

NAME :

CLASS :

DATE :

THEME : LIGHT, WAVES AND SOUND



Unit 12  
LIGHT

Consolidation Worksheet 2 -  
Graded

1 Hello,

You have made a very important and right decision to look at this sample learning material created by Calvin Kong, a former MOE Senior Teacher in Physics with more than a decade of experience, also trained under the [Research for Better Teaching, Inc.](#) (Massachusetts) and [New Teacher Centre](#) (California).

This set of **Consolidation Worksheet (Part 2)** is designed by Calvin Kong and used to assess how much have his students learnt at that specific point in time. It is conducted as a short-timed quiz where it will be marked and graded. As what Calvin Kong repeatedly reminds his students, "Make all your mistakes in my class, and less will happen in your school".

This set of notes is designed based on numerous pedagogical research findings (theoretical) and fine-tuned based on feedback and response of students who uses them (theories put to test).

(b) Calculate the refractive index of the glass used in the lens.

refractive index = .....

The focal length of the lens is 20 cm. An object is placed 50 cm from the lens and an image is formed on a screen.

(c) Explain what is meant by the *focal length* of a lens.

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(d) Draw a ray diagram to show the formation of the image.  
cm

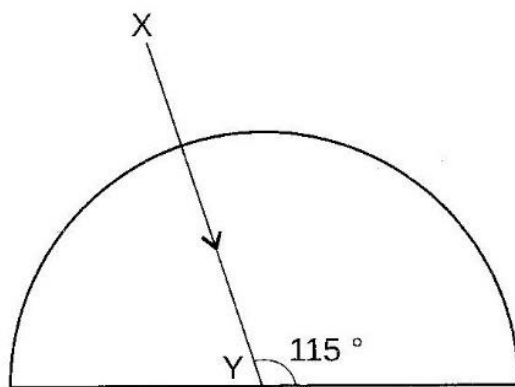
### Assessment for Learning

A class in which students listen, mark their own work and leave will not have effective teaching and learning taking place. In every class, it must not be assumed that students have mastered **everything**. In fact, very often they do not.

Up to this point in time, the students will have a clear understanding of the key focuses and key concepts of the topic. They had tried applying the concepts in **Consolidation Worksheet (Part 1)**. To complete the loop, there must be a mode of assessment in which the tutor can check if the students have learnt and reach the mark of distinction. Any learning gaps will also be addressed here. While there are multiple ways to assess students' learning, one of the most practical and constructive way is to administer a quiz. It is the mode of assessment used in the National Examinations anyway.

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2. The diagram shows a ray of yellow light entering a semi-circular glass block in the direction XY. The angle of Y is  $115^\circ$  measured from the surface of the glass block as shown. The refractive index of the glass block is 1.35.



- (a) Explain why the light ray does not bend when it enters

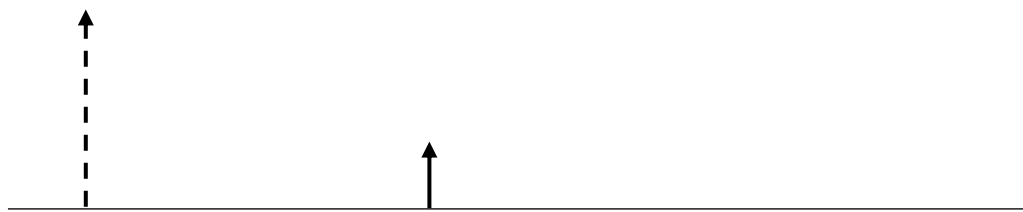
- (b) Calculate the angle of refraction of the yellow light.

- (c) At Y, some light is reflected. Calculate the angle of reflection.

- (d) By how much degree does the ray bend when it enters the glass block?

angle change = ..... [2]

3. Fig 5.1 (an actual 1:1 scaled diagram) shows an object and its corresponding virtual image when the object is placed in front of a thin converging lens.



(a) Add rays to the diagram to locate the

(i) optical centre of the lens and

(ii) focal point.

(b) Suggest one instrument which

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## The End

It is recommended that you continue to look at the all-time favourite among all of Calvin Kong's students – the **2-Paged Summary**