Checking Two Filters in One Light Path

Scoring guide · one credit per question · review written work against each rubric

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Question 1

Choice (4)

P passes 0.80 of the 100 band A units, so 80 units reach Q.

Question 2

For band A, Q passes 0.50 of 80 units, giving 40. For band B, Q passes 0.80 of 50 units, also giving 40.

Question 3

Q first passes 80 units in band B. P then passes 0.50 of that, still 40. Changing the order does not change the product of the two fractions.

Question 4

Band B should give 40 units but gives 30. The final detector sees the result after both sheets. Without a reading between them, it cannot tell how much light reached the second sheet.

Question 5

The second stage passes 30/50 = 0.60 of the band B light reaching it, compared with the predicted 0.80. The measured 50 units after P agree with the model, so the difference occurs between the probe and the final detector.