Checking Where a Cloudy Film Sends Light

Base your answers on the information provided and your knowledge of chemistry. Use the 2025 Chemistry Reference Tables as needed.

A film spreads some light from a narrow beam into other directions. The class measures how much of the incident light comes through the film within 10° of the original direction, how much comes through beyond 45°, and how much comes through over all angles on the far side.

Film	Within 10° (%)	Beyond 45° (%)	All transmitted (%)
P	50	20	85
Q	50	2	55

1 Which reading shows that more light gets through P overall?

(1) The within-10° reading

(2) The all-transmitted reading

(3) The beyond-45° reading by itself

(4) The difference in incident light

2 Calculate the percent of incident light transmitted between 10° and 45° for each film. [1]

Answer and work

3 The display must send at least 10% of incident light beyond 45° for a viewer standing well off to the side. A student says either film works because both send 50% nearly straight through. Use the record to evaluate the claim. [1]

Answer and work

A new receiver collects only light more than 10° and no more than 30° from the original direction.

4 State the largest reading the new receiver could give for P. Explain why the table cannot predict its exact reading. [1]

Answer and work