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# INTERNATIONL MATHENATICS AND SCIENCE OLYMPIAD FOR PRIMARY SCHOOLS (IMSO) 2004

## Science Contest in Taiwan

Experiment I: Magic of Light

Name:_____ School:_____ Grade:_____ ID number:_____

1. Put the flashlight in front of the graph paper screen.

2. Turn on the flashlight and you will see this image ⌟ on the graph paper screen.

3. Mark the top and bottom positions of the image on the graph paper on the screen (Look at **Figure 2**).

4. Measure the distance ***x*** (look at the **Figure 1**, the distance *x* is 20cm).

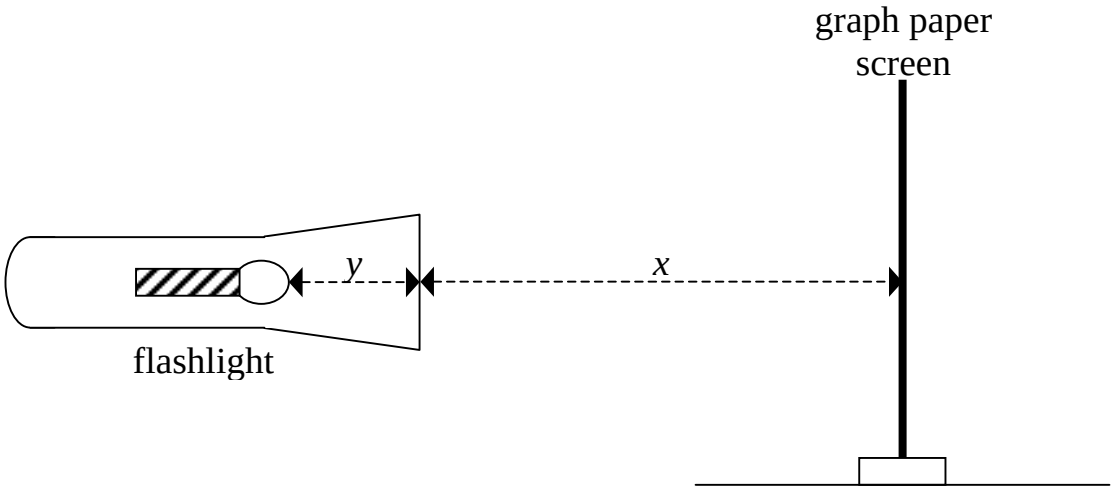



**Figure. 1**

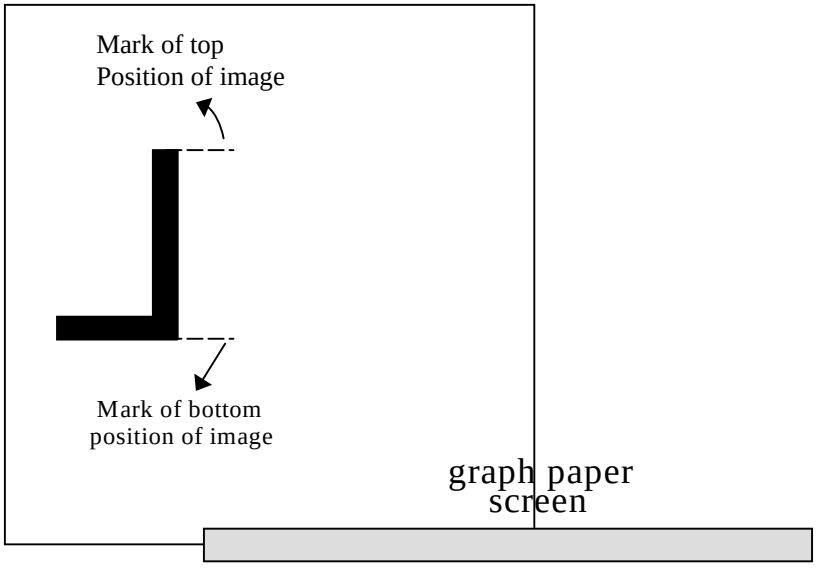



**Figure. 2**

5. Do the same instructions above with 3 different distances by moving the graph paper screen

6. Draft (draw) all the marks including their distances on to another graph paper. Different image heights of different distances X's are shown as follows：

| | Distance x (cm) | Image height |
|---|---|---|
| First position | 15 | 3.20 |
| Second position | 13 | 2.88 |
| Third position | 5 | 1.60 |

Problem-1

Calculate the height of the image at $x$ = 10 cm (Score: 25)

Problem-2

Calculate the distance (***y***) as shown in Figure 1 (Score: 25)

Problem-3

Calculate the height of the object on the flashlight (***h*** as shown in **Figure 3**) without using a ruler
(score: 25)

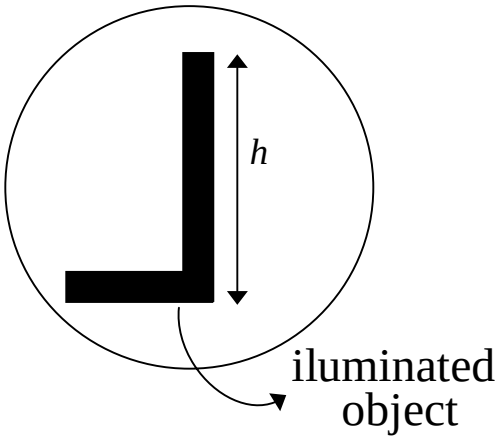



**Figure. 3**

Problem-4

1. Arrange the set of experiment (provided materials) so that you can see the image in the laterally opposite position. (two plane mirrors, two convex lens, two concave lens, two convex mirrors and two concave mirrors are provided)
2. Draw on the paper provided the position of mirrors, screen, and ray path.

(Score: 25)



Laterally opposite positio

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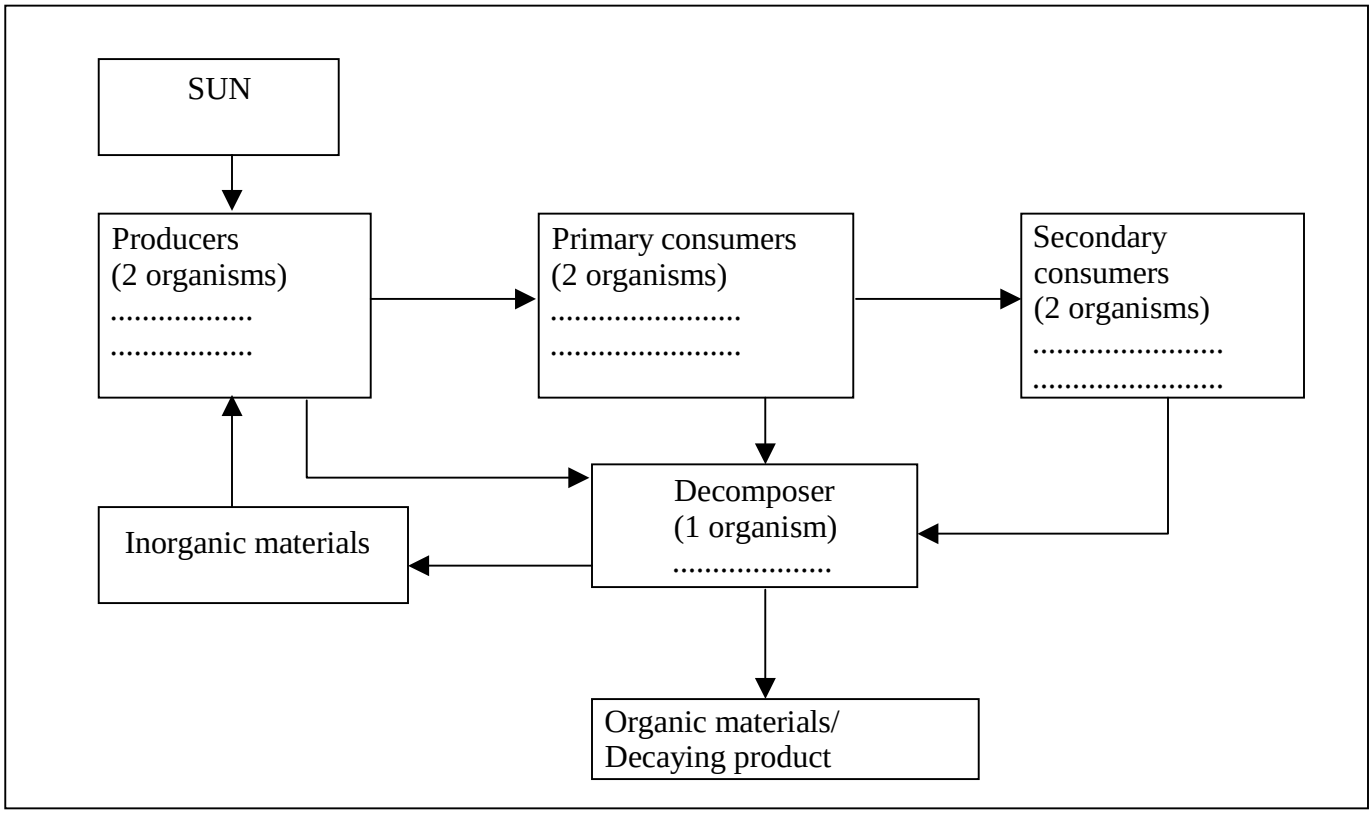
Experiment II

Name:_____ School:_____ Grade:_____ ID number:_____

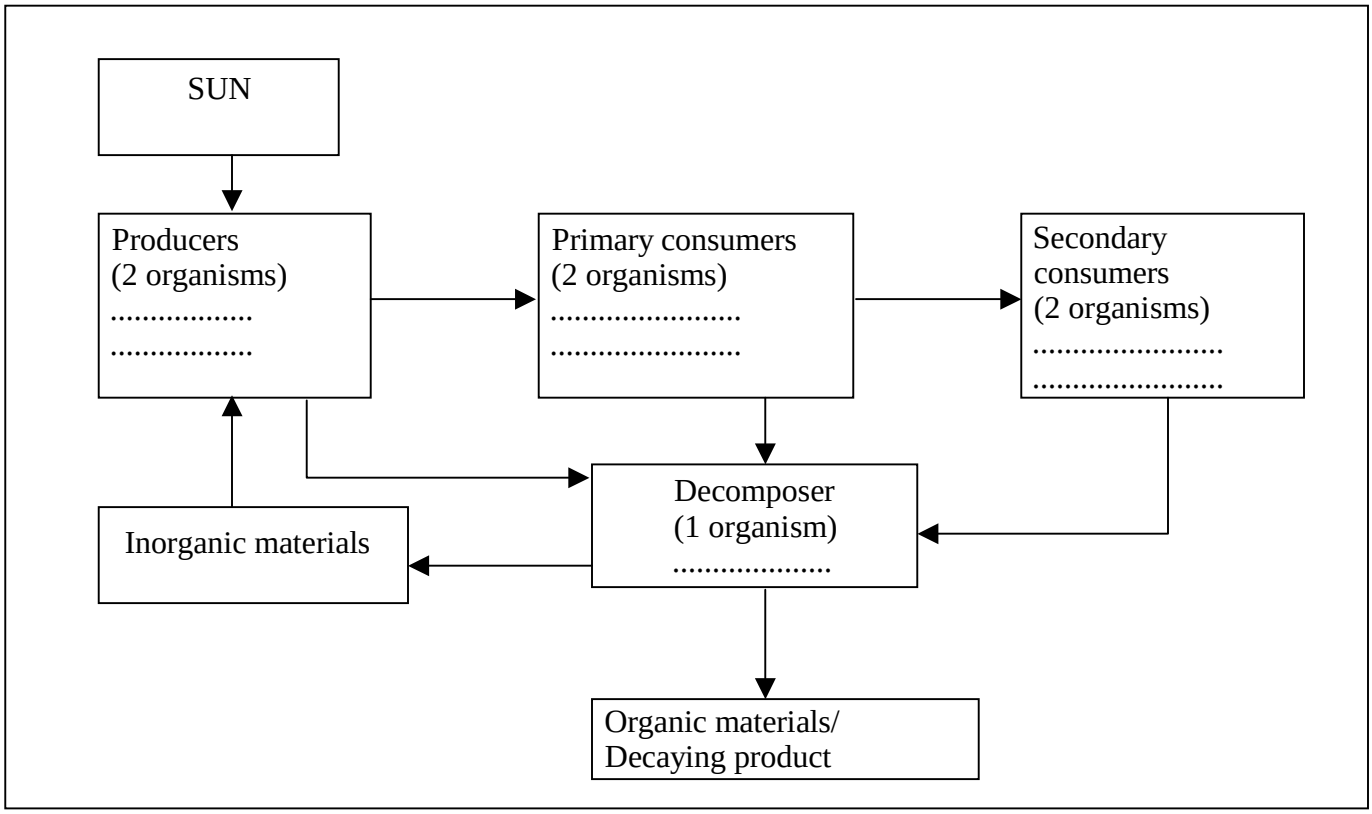
Instructions:

Write down the correct biological species terms as shown in the **PICTURES OF EXPERIMENT II** into the following food chain.

## A. FOOD CHAIN IN THE RICE FIELD



B. FOOD CHAIN IN THE MARSH (SWAMP)




C. FOOD CHAIN IN THE TROPICAL RAI

