volume of the small can. If Jessica were to buy 4.63 small cans it would cost her $(4.63)(0.80) = \$3.70$. This is cheaper than the large can at \$3.99.
4. 75 cm
5. 600 cm^2
6. 167.55 cm^3
7. 9 cm^3
8. 1750 cm^3
9. 640 cm^3
10. 13.2 cm^2
11. 58.4 cm^2
12. 81.2 cm^2
13. 33.5 cm^2
14. 343 cm^2