CREAMHILL SCHOOLS – MULAGO

MATHEMATICS

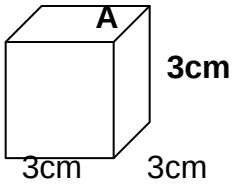
SUB-TOPIC: VOLUME

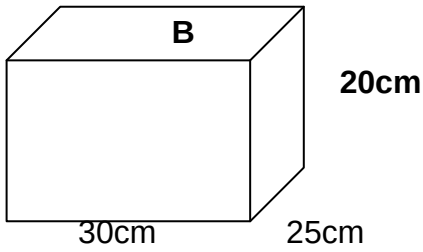
CONTENT: PACKING.

EXAMPLES :

Example 1: How many cubes of ½ cm^3 are obtained from a cube of $2cm^3$.

2. Pieces of soap each measuring 3cm by 3cm by 3cm are to be packed into a big box measuring 30cm by 25cm by 20cm.





1. **How many pieces can fill the bottom(first) layer?**

Illustration

Step 1.

Obtain the ratio of the ratio of the length of the Big box to that of the small box. That is to say; $\frac{30cm}{3cm}$

Step 2;

Obtain the ratio of the width of the big box to that of the small box.

$\frac{25cm}{3cm}$

Step 3:

Obtain the product of only the quotients. (ignore the remainders),

Solution;

Number of pieces along first layer = $\frac{30cm}{3cm} \ x \ \frac{25cm}{3cm}$

= 10 x 8

= 80 pieces of soap.

2. **How many pieces can be packed along the height?**

Illustration

Step 1;

Obtain the ratio of the height of the big box to that of the piece of soap.

The number of layers = $\frac{20cm}{3cm}$

= 6 layers

3. **How many pieces of soap can fill the big box?**

No of pieces that can fill the box = no of pieces in the first layer x no of layers.

= ($\frac{30cm}{3cm} \ x \ \frac{25cm}{3cm}$) x $\frac{20cm}{3cm}$

= 80 x 6

= 480 pieces of soap.

4. **Calculate the amount of space that will be left after packing.**

Step1;

Calculate the volume of the big box

Vol. = L x W x H

= 30cm x 25cm x 20cm

= 15000cm^3

Step 2;

Calculate the **TOTAL volume** occupied by **ALL** the pieces of soap **packed in the big box**.

Volume of one piece = S x S x S

= 3cm x 3cm x 3cm

= 27cm^3

Volume of all pieces packed = vol. of one-piece x no of pieces packed.

= 27cm^3 x 480

= 12,960cm^3.

Step 3;

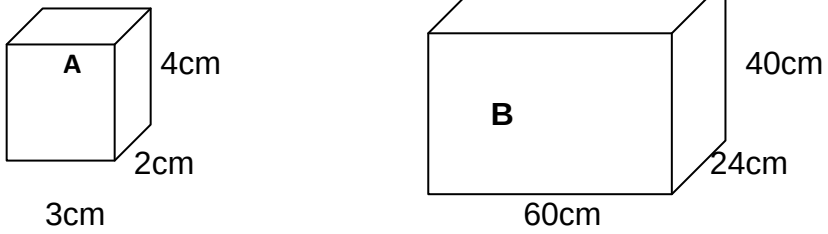
Volume of space left = Volume of the big box – volume of all boxes

$= 15{,}000cm^3 – 12{,}960cm^3$

$= 2{,}040cm^3$

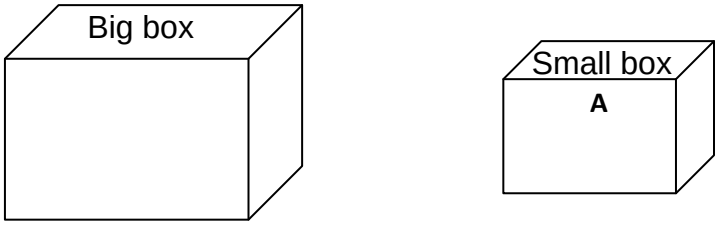
Activity;

1. Amos was given a task of packing small cubes (A) into box (B).



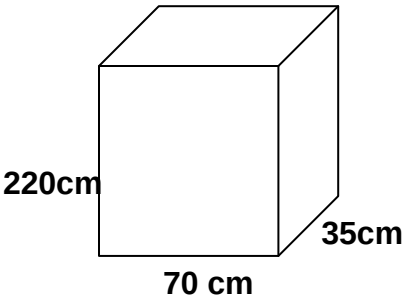
a) How many small boxes will fill the first layer?
b) How many layers will he make to fill the box?
c) Calculate the space left to fill the box?

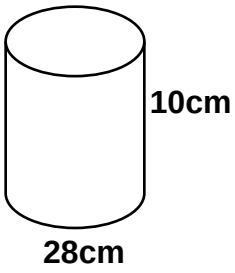
2. The diagram below shows a big box 60cm long, 50cm wide and 40cm high and the small box measuring 9cm by 9cm by 9cm. use it to answer the questions that follow.



a) Find the number of small boxes that will be packed in the first layer of the big box.
b) How many layers will fill the big box?
c) Ho w many small boxes will fill the big box?
d) Calculate the amount of space left in the big box after filling it with the small boxes.

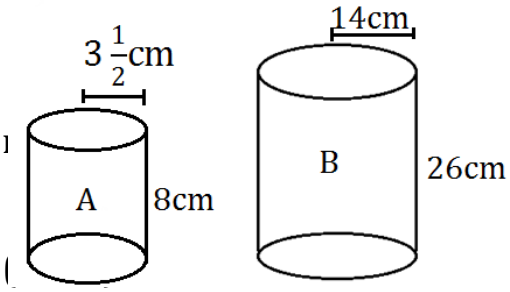
3. A rectangular tank measures 220cm by 28cm and 50cm. A cylindrical cup of diameter 28cm and height 10cm is used to draw milk from the tank. How many full cups can be obtained tank?





a) Find the number of cylinders that will be packed in the first layer of the big box.
b) How many layers will fill the big box?
c) Ho w many cylinders will fill the big box?
d) Calculate the amount of space left in the big box after filling it with cylinders.

4. Use the diagrams below to answer the questions that follow.



If t in B is to be filled with water using tin A, how

full tins of A can fill tin B with water?

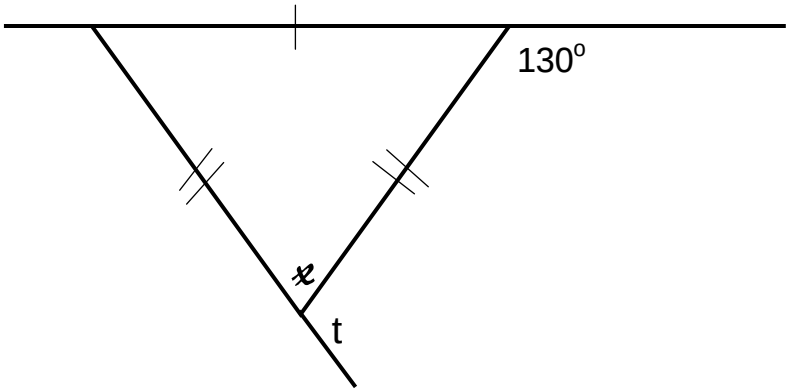
REVISION EXERCISE SET 3

1. When a motorcyclist travels from town A to town B at a speed of 10km/hr, he arrives at town B one hour late. But when he travels from town A to town B at 15km/hr, he reaches town B one hour earlier. Find the distance between town A and town B

2.a) using a well sharpened pencil, a ruler and a pair of compasses only, construct a triangle PQR such that PQ = QR = 6cm and angle PQR = 90^{o}

b) Measure the length PR.

1. Find the size of the angles marked t and x



2. Work out $\frac{3}{4}$ of $\frac{1}{2} \div \frac{7}{8}$

b) Betty's car got a puncture after covering $\frac{2}{5}$ of her journey and she was remaining with 60km to complete her journey.
Find the distance for the whole journey.

3. Luutu's son is 17 years old now. If Luutu is 42 years now, at what age will his son be a half of the father's age?

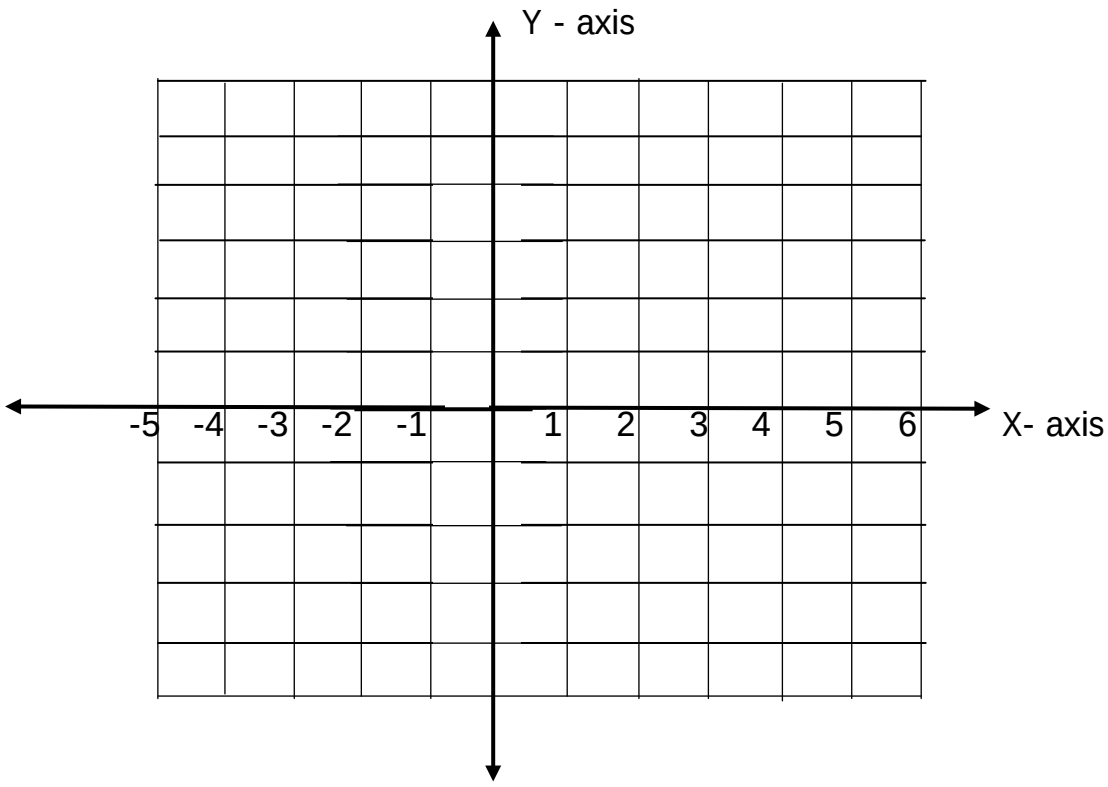
4. At Superior Forex Bureau the exchange rates are as follow;

1 US dollar	=	UgSh.3500
1 dirham	=	UgSh.630
1 rand	=	UgSh.1200

a) A phone costs 35 rands. Find its cost in Ugandan currency.

b) A trader has 300 dirham's. Calculate its value in US dollars.

8.a) Use the co-ordinate graph below to plot A($^{-}$3, 1) , B(1, 1), C(3, $^{-}$2) and D($^{-}$3, $^{-}$2) and join them to form a shape ABCD



b) Name the polygon formed above.

c) Calculate the area of the figure formed.