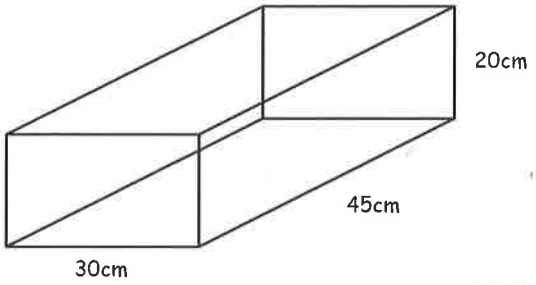
Geometry/Trig 2
12-3 Applications

Name _____
Date _____ Block _____

Directions: Solve each word problem. Show any formulas used and express your answers in the specified form.

1) The container shown has the shape of a rectangular solid. When it is filled with water, the water reaches a height of 20cm (NOTE - this is not the maximum height of the container). After a rock is submerged in the tank, this causes the water level to rise 0.5cm. Find the volume of the rock.



No Rock

$V = BH$

$V = (1350)(20cm)$

$V = 27{,}000\,cm^3$

w/ Rock

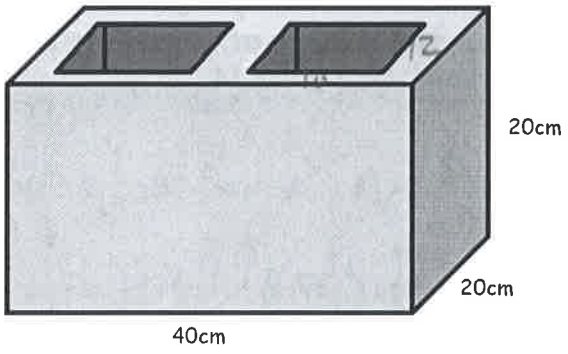
$V = BH$

$V = 1350(20.5)$

$V = 27{,}675\,cm^3$

V Rock $= 675\,cm^3$

2) A cement block has two rectangular holes, which have a length of 12cm and a width of 10cm. Find the weight, to the nearest kilogram, of the cement block shown. Cement weighs $0.0017 kg/cm^3$.



Block

$V = BH$

$V = 800 \cdot 20$

$V = 16{,}000$

Hole ×2

$V = BH$

$V = 120 \cdot 20$

$V = 2400$

$\times 2 = 4800$

T Volume

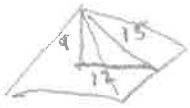
$V = 16{,}000 - 4800$

$V = 11{,}200$

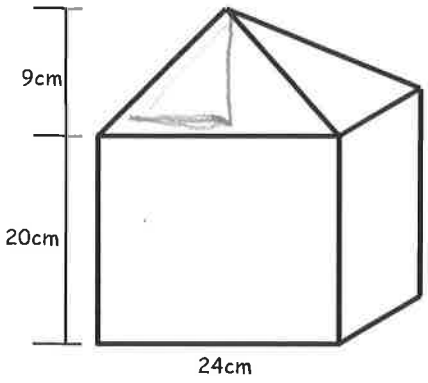
Weight $= 11{,}200 \cdot .0017$

$= 19.04\ kg/cm^3$

19 kg



3) A model of a house is being constructed out of cardboard. There will need to be a base for the house, but the inside of the house will be completely hollow (the square pyramid will not require a base). If the cardboard costs $0.68 per 100 square centimeters, approximately how much will it cost to construct this model house?



House

LA + B

LA = ph

LA = 96 · 20

LA = 1920 + 576

= 2496

Pyramid

LA $\frac{1}{2}$ pl

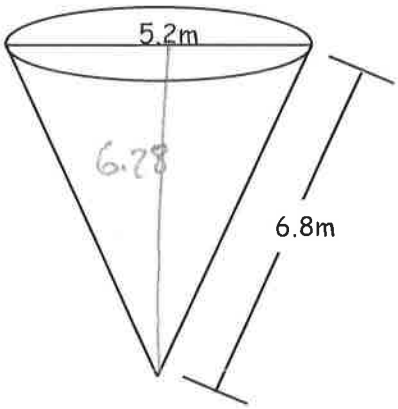
LA = $\frac{1}{2}$ · 96 · 15

LA = 720

T Area = 3,216

$\frac{3216}{100}$ · .68 = $21.87

4) Water is pouring into a conical (cone-shaped) reservoir at the rate of 1.8m^3 per minute. Find, to the nearest minute, the number of minutes it will take to fill the reservoir. Use π = 3.14.



$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\pi(2.6)^2 \cdot 6.28$

$V = 44.43 m^3$

$\frac{44.43}{1.8} = 24.69$

25 minutes