



3 Wild and rocky!

By Dawn Savidge

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Theme: soil and rock, sand and mud

Aim: to get up close and personal with soil, mud, sand, rocks and stones to explore themes like being in a hard place, the hugeness of numbers of grains of sand or the age of rocks and the miraculous richness of soil despite its dull everyday appearance.

Science advisor: Martin Hodson

Advice from Dr Martin Hodson: it is particularly important when working with soils to consider tetanus. Nobody should handle soil with cuts on their hands. Tetanus jabs should have been done. It is possibly best to have adults do the soil handling!

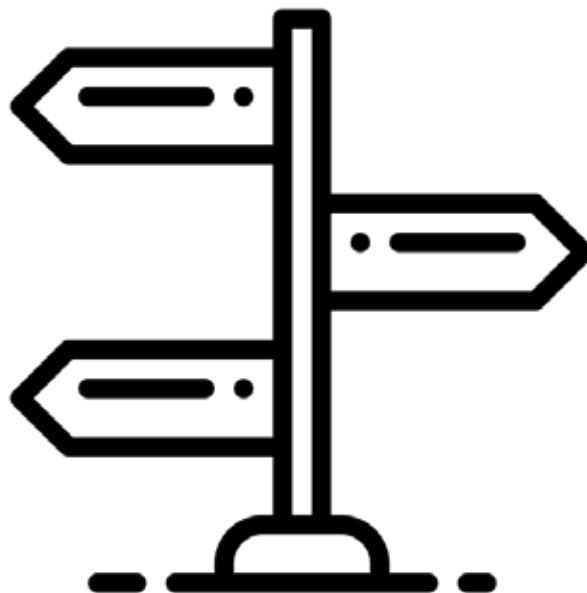
Messy Church values:

- Christ-centred – discovering more about who Jesus is through the properties of soil, rock, sand and mud, and the story of the two builders (Matthew 7:24–25).
- Hospitality – creatures that live in the earth; make homes from the earth and cover themselves in the earth to protect themselves.
- Celebration – the joy of things that come from the earth; the splash of muddy puddles and the wonder that creation gives us things that we can construct things from.
- Creativity – imagining different ways to use the resources of the earth.
- All-age – opportunities for all generations to reflect on the wonders of the earth.

Locations: field; meadow; park; garden; hillside; beach; playing field.

Section 1 On the move

You could start off by watching Martin Hodson, a scientist who knows a lot about soil and sand, rock and mud and about God in this video (youtu.be/zfrWBEufp7E). Martin and Margot Hodson have written *A Christian Guide to Environmental Issues* (BRF, 2nd edition, 2021) which has a whole chapter (chapter 7, pages 128–144) on soil that could be useful for leaders.)





1 Wall

A garden wall/a house/village hall/church building

- Pause by a wall.
- Get the group to feel the wall. What does it feel like? Hard? Cold?
- Get the group to look at the wall. What do they notice about it?
- You could make a wax-crayon rubbing of the wall to get a feel for the texture.
- Talk about how a wall is made. Bricks are first shaped and baked and then mortar is used to stick the bricks together.
- Can you see any old buildings on your walk that might not have been made using the same shaped bricks and mortar? (Think old style buildings and dry-stone walls).
- Bricks are made from clay and sand. Ask if sand is a good building material. Why?
- Tell the story of Joshua and the walls of Jericho from memory while people lean against the wall or feel its surface and solidity (Joshua 6). The walls of Jericho, strong though they were, weren't as strong as God. Some people today have obstacles that seem as high and strong as the walls of Jericho in their lives – things that stop them getting where they need to go. Can God help? I wonder how you would ask God to help?

Ask: what questions does this wall make you want to ask?

Suggestions for specialist input: builder, architect.

2 Patch of soil

A flower bed or field

- Find a good patch of soil.
- Talk about what materials are in the soil. If you have a microscope app on your phone, see what soil looks like magnified.
- Ask what kinds of things or creatures people might find in the soil.
- Use litmus paper to test the soil's acidity and talk about different plants needing acidic or alkaline soils, or hydrangeas actually changing colour depending on the acidity of the soil!
- Is your soil clay, sand, loam or something else? Talk about the types of bedrock in your area if you know them. How does it make you feel to have a stratum of different rocks under your feet going all the way to the centre of the earth and getting hotter and hotter? Not all soils are the same! Some are sandy, some silty, some are clay and some are a mixture of all three (loams).
- Look up into the sky. You can't see them, but there are rocky meteors and meteorites flying through space above you right now. Some have hit earth and brought chemicals from outer space to earth. Just think, you and everything around you is made of stardust. How does that make you feel? The writer of Genesis, the first book of the Bible, describes God making Adam out of dust. It might be a myth that represents a bigger truth, but it does help us know that in God's eyes, we are all part of this earth and deeply connected to it.
- Pour some water on to a small patch of soil. Observe what happens. The soil has now turned into mud. Can you split up the soil and the water now it's mixed?
- Ask what kinds of things mud might be used for. Puddles (fun); building material (roof and mortar in some countries); beauty face masks (mud has lots of healing properties); animals use it to build shelters; pigs use it as sunscreen: what other uses can you think of?

- If your surroundings allow, do some puddle-jumping, mud-pie moulding, mud-painting, mud angels (like snow angels but messier).

- Tell the story about Jesus healing the blind man (John 9:1-7). Tell it by memory if you can. Ask: how do you think it would feel to have mud smeared over your eyes? Would it feel different if it was Jesus' fingers smearing the mud?

Ask: what's the most interesting question starting with the word 'How...?' that you can think of to ask about dust, mud or soil?

Suggestions for specialist input: gardener, builder, potter.





3 Sand

A beach, riverbank, garden sandpit, an area that has big yellow bins with sand/grit in (these often have salt mixed with the sand – there is an interesting story about this on page 132 of *A Christian Guide to Environmental Issues*); if you can't get to any of these places then carry a small bucket of sand with you outside somewhere.

- Pause at your sandy place. If there is no sand, then pause in an appropriate place and use a small bucket of sand which you have brought with you.
- Get the group to feel the sand. What does it feel like?
- Ask them how they can use sand.
- Get them to spread small amounts of sand on the ground and walk over it. Can they slide? Why not? One way that a town/village/estate might use grit or sand is when the roads are icy, as the grit increases the friction between the road surface and the car tyre or the sole of your boot.

- Sand is also used when there are big spills on the road. If a lorry spills its contents over the road, or there is lots of oil on the road, sand may be put over the top. It stops people and cars slipping and causing accidents.

- Can you think of other uses for sand? Why do we see sand in buckets in buildings? How is it used on building sites? Are there different sorts of sand? Are all beaches the same?

- God promised Jesus' great-great-great (times lots) grandfather, Abram, that he would have more children and grandchildren (and great-great-great times lots of grandchildren) than there are grains of sand in the desert. Abram and his wife Sarai only had one son. But what a huge family they ended up with over the centuries! Can you even count the grains of sand in your hand? If each grain of sand represents a human being, how amazing that each single person is really important to God, when there are so many of them. How can you measure that love?

Ask: what's your most interesting question about sand starting with 'Why...?'

Suggestions for specialist input: Council roadworker, builder.

4 Park or place where you can find rocks

A park, a pebbly beach, or a playground

- Pause at a place where you know you will be able to find loose rocks. If you're near a coast, a pebbly beach would be perfect.
- Get the group to go and find as many rocks as they can in five minutes. Then all meet back together.
- What was living underneath your rock? What was the rock providing for it?
- Have a look at each other's collection of rocks. What do people notice about them? Which is their favourite and why?
- Talk about how heavy a rock can feel.
- Talk about how old different sorts of rock are. How long have human beings been on earth compared with rocks? How does that make you feel?
- Tell the story of Jesus in the wilderness. After 40 days in the desert of not eating or drinking, Jesus was tempted by the devil. The devil told Jesus that if he was hungry, he should turn the rocks into loaves of bread, but Jesus knew that it wasn't right to do that; he wanted to do what was best and right, and he trusted that God would look after him. Which of your rocks looks most like a bread roll? Remember that when you have decisions to make, the easiest way isn't always the best way. Jesus always chose the best way. Has anyone had any experience of that, that they'd be happy to tell everyone about?

Ask: what's your most interesting question about rocks that starts with 'What...?'

Suggestions for specialist input: geologist or just somebody who loves rocks.

5 Church window

A church window or some other large window, or if out in the countryside, use a binocular lens or spectacles lens

- Pause by a window or show a glass object.
- What can the group see? How do they think it was made?
- Talk about how glass is actually made of sand. Sand contains silica which, when heated up really hot, can make glass.
- Glass is actually pretty amazing. When it breaks, the cracks move at 3,000 mph – that is five times faster than an aeroplane! And recycling one glass bottle could power a computer for 20 minutes!
- Ask what happens when a window gets dirty. If you are able to, get the group to wash a dirty window.
- Talk about the way that our lives can get clogged up with things we say, do and think that act a bit like dirt on a window. We can sometimes have bad thoughts or do bad things that block out the way things really are. And looking the other way, the ‘dirt’ means people don’t get to see the real you. But saying sorry to God for the ‘dirt’ can help. God can ‘clean’ our lives when we say sorry for the wrong things that we have done. That way, people can see the light that Jesus puts in our hearts, a lot like the way that we can see through a clean window. They can see the real us and we can see the world around us more clearly. It’s why church services usually have a ‘confession’ or opportunity to say sorry to God and be forgiven completely – washed clean like a window!

Ask: what interesting questions have you got about glass that start with the word ‘Who...?’

Suggestions for specialist input: window cleaner, glass blower.

Celebration

Invite everyone to share one new thing they've learned today and one thing they're going to do this week that's different because of what you've done today. Remember to ask about how you all got on next time you meet.

Prayer

What would you like to pray for today? You might like to pray for a hard situation that you're facing – perhaps an illness, a difficult situation or a problem, like the walls of Jericho. We've seen today that no matter what hard place we find ourselves in, God is always with us. You might like to pray for something to change in your life. Again, we've seen today how things can change. Sand can change into glass; soil can change into mud; a dirty window can be cleaned. God can change things through prayer. Find a stone and as you sit or stand in a circle, silently talk to God about what you want to talk to God about, then place the stone on the ground and let go of it. If you've all prayed this prayer, you could pile up your stones as a prayer cairn, to show you've been on this journey together today.

As you leave

Invite everyone to talk on your way home about where you saw God at work today.

Section 2 Adventure area in one spot

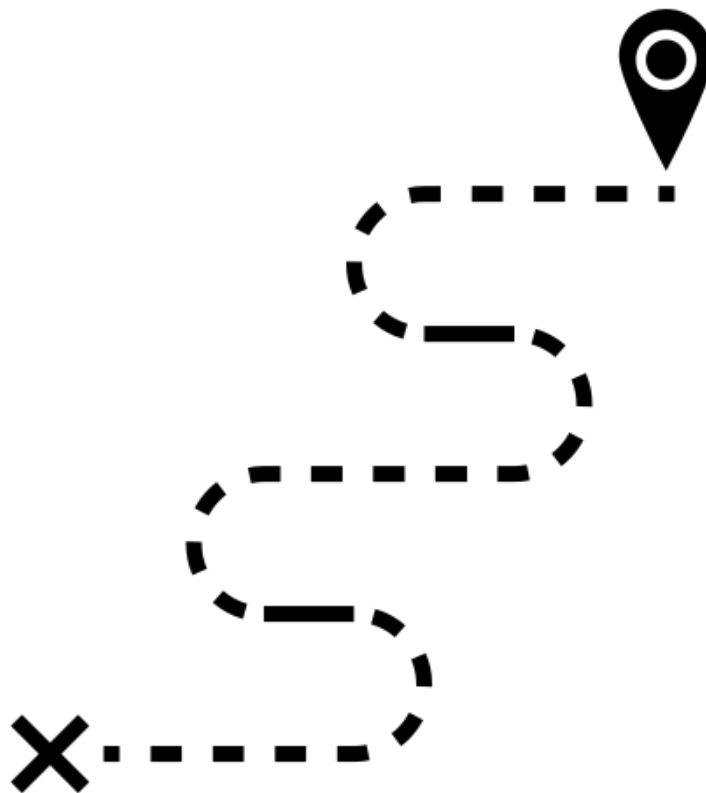
Meet at a park, beach, field, park, open space, hillside, garden – bring sand and water bottles with you if needed.

- Stand in the space together. Ask the group to name one thing they notice about the space.
- Have a rock hunt and see how many different types of rock or stone you can find. Bring them together – can you identify them? (Search for a rock identifier app on your phone.)
- Invite people to take a printed copy of the story that Jesus told of the wise and foolish builders (Matthew 7:24–26). Explore the area and find the best spot to read the story together.
- Find a rock or concrete base for building one house and (unless you're on a beach) spread out a thick layer of sand for the other. Try building a house on each from driftwood, sticks, stones, leaves and anything else you can find. Talk about which foundation is stronger. What happens when you pour water over the houses like the storm in the story? Why do you think Jesus told his story? If he was telling it to you, what do you think he would want you to notice from it at this point in your life?
- Suggest a selection of the activities in section 3 to explore the properties of the earth.
- Explore what biodiversity there is under, in and amongst the rocks and the soil. Use a magnifying glass or microscope phone app, listen to the insects and birds, count the different species within a square metre. In the autumn, take a torch out to a lawn with trees to observe earthworms dragging leaves down into the soil.
- Have a look at the area. Is there any litter around? How might that affect the wildlife?
- Do a litter pick before you leave.

Wonder:

- There are many things that can change. Rocks can change into sand; soil can change into mud. There are some people in this group that say that Jesus can help make changes in your life, good changes. What would you like to change in your life?
- Perhaps soil looks boring but think how many different materials and living things there are in it when you look closely! I wonder how we would change if we went beyond our first impressions and looked more closely at other parts of our world, at other people and at ideas that might seem boring at first glance?
- When we first moved into this space, we probably didn't notice a lot. It was only when we stopped and explored that we saw things that were first unseen. What do you need to spend more time digging into? It might be a relationship with a new friend; a new hobby; reading the Bible.

Suggestions for specialist input: gardener, builder, environmental scientist, Wildlife Trust.



Section 3 Activities to explore the properties of soil, rock, sand and mud



1 It's a home

You'll need: a small garden trowel; magnifying glass or mobile phone microscope attachment.

What to do: explore what creatures are living in the soil. What can we see with the naked eye and what can we see with a magnifying glass or microscope? You could take some pictures on a phone.



Big thinking: what do these creatures do in the soil? They eat and break down the leaves to form the organic matter in the soil which is really important for holding the soil together! It is also good for soil fertility.



Big question: what makes the soil a good home for all these creatures? What would make it not a good home? Pesticides and insecticides are very bad for the soil and the creatures. It is also not a good home if the soil is flooded or is too dry. Would it matter if the insects all disappeared? Why did God create every sort of animal, even those that 'scurry along the ground' (Genesis 1:24)? How can we look after minibeasts?

2 It's for building

You'll need: a patch of soil; some rocks; small garden trowel; bottle of water.

What to do: smaller animals may use the soil to make their homes, both on top of the soil and underneath the ground. I wonder if we can build a small house for a creature.



Big thinking: earthworms live in long burrows underground. Rabbits, badgers and moles also live underground. Ants and termites also make homes out of soil. Sometimes they build them above the surface, like minibeast skyscrapers which can be nearly as tall as a human being. They don't use concrete to build them either. They stick the soil together using spit and poo!

? Big question: the minibeasts all have to make homes in order to protect themselves. I wonder if they ever worry about things? The Bible says that we shouldn't worry about anything because God already knows what we need (Matthew 6:25–34). How you can let go of what is worrying you?

3 It can be sticky

You'll need: a small garden trowel; bottle of water; sticks, leaves and other natural building materials.

What to do: people all over the world make shelters to live in. Some live in buildings made of bricks, some in houses made of sticks. Sometimes people use mud to make houses with. They use it to waterproof their houses and roofs and stick together building materials. I wonder if we can build a shelter using some of the things we can find around us.



Big thinking: you can do an easy test to see what type of soil you have by hand – [youtube.com/watch?v=fv3JCciOhrE](https://www.youtube.com/watch?v=fv3JCciOhrE) or see A Christian Guide to Environmental Issues (page 130).



Big question: the water turns the soil into mud and changes the properties of the soil and makes it sticky. I wonder what we let 'stick' to us? It might be the way that people criticise us or call us names. It might be people's expectations of us to act a certain way or say a certain thing in order to fit in. When the world tries to stick bad things to you, try to remember that God loves you just as you are, and made you with a special purpose in mind.

4 It can change

You'll need: a source of sand (either in the ground or brought in in a bucket); glass bottles with lids; powder paint; funnels; small bowls; sticks or spoons.

What to do: did you know that glass is made from sand? Under extremely high temperatures, sand is used to make glass. Hold the sand in your hands. Notice how it feels, how it moves and think about what you might use sand for. Now hold a glass bottle in your hands. Again notice how it feels and think of different ways that you might use a glass bottle. Compare the differences with each other. Pour some sand into a bowl and stir in the powder paint to colour it. Repeat with different colours in other bowls of sand. Now fill a glass bottle with layers of the coloured sand using the funnels.



Big thinking: sand is made up of silica. It's a type of rock that is made from the chemical silica, the material in computer chips and oxygen. It is very common around the world and most soils have silica in them. Some plants, particularly grasses, take up soluble silica from the soil and form plant stones known as phytoliths in their tissues. This is why you can cut your hand on a grass leaf (try pampas grass but be careful because the silica makes the leaves very sharp just like glass can be!). Nettles have little hairs that contain silica and act like hypodermic syringes to inject poison into you!



Big question: change is all around us; animals, landscapes, objects, humans. But the Bible says that God never changes. What does that mean and how does that make you feel? Do you think that change is a good thing? What one thing would you like to change today?

5 It can be washed away

You'll need: soil; muddy rocks; dirty glass objects like old drinking glasses; buckets; camping plates; environmentally friendly soap; water; old clean rags.

What to do: there are a couple of activities that you can do here.

Look at a few dirty objects; rocks and glasses. What do you notice about them? Pour some water into a bowl and add soap. Now wash all the dirt away.

Grab a handful of soil and pop it on to the ground (or on to a camping plate if the ground is impractical). Add some water to make mud. Have fun writing messages on the ground or plate. Now pour over some clean water and watch the message disappear.



Big thinking: 'erosion' is the word we use to describe the washing away or wearing away of land, soil or rock. Coastal erosion happens when the sea levels rise due to global warming and areas of land can be battered by the waves until they wash away. Soil erosion happens when forests are chopped down and there are no roots left to hold the earth in place. Where do you see this happening around the world? Can you think of any other causes of erosion? (e.g. wind, ice, rivers.) Where does the displaced soil end up? (It can get carried into rivers or estuaries which then become silted up.)



Big question: human beings are made of dust – the elements of the planet earth – according to Genesis 2 and according to the list of chemicals that make up a human body. What can 'erode' us as we journey through life? Is this always a negative process, or might we see it as being lovingly shaped into better people through the forces, places and people God sends our way? It can be part of our discipleship journey. Proverbs 3:12 says: 'But don't, dear friend, resent God's discipline; don't sulk under his loving correction. It's the child he loves that God corrects; a father's delight is behind all this' (MSG).

6 It can heal

You'll need: soil; bottle of water; wipes.

What to do: grab a handful of soil and add some water to make mud. Roll your sleeves up and cover your hand and arm in the mud and then allow it to dry. Some people use mud to heal all sorts of illnesses, from spots to skin diseases.



Big thinking: what would happen if we treated our farmland and gardens as 'members of our families' (as one scientist argues in ourworld.unu.edu/en/the-surprising-healing-qualities-of-dirt)? In other words, if we were as careful with our soil as we are with our great-aunt or our child, it stands a chance of giving back to us in return. Scientists have discovered that soil that is packed with different sorts of life (such as bacteria, nematodes and fungi) is likely to grow food more densely packed with nutrients. The 'rhizosphere' is the rather lovely name we give to the friendly neighbourhood around a plant's roots – the soil, microbes, water, nutrients exchange. Perhaps we, the gardeners, might be part of that neighbourhood – are we a good neighbour or the sort of neighbour who makes the neighbourhood miserable?



Big question: Jesus used mud to heal a blind man. A lot of salons use mud as a beauty treatment to heal the skin. Children often like to play in the mud because it feels nice. The Bible says that God is our healer. What does that mean to you? Is there something that you would like to ask God for healing for? If the rhizosphere is like a neighbourhood where everyone wants to help each other, do you think we could learn something by observing and copying the simple everyday processes in the earth, like this one?

7 It can be heavy

You'll need: weighing scales; rocks.

What to do: go on a treasure hunt in your surroundings to look for some rocks. If this isn't possible, bring a collection of rocks with you. Get the group to have a guess as to which is the heaviest by just looking at them. When they have finished ordering them, weigh the rocks one by one to see who has the right order or who was closest.



Big thinking: there are three main types of rock – igneous, sedimentary and metamorphic, which are awesome names! Igneous rocks come from volcanoes and can even FLOAT (how cool is that?). Sedimentary rocks are formed from tiny particles of rocks that are pressed together over millions of years. Metamorphic rocks are igneous or sedimentary rocks that have been changed by heat and/or pressure. Can you classify any of the rocks you've collected? Can you tell, just by looking, which one is the heaviest? The lightest? Think about what each of these rocks has been through to get to this place today – what an amazing adventure it's been on, being gushed out from the core of the earth and solidifying into the shape you see now, or waiting for millions of years under a lake, or transformed in a violent act of earthquake or eruption.



Big question: rocks can be heavy. Sometimes when we have a lot to deal with in life, it might feel as if we're being weighed down with rocks. But like these rocks, you can't always tell, just by looking, whether someone is feeling light as air or weighed down by worries. Like these rocks, might we take the time to imagine what someone else's story up to this point has been? What is weighing you down at the moment? How can you let go of it? Jesus said that all those who are weighed down with troubles should come to him and he would give them peace. What does that mean to you?

8 It can be hidden

You'll need: a small garden trowel; magnifying glasses or mobile phone microscope attachment; pencil; paper.

What to do: sand doesn't just come from the beach, it can be hidden in the ground or in the very rocks themselves. And rocks aren't always on the surface of the soil. Have a dig around in the soil and see what 'treasures' you can find. Can you find any grains of sand?



Big thinking: scientists call different sizes of soil particles by different names. Be aware that sand in scientific terms refers to particle size (0.05 to 2.0 mm). The next size is silt (0.002 to 0.05 mm), followed by clay (less than 0.002 mm). Can you find these measurements on a ruler and see how small they are? What colour is sand? (Sand comes in all sorts of colours: black, brown, red as well as white and yellow.) Good scientists are good observers and recorders. Can you draw the different tiny particles and creatures you find in the soil?



Big question: there are many stories in the Bible where people hid. They hid from their enemies, friends and God. When have you felt like hiding? The truth is, we can't hide from God. The Bible says that even on our worst days, God is still with us (Psalm 139:7-12). How does that make you feel?

9 It is unique

You'll need: different types of sand; magnifying glasses or mobile phone microscope; black paper; white vinegar.

What to do: sprinkle some sand on the black paper. Spread it out as thin as you can so that you can see the individual grains of sand. Look at it through the magnifying glass. Try it again with different types of sand. Notice the different shapes, sizes and colours of the sand. Put a bit of vinegar on the sand and watch and hear what happens.



Big thinking: the vinegar will dissolve any calcium carbonate within the sand. If you don't notice any dissolving, it may be because sands from acidic sources will already have lost their calcium carbonate through leaching.



Big question: when you first see sand it all looks the same, until you look really closely at it. The Bible says that we are all uniquely made. Do you think that is true? How does that make you feel? How are you made differently from other people?

10 It is everywhere

You'll need: an assortment of rocks (different sizes, shapes and colours); different objects that are made out of sand (mirrors, glass, bricks).

What to do: have a treasure hunt. Place the objects around your area beforehand. Give each team a list of the different sandy/rocky objects for them to find. Who can find the most? You might want to do a more challenging list to stretch some participants, using geological names of rocks, for example, 'find a lump of sandstone', rather than descriptions that are more suitable for younger ones, such as 'find a yellow rock as big as a tennis ball'.



Big thinking: when you've gathered all your treasures, have fun allocating the proper scientific labels to them. Some people of all ages will be fascinated by the complex language and interesting technical terms. Put some of these words – and your own localised ones – on to tags or labels and call them out, and, as a group, try to attach each one to one of your 'treasures'. This webpage has some resources that might be useful – geol soc.org.uk/Education-and-Careers/Resources/Rock-Sets. (For the 'gemstone', there might be someone wearing a stone whom you could label.)

Here are some words that describe different types of rock – you could look up what they mean on the internet:

- Sedimentary
- Metamorphic
- Organic
- Mineral
- Crystal
- Gemstone
- Clay
- Fine-grained
- Oolite (excellent word)
- Oxidation
- Pebble
- Porous rock
- Rounded rock
- Weathering



Big question: rocks and sand are used to make lots of different objects that we use every day, even TVs! Some of the people in our group believe that God is everywhere. What do you think about that? Does it help you to know that God is everywhere?

Bigger activities

- Build a wall – find a bricklayer to show you how
- Make moon sand (do a web search for how to make it)
- Make sand play dough
- Visit a building site, quarry or an architect firm
- Build a cairn in your area
- Watch a farmer build a dry-stone wall or try building one yourselves
- Enjoy videos like ‘Where does soil come from?’ by SciShowKids video.



Section 4 Celebration

This story involves lots of participation. One leader is the main storyteller. Choose two team members beforehand to play the role of a builder. Start off with retelling the story about the parable of the builder (Matthew 7:24–27). Start with the person who built his house on sand. Say ‘this man decided to build his house on sand. What do you think? Is it wise? Will it fall down?’ Then have other team members responding with lots of ‘no’s’. The team member will build his house (using cardboard, large boxes or anything else you can use). Then say ‘the wind blew and the rain came down and the house fell to the ground’. A team member knocks the house down! Repeat for the second builder, but say it was built on rocks and get a mixed response from the other team members (‘yes’ and ‘no’ to whether it will fall down). Finish the parable.

Song suggestions:

- ‘Shelter in a time of storm’ – Go Fish
- ‘The wise man built his house’ and ‘I’m gonna build my house on solid rock’ – Doug Horley

Section 5 Eating together

Pick an idea from the Messy take-out menu or another source for outdoor meals, snacks and treats.

Rock buns, sticks of rock, raw carrot sticks, roasting or boiling other root vegetables (that grow in the soil) would work well with the theme and provide a talking point.

