



Compare material properties and choose a use

What this pack helps with

Use simple property words, compare samples by one property, classify light transmission, and justify a material choice for a stated use.

Before you start

Use the printed sample evidence before testing real materials. Read transparent, translucent and opaque aloud and compare what can be seen.

What you need

Pencil. Optional adult-checked safe samples, a bold symbol and an adult-held battery torch; no sun, laser or intense lamp.

Use and safety

Keep tests low-risk and observations sample-specific. An adult handles glass and checks all samples. Never use the sun, a laser or a very bright lamp for a viewing test.

Print A4 at actual size. Child pages are 2–5; pages 6–7 contain answers, rubrics and next steps. Colour is optional.

Scope and source

A sample result does not prove that every item with the same material name behaves identically. Suitability can depend on shape, thickness, construction and several properties. DfE Year 1 Everyday materials and KS1 working scientifically (England; OGL v3.0).

Transparent/translucent/opaque wording also follows the site activity inventory. Original TheLearnDen tasks; not an official assessment.



OBSERVE · COMPARE · EXPLAIN

Compare material properties and choose a use

1. property pairs

Match each labelled sample to the two printed observations.

sample	properties
wooden cube	_____
sponge sample	_____
foil sheet	_____
clear acetate	_____

hard and stiff

soft and absorbent

shiny and bendy

transparent and bendy

2. light screen

Use the observation, then write transparent, translucent or opaque.

screen	what was seen	property
clear sheet	shape seen clearly	_____
tracing paper	light passes; detail blurred	_____
cardboard	shape not seen through it	_____

Use a battery torch only with adult supervision; never use the sun, a laser or a very bright lamp.



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3. property table

sample	texture	flexibility	light
A	smooth	stiff	opaque
B	rough	bendy	opaque
C	smooth	bendy	transparent

Same texture: _____ + _____ Same flexibility: _____ + _____

Same light property: _____ + _____

4. same object property

These are all cups. Match each cup to its printed properties.

cup	properties
clear glass cup	_____
plastic picnic cup	_____
paper cup	_____

transparent and stiff

light and hard to shatter in normal use

opaque and light



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5. use from property

Choose the option whose property meets the stated need.

need	choice	because it is...
curtain that blocks a view	_____	_____
tea towel that dries a spill	_____	_____
folder window that shows a label	_____	_____
flexible cover for a book	_____	_____

opaque fabric

absorbent fabric

transparent plastic

bendy plastic sheet

6. safe light test

question

three safe samples

same symbol and distance

battery torch position

what I observed

transparent, translucent or opaque

Never use the sun, a laser or a very bright lamp. An adult handles glass and checks every sample.



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7. design for use

Design brief: Choose a lining for a small basket.

option	printed properties
soft fabric	soft; may absorb
foil	bendy; not absorbent in this model
cardboard	stiff; opaque

My priority: _____ My choice:

Reason and one drawback:

A paper design does not certify safety, strength, hygiene or suitability for a child, pet or food.



ADULT ANSWERS AND FEEDBACK · 1 OF 2

Respond to the evidence

Fixed keys check the printed model. Open investigations and designs are assessed against the actual evidence and the stated need.

1 **wooden cube: hard and stiff; sponge sample: soft and absorbent; foil sheet: shiny and bendy; clear acetate: transparent and bendy**

Wooden cube—hard/stiff; sponge—soft/absorbent; foil—shiny/bendy; clear acetate—transparent/bendy. These words describe the labelled samples in the printed evidence. Another sample of the same broad material may behave differently.

Look for: Two properties are matched to each named sample. The learner uses property words rather than object uses. **Next:** Safely compare one real pair and record any result that differs from the printed model.

2 **transparent, translucent, opaque**

Clear sheet—transparent; tracing paper—translucent; cardboard—opaque. Classify from the stated viewing result under the same light and position. Colour alone does not determine the category.

Look for: Transparent and translucent are distinguished by visible detail. Opaque is linked to blocked viewing, not necessarily darkness or colour. **Next:** Explain which observation separates transparent from translucent.

3 **sameTexture: A → C; sameFlexibility: B → C; sameLightProperty: A → B**

Same texture—A and C; same flexibility—B and C; same light property—A and B. Use only the supplied table. The letters are samples, and no material identity needs to be guessed.

Look for: Each comparison uses one table column at a time. Pairs can be regrouped when the chosen property changes. **Next:** Choose a different property and explain how the groups would change.

4 **clear glass cup: transparent and stiff; plastic picnic cup: light and hard to shatter in normal use; paper cup: opaque and light**

Clear glass cup—transparent/stiff; plastic picnic cup—light/hard to shatter in normal use; paper cup—opaque/light. Compare the labelled examples only. “Hard to shatter” does not mean unbreakable, and glass must be handled by an adult.

Look for: The object use stays the same while materials and properties change. Safety claims stay within the printed wording. **Next:** Choose one use, such as a picnic, and explain which printed property matters most.



ADULT ANSWERS AND FEEDBACK · 2 OF 2

Respond to the evidence

Fixed keys check the printed model. Open investigations and designs are assessed against the actual evidence and the stated need.

5 curtain that blocks a view: opaque fabric; tea towel that dries a spill: absorbent fabric; folder window that shows a label: transparent plastic; flexible cover for a book: bendy plastic sheet

View-blocking curtain—opaque fabric; drying towel—absorbent fabric; folder window—transparent plastic; flexible cover—bendy plastic sheet. Select from the property-labelled options. Real designs may need more than one property and may combine layers or materials.

Look for: The needed property is identified before the material choice. The reason links property to use. **Next:** Name a second property a real version might need.

6 Adult-assessed evidence

Example: place the same bold symbol behind each sample at the same distance; use ordinary room light or an adult-held battery torch; record whether detail is clear, blurred or blocked. A comparison is valid when the symbol, distance and light remain the same. Adult-check samples and handle any glass. Never use the sun, a laser or an intense lamp.

Look for: Only the sample changes. Observations are recorded before labels are assigned. The light-safety rule is followed. **Next:** Repeat an unclear result without changing the symbol, distance or light.

7 Adult-assessed evidence

Example: soft fabric if comfort is the priority; foil if the printed need is a wipeable non-absorbent layer. The choice depends on the stated need. Accept any option justified with a printed property and an explicit need. Acknowledge a drawback; do not claim the material is suitable for every basket or user.

Look for: The need is stated. One property supports the choice. One limitation or missing property is noticed. **Next:** Change the need and decide whether the material choice should change.