# Rock Detectives Sort and Group

| | | | |
|---|---|---|---|
| **Teacher** | | **Class** | Year 3 |
| **Subject** | Science | **Topic** | Rocks |
| **Date** | | **Room** | |
| **Lesson length** | 60 minutes | **Country** | United Kingdom |

Pupils compare rocks by colour, feel, shape and weight. They sort rocks into groups and explain their choices.

## Curriculum links

- compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

## Learning objectives

- Students will compare rocks by colour, texture, shape and weight.
- Students will group rocks with matching appearance and properties.
- Students will explain rock groups using features they observed.

## Success criteria

- I can describe a rock's colour, feel, shape and weight.
- I can sort rocks into groups that look and feel alike.
- I can explain why my rocks belong in the same group.

## What students already know

Show two pebbles: Are all rocks the same? Ask pairs to whisper one difference they already know in 2 minutes.

## Key words

| | |
|---|---|
| **appearance** | what something looks like to your eyes |
| **texture** | how rough or smooth something feels when you touch |
| **property** | something you can see or feel about an object |
| **group** | things put together because they match |

## Materials

- rock samples in mixed trays (one tray per pair)
- magnifying glasses (one per pair)
- sorting trays and sorting mats with two choices
- picture cards for colour and pattern prompts
- Slides 1-7 and 9-12, Video clip 1 (0:00–4:23)

## Before the lesson

- Mix rock samples into trays and check for sharp edges, wash hands after handling
- Print sorting mats with spotty or not spotty choice and picture cards
- Test Slide 6 Video clip 1 (0:00–4:23) with sound and freeze image
- Set out magnifying glasses, trays and Slides 1-12 in order

## Lesson outline

**0–5 min** **Starter** 5 min · Whole class

*To hook pupils and surface ideas about rocks being different.*

**YOU DO**

1. Welcome class with Slide 1 and read the title line together.
2. Say the hook: Detectives, I mixed up all the rock boxes. Your magnifiers can save the day. Ready to look super close?
3. Show Slide 2 question and give 30 seconds think time.
4. Ask pairs to share one quick answer with each other.

**STUDENTS DO**

1. Look at Slide 1 and repeat the detective mission.
2. Think about Slide 2 question on their own.
3. Tell a partner one way rocks can look different.

**Say:** Detectives, I mixed up all the rock boxes. Your magnifiers can save the day. Ready to look super close? Turn to your partner and tell them: are all rocks the same, and how can you tell?

**Ask:** Are all rocks the same? (No, they have different colours, patterns, feel and weight.) · How can you tell rocks apart without breaking them? (By looking closely and feeling colour, spots, roughness and weight.)

**Check understanding:** Hands up for who can name one difference; if few can, show two contrasting rocks and name colour and feel together.

**Support:** Let pupils point to a rock and say the colour word only. **Stretch:** Ask pupils to give two differences in a full sentence.

Use: Slides 1-2

Created with LessonDino.com · AI lesson planner with checkable sources

**5–15 min** **Teaching** 10 min · Whole class

*To teach key words and model comparing rocks by observed features.*

**YOU DO**

1. Show Slide 3 and explain there are 3 main rock groups called igneous, sedimentary and metamorphic rocks [1].
2. Teach Slide 4 key words by pointing to a rock for each property.
3. Read Slide 5 mystery aloud and let pupils guess using clues.
4. Model comparing two rocks by colour, feel, shape and weight.

**STUDENTS DO**

1. Repeat key words and actions for look, feel and match.
2. Listen to the mystery clues and suggest colour and feel.
3. Watch teacher comparison and say same or different for each property.

**Say:** Scientists sort rocks into groups when they match. Today we will use what we see with a magnifier and what we feel with our fingers. Colour tells us what shade it is, feel tells us if it is rough or smooth, and weight tells us if it feels heavy or light.

**Worked example:** I pick Rock A: grey with white spots, smooth, round, light. I pick Rock B: brown with stripes, rough and bumpy, flat, heavier. Step 1 colour: grey spotty vs brown stripy, not same. Step 2 feel: smooth vs rough, not same. So I put them in different groups: smooth spotty greys and rough stripy browns.

**Ask:** What four properties can we check to compare rocks? (Colour, feel or texture, shape and weight.) · There are three kinds called igneous, sedimentary and metamorphic [1]. Do we still need to look closely? (Yes, we group by clear features we can see and feel.)

**Check understanding:** Show thumbs up if they can name colour, feel, shape, weight; reteach any missing word with a rock in hand if unsure.

**Support:** Give word bank cards: grey, brown, rough, smooth to hold up. **Stretch:** Ask pupils to predict which property will be most useful for sorting and why.

Use: Slides 3-5

15–25 min **Guided practice** 10 min · Whole class

*To practise checking colour and texture together before sorting alone.*

**YOU DO**

1. Play Slide 6 video and pause to repeat rough, smooth, shiny words.
2. Show Slide 7 cards and model checking one rock for colour, feel, shape, weight.
3. Ask class to call out the group name for the modelled rock.
4. Set rules: look first, feel carefully, keep rocks on tray.

**STUDENTS DO**

1. Watch the video and whisper the describing words.
2. Join in checking the teacher's rock for each card.
3. Vote with fingers for which group the rock joins.

**Say:** Watch how colour and texture are checked. Listen for rough, smooth and shiny words. After, we will check one rock together and decide where it belongs.

**Worked example:** I hold up a dark grey rock. Colour: dark grey with shiny bits. Feel: bumpy and rough. Shape: sharp edges. Weight: heavy for its size. Class, does it match the smooth light group or the rough dark group? It matches the rough dark group.

**Ask:** Is this rock rough or smooth, and how do you know? (Rough because it feels bumpy and looks dull, not shiny smooth.) · If two rocks are both spotty but one is light and one is heavy, are they a perfect match? (They match on pattern but differ on weight, so check which rule we are using.)

**Check understanding:** Use mini whiteboards to write rough or smooth for teacher rock; remodel feel check if split.

**Support:** Partner says colour choices aloud while pupil points to match. **Stretch:** Ask pupils to name a second feature that would split the guided group.

Use: Slides 6-7, Video clip 1 (0:00–4:23)

Created with LessonDino.com · AI lesson planner with checkable sources

25–50 min **Main activity** 25 min · Pairs

*To compare and group rocks closely in pairs using magnifiers.*

**YOU DO**

1. Show Slides 9-10 and explain steps: look, feel, find matches, name groups.
2. Hand out trays, magnifying glasses and sorting mats for Magnifier Detectives.
3. Remind pairs to use magnifying glass to explore examples of the rocks [1] and sort by colour, spots, stripes, holes or shiny bits.
4. Circulate, ask for group names and prompt splitting one group by a second feature.

**STUDENTS DO**

1. Work in pairs to look closely with magnifier and feel each rock.
2. Sort tray into 2-3 groups by one clear feature first.
3. Explain groups to teacher, pointing to the feature used to decide.

**Say:** Look at each rock with a magnifier. Check colour, feel, shape and weight. Put matching rocks together and give each group a clear name, like smooth light greys. You will sort your tray into 2 to 3 groups.

**Worked example:** Pair sorts six rocks: Group 1: pale, smooth, round, light, no spots. Group 2: dark, rough, bumpy, heavy, spotty. Group 3: mixed colour with stripes, smooth but heavy. They label trays and point to spots and shiny bits with the magnifier to prove it.

**Ask:** Why did these rocks go together? (Because they match on colour and feel, for example all smooth and light grey.) · Which rock does not fit, and where should it move? (The rough spotty one does not fit the smooth plain group, so move it to the rough spotty group.) · How could you split your large group into two smaller groups? (Use a second feature, for example split light greys into smooth light greys and rough light greys.)

**Check understanding:** Each pair holds up groups and states rule; if rule unclear, ask them to point to feature and resort one rock together.

**Support:** Give a sorting mat with two choices, such as spotty or not spotty, to limit choices. **Stretch:** Ask students to split one large group into two smaller groups using a second feature.

Use: Slides 9-10

50–60 min **Plenary** 10 min · Whole class

*To agree best sorting features and check learning against success criteria.*

**YOU DO**

1. Invite two pairs to show groups and explain feature used.
2. Run Slide 11 vote for best single sorter: colour, feel or weight.
3. Revisit success criteria and link to grouping by appearance and properties.
4. Set Slide 12 exit ticket sentences for pupils to finish.

**STUDENTS DO**

1. Present groups and say why they chose that hoop or tray.
2. Vote and give a reason for colour, feel or weight.
3. Write exit ticket lines about grouping and one question.

**Say:** Great detective work. Tell us how your rocks were grouped by. If you could only pick one way to sort, which would you use, and why? Finish your exit ticket to show what you learnt.

**Worked example:** A pair shows: Our rocks were grouped by feel. All rough dark rocks together, all smooth light rocks together. We voted feel is best because colour can look similar but feel is clearly different.

**Ask:** What is best to sort by if you could only pick one? (Any justified choice, e.g. feel, because rough and smooth is easy to check and groups clearly.) · How are igneous, sedimentary and metamorphic rocks [1] linked to our sorting? (They are the three scientist groups, so sorting by clear features helps us put rocks with matching looks together.)

**Check understanding:** Read three exit tickets aloud; if grouping reasons are vague, model full sentence: Both rocks are smooth but one is heavier.

**Support:** Provide sentence starters: Both rocks are ___. Only one rock has ___. **Stretch:** Ask pupils to give a reason why another pair might group the same rocks differently.

Use: Slides 11-12

## Common mistakes

| Mistake | How to spot it | How to fix it |
|---|---|---|
| Thinking size is the same as weight and putting all big rocks as heavy. | Pupil says big must be heavy without hefting both rocks. | Hold same-sized rocks, one in each hand, to compare heavy for its size, then check feel again. |
| Grouping only by favourite colour shade and ignoring spots, stripes or texture. | Groups have mixed smooth and rough rocks just because greyish. | Use magnifying glass to explore examples closely [1] and re-sort by spots, holes or shiny bits. |
| Thinking there are only the three names igneous, sedimentary and metamorphic [1] so appearance does not matter. | Pupil tries to guess the name instead of describing what they see. | Remind them to name groups by property first, e.g. rough darks, then link to scientist groups later. |

## Support

- Give a sorting mat with two choices, such as spotty or not spotty, to limit choices.
- Provide word bank and sentence starters for smooth, rough, heavy, light, bumpy and flat.

## Stretch

- Ask students to split one large group into two smaller groups using a second feature.
- Ask students to explain out loud how they would justify a different grouping by another pair.

Created with LessonDino.com · AI lesson planner with checkable sources

## For the LSE or teaching assistant

Stay with target pairs in main activity, prompt magnifier use, read colour choices aloud and scribe group names if needed.

## Check for understanding

| Question | Answer |
| --- | --- |
| Name two properties you used to compare your rocks. | Colour and feel, e.g. grey and smooth, or spotty and rough. |
| My rocks were grouped by... | One clear rule, e.g. all rough and dark with spots together. |
| How do you know two rocks belong in the same group? | Because they match on the chosen appearance or feel feature. |

## Homework

At home, describe the colour and feel of one garden stone in two full sentences.

## Sources


1. St James C of E Junior School: Class 6 - using chocolate to explore different types of rocks · stjamesjun.cumbria.sch.uk · https://www.stjamesjun.cumbria.sch.uk/work/class-6---using-chocolate-to-exploring-different-types-of-rocks/59892
2. List of rock formations in the United Kingdom - Wikipedia · en.wikipedia.org · https://en.wikipedia.org/wiki/List_of_rock_formations_in_the_United_Kingdom
3. Common Rocks, United Kingdom location · location.zone · https://location.zone/gb/rks/common-rocks
4. Eddystone Rocks, United Kingdom location · location.zone · http://www.location.zone/gb/rks/eddystone-rocks


Created with LessonDino.com · AI lesson planner with checkable sources