

Light sources and straight-line rays

Grade 6 science (Year 7 · Class 6) · Lab answers

The model answers use the sample readings in the results table. Your own readings will differ, but the order of the materials and their classification should agree, and the cards should block the light when misaligned.

Level: Grade 6 science (Year 7 · Class 6) · **Curriculum:** MS-PS4-2

Question 1 Mean readings

No sample: $(120 + 121 + 119) \div 3 = \mathbf{120 \text{ lux}}$. Clear plastic: $(112 + 110 + 114) \div 3 = \mathbf{112 \text{ lux}}$. Bubble wrap: $(90 + 92 + 88) \div 3 = \mathbf{90 \text{ lux}}$. Tracing paper: $(66 + 64 + 65) \div 3 = \mathbf{65 \text{ lux}}$.

Question 2 Percentage transmitted

Clear plastic: $112 \div 120 \times 100 = \mathbf{93 \%}$. Bubble wrap: $90 \div 120 \times 100 = \mathbf{75 \%}$. Tracing paper: $65 \div 120 \times 100 = \mathbf{54 \%}$.

Question 3 Classify the samples

Clear plastic is **transparent**. Bubble wrap and tracing paper are **translucent**. Cardboard and aluminium foil are **opaque**.

Question 4 Ranking

Clear plastic (112), bubble wrap (90), tracing paper (65), then **cardboard and foil tied at 0 lux**.

Question 5 Fair test

The distance from torch to sample, the distance from sample to meter, and the same torch and room light. If any changed, the readings would differ for reasons other than the material, so the **test would not be fair**.

Question 6 Straight line test

You saw the torch only when the three holes were in line. Moving the middle card hid the torch. This shows that **light travels in straight lines**.

Question 7 Improving accuracy

Work in a darker room so stray light does not add to the meter reading, and take more repeats. A fixed holder gives the same distances each time. **Any two** sensible improvements are accepted.