15 A physics teacher placed a coin at the bottom of a cup.

When viewing the cup from an angle, the coin was not visible, as shown in Photograph 1.

Photograph 1

While still observing from the same angle, the teacher slowly poured water into the cup. The coin gradually became visible, as shown in Photograph 2.

Photograph 2

This effect is caused by refraction.

(a) Explain what is meant by refraction.

(2)

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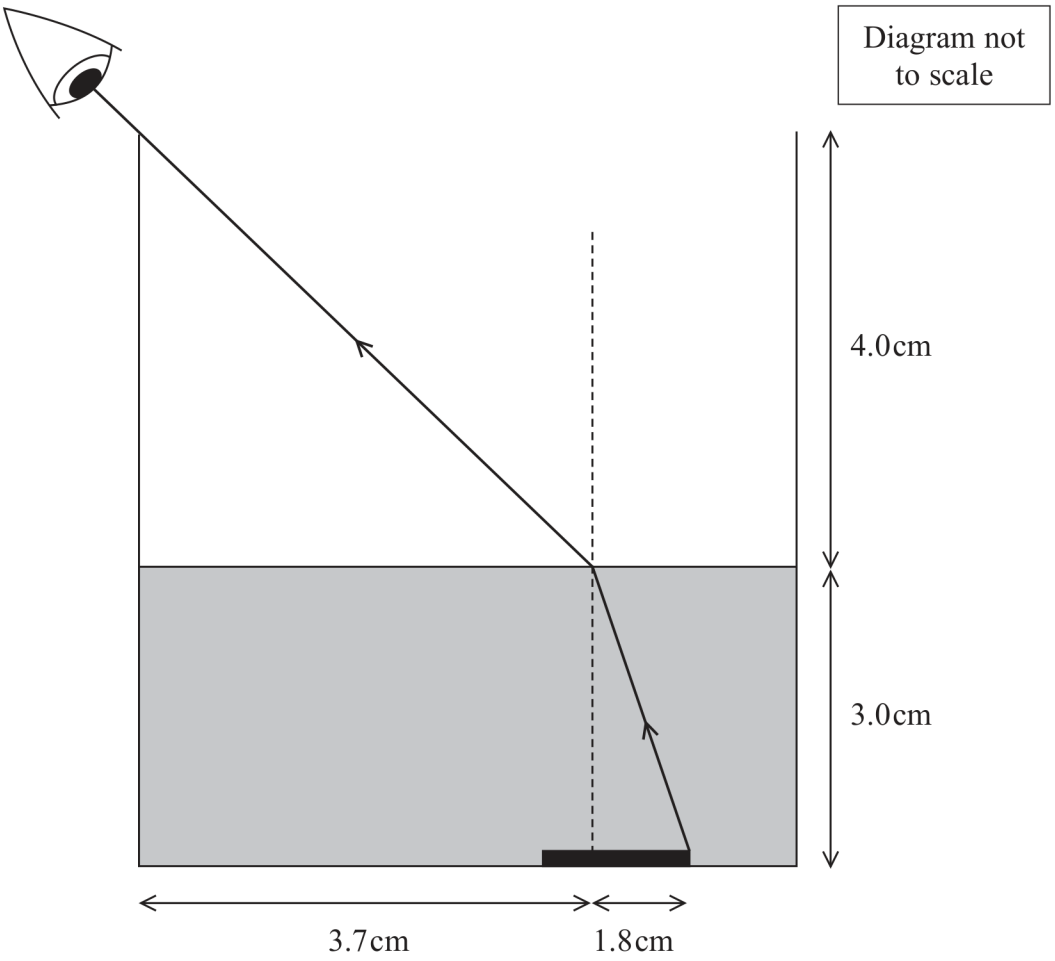
(b) The simplified diagram below shows how a ray of light travels from the edge of the coin to the teacher's eye, when the cup is partially filled with water.



Determine the refractive index of the water in the cup.

(3)

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Refractive index of water = ...

(Total for Question 15 = 5 marks)