

# How to Make Science Materials?

-By Using Local Materials-

## Making Materials: MATHEMATICS

### 1) White board & Grid Paper

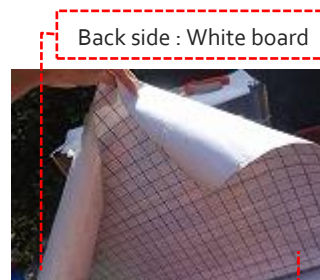


[Materials]

- Big white paper
- Scotch tape
- Pen

[Making]

- 1) Draw grid lines on a big paper.
- 2) Paste wide scotch tape on the paper.  
\*both sides.



Surface : Grid paper

### 2) White board holder



[Materials]

- PET bottle
- Rope
- Vinyl tape

[Making]

- 1) Cut two PET bottles.
- 2) Make two holes for two PET bottles.
- 3) Insert the rope and tie those PET bottles.
- 4) Wrap the edge with vinyl tape

\* adjust the size by rope length



\*Insert the handmade white board



### 3) Card Game



[Materials]

- Cardboard

[Tips]

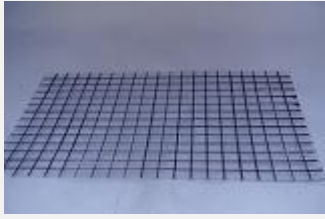
- \*Make answer card & question card.
- \*Arrange the answer cards on the table



- \*Read a question card.  
Students get the answer cards.

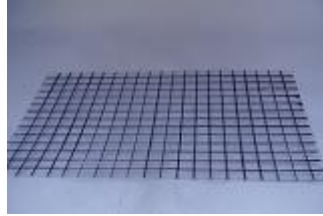


#### 4) Grid Sheet

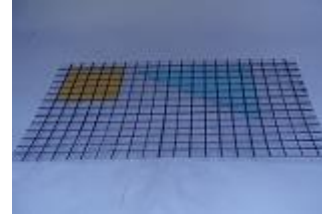


[Materials]  
- Plastic Sheet

[Making]  
-Draw lines and make grid sheet

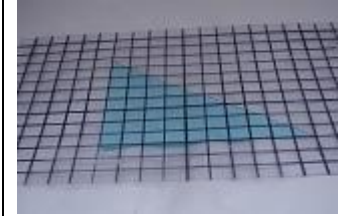


[Tips]  
-Set some shape.

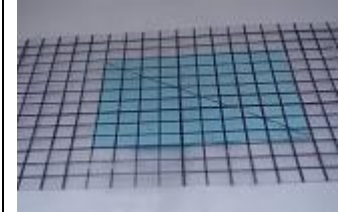


\*Rectangle can be calculated by only counting.

\*Right triangle can't be counted. So add one right triangle.

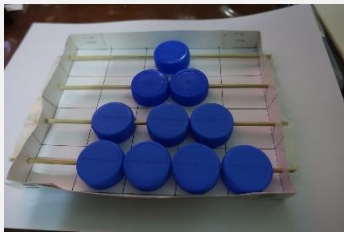


You can make rectangle.



\*Area of this triangle is half of this triangle.

#### 5) Area of Triangle



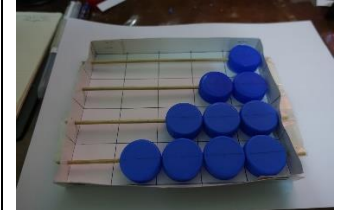
[Materials]  
- Cap of PET bottle  
- Skewer  
- Cardboard

[Tips]  
-Right Triangle can be calculated by "Base x height x1/2"  
Because it is half of rectangle.  
-How about other triangle?

Triangle



↓ Move each part  
Right Triangle



\* Area of Triangle is needed only base and height.

#### 6) Area of Circle-1



[Materials]  
- Cardboard

[Tips]  
\*Circle can be divided by like these pieces.



\*If you arrange it, it will be like a rectangle.  
\*Especially if you cut more small part.



Area of Circle

- \* height =  $r$
- \* Base + upper base = circumference =  $2\pi r$
- \* Base =  $1/2 \times 2\pi r = \pi r$

$$\text{Area of circle} = \pi r \times r = \pi r^2$$

## 7) Area of Circle-2



[Materials]

- String
- Scotch Tape

[Tips]

- \*Circle can be separate these strings.
- \*If you arrange pile it, you can make a triangle.



Area of Circle

Base=Circumference= $2\pi r$

Height= $r$

**Area of circle:**

$$\text{base} \times \text{height} \times 1/2 = \pi r^2$$

