

# Minerals In Your Home

## Activity Book



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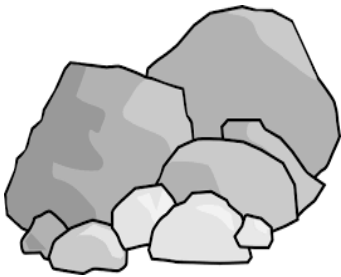
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# Introduction

As you look around your home, it is important to think of the many things that you have and *what are they made from*. It's simple - *everything* is made from **Earth's natural resources**: rocks, soil, plants, animals, and water. They can be used in their natural state, or processed, refined and manufactured by people into other useable things.

The resources that grow and can be replaced when they die or are harvested, like plants and animals, are called **renewable resources**. Those that cannot be regrown and replaced, like rocks, soil and water, are called **non-renewable resources**. All natural resources are valuable and we must use them conservatively.



**Mineral resources** are natural Earth materials that must be mined from the ground. We use them every day, and they are **non-renewable**. Some are changed very little before they are used, like the rock **granite** for example, that is commonly used to make kitchen countertops or tombstones. Other mineral resources, like those that contain useful **metals**, must be *processed* to extract the metal ingredient. The metal is then manufactured into different parts of a product, like a toaster or a smartphone. Whether you are practicing violin in your room, eating a meal in the kitchen, watching TV in the living room or brushing your teeth in the bathroom, your daily activities use things that come from **mineral resources**.

It is pretty easy to tell which items in your home are made from **mineral resources**. Everything that is *not made of wood or other plant materials*, like paper or bamboo, or is *not grown on a plantation, or on a farm*, like lettuce or beef, comes from mineral resources. **If it can't be grown, it has to be mined.**

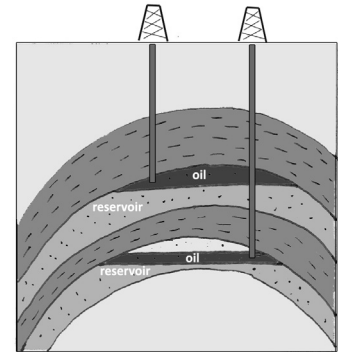
Things in your home that are made with **metallic mineral resources** are easy to recognize. They are commonly shiny and look like metal (unless they are painted), are hard (unless they are very thin) and are generally heavy for their size. The door on your refrigerator, the frame of your bike, the cutlery in your kitchen are all good examples. Parts of many household items are also made of metal, like the plug for the vacuum, the hinge on the front door, and the buckle on your pet's collar. The most common household metals are **copper** and **aluminum**. The most common household **metal alloys**, that are made of two or more metals, are **brass** (copper + zinc) and **steel** (iron + carbon + other elements). The special ingredient in stainless steel is a small amount of the metal **chromium**, which prevents the steel from rusting!



# Minerals in Your Home

There are many other things in your home that are made of **non-metallic mineral resources**, also called **industrial minerals**. The **concrete** foundation of your home is made with **sand, gravel, and lime** from limestone. Chimney **bricks** are made of **clay minerals**. Window **glass** is made of **quartz sand**, while inside walls are made of sheets of **drywall** made mostly of the mineral **gypsum**. **Gypsum** is also ground up and used as a filler in **paint** on the walls, and other minerals are ground up to provide **pigments** that colour the paint.

Another very common material in our homes that comes from mineral resources is **plastic**. **Plastic** forms the body of your printer, your eyeglasses, and the container for your ketchup. The mineral resources used to make plastics are **crude oil, natural gas** and **coal**. Crude oil and natural gas are liquids, and coal is solid. All three are made mostly of carbon that comes from buried organic material, like **plant leaves** and **microscopic plankton**. While these natural materials are not minerals, they all occur within sedimentary rocks and so are considered mineral resources. All three must be refined in order to be used in making plastic.



All **mineral resources** are **non-renewable**, so it's very important that they are **conserved**. We can conserve our mineral resources by using the products we buy for a very long time, by passing on the things we no longer need to others, or by using them for another purpose. We can conserve mineral resources at the end of their lives by properly recycling products so that they can be made into other useful goods.

Read on to learn about the many mineral products in your home.

# The Office

The office is a quiet room. It is a place to do homework, read books, make phone calls and use the computer.



**Computers** and **printers** are used by everyone in the family. These devices run on electricity. The electricity moves throughout the house along electrical wires that are made of the metal **copper**. Copper wire is in all electronic devices, plugged-in and battery powered!

To use a computer you need a **k** \_\_\_\_\_ **d** and a **m** \_\_\_\_\_ **e**. The electrical parts in these devices are also made with **copper**. The cases of these devices are made of **p** \_\_\_\_\_ **c** that is made from **crude oil**. The mineral **talc** is added to plastic to make it stiff and strong.



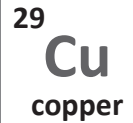
Find two other things in this office that use electricity and are made in part with the metal **copper**. **Name them.**

\_\_\_\_\_

# Minerals in Your Home

## Did you know?

**Copper** is a reddish-orange **metal**. It is also a chemical **element** that is an ingredient in many minerals, such as **chalcopyrite**. The copper we use is extracted from this mineral by mining.



Humans have made things from copper for **10,000 years!** Copper is abundant, fairly soft, easily bent into shapes, and can be stretched very thin. Pure copper conducts electricity without making heat. That is why it is so useful as electrical wire in every modern building and in all household appliances and electronics.

**Copper** metal and **zinc** metal are combined to create the **metal alloy, brass**. Brass looks golden and is used for many things, including door knobs and other hardware. The copper in brass kills germs! Brass is a great material for hospitals and public places.

**Window glass** is transparent and lets sunlight into the room. It is made of **sand** made mostly of grains of the mineral **quartz**. Quartz is very hard. When it is pure, it is also very clear.



Name six things in this office made with glass. Mark them with the letter **G**.

\_\_\_\_\_

\_\_\_\_\_



Many things in the office are made from **wood** that is harvested from trees. Trees are [**renewable**][**nonrenewable**](circle one) **natural resources**. Mark with a **T** all the items in the office that come from trees.

The desk in this office is made mostly of **wood**, but the legs are made of the metal alloy **steel**. Why is steel a good material to support the desk?



List all the things that this Dad is wearing or using and whether it comes from plant materials (**P**) or mineral resources (**M**).

\_\_\_\_\_

\_\_\_\_\_



I am skinny and fit in the palm of your hand. I come in many colours and am made of plastic and metal. I can make a sound, and I can make a mess. I can do lots of things, but only if a person holds me. What am I?



# The Nursery

We use things made of mineral resources to take care of babies too.



**Diaper cream** is used to protect a baby's skin from getting diaper rash. The active ingredient that protects the skin is **zinc oxide** which is made from the mineral **sphalerite**.

Mom may sprinkle **baby powder** on the baby's skin to keep the skin cool and dry. It is made of the mineral **talca**, one of the softest minerals on Earth! After it is ground up, perfume is added to this natural material to give it a nice scent.



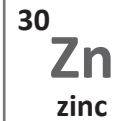
Circle the baby's diaper pins, clothes hangers and hooks. Like the desk legs in the office these are also made of **steel**. Steel is a very strong **metal alloy**. Because it is made of iron, it is also **magnetic**!



# Minerals in Your Home

## Did you know?

Zinc combines with the element **sulphur** to form the mineral **sphalerite (ZnS)**. Zinc is the fourth most common metal we use.



It is called **The Great Protector** for good reason. Besides its use in diaper cream, zinc is also used in **sunscreen** to prevent sunburn. Zinc is used to **coat steel** to prevent it from rusting. This is called **galvanized steel**. You might have seen it on steel pipes, nails, railings, or beams in big buildings.

Zinc is a **necessary nutrient** for our bodies and brains to grow. It helps fight infection and it is a life-saving treatment for diarrhea. The zinc found in our food, like beef, bean and nuts, all comes from zinc-rich soil!

The **walls** in the nursery and every other room in the house are built with sheets of **drywall**, which are made from the mineral **gypsum**. They help keep the room quiet and warm. Gypsum is solid, but rather soft. How can we tell? It is very easy to pound a nail into drywall to hang a shelf or curtain rod!



I spy two things in the nursery that run on electricity. Circle them. They have wires made of the metal **\_\_\_ p p \_\_\_**.



Look carefully. Find all the items in the nursery that are labelled **P**. The main ingredient in these **p \_\_\_\_\_ c** items is **crude \_\_\_\_\_**.

The crib is made of wood. What is used to fasten the wooden parts of the crib together? Nails, screws, bolts and washers, that are made of **metal** hold the crib together. Those small parts could be made of **brass, zinc-coated steel** or **stainless steel**. All three are strong and will not rust.



Can you find two things in the nursery that could be **reused** by another family with a new baby? Name them.

\_\_\_\_\_

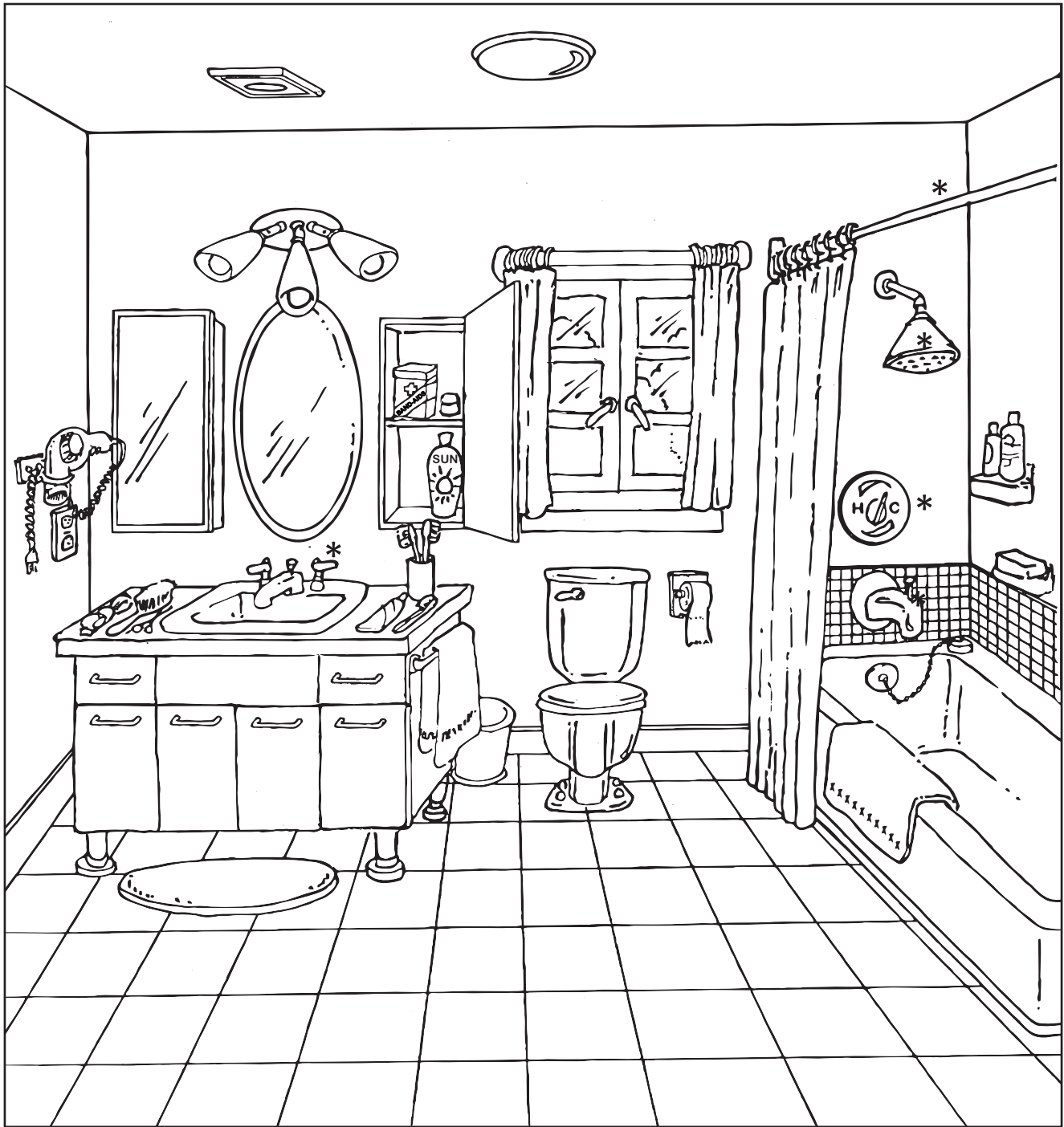


Name three things in the nursery that can be **recycled**.

\_\_\_\_\_



# The Bathroom



Your bathroom is made using so many mineral resources that it is practically a **mine in disguise!** The toilet, tub and sink are made of **porcelain** made from **clay minerals**. The shower rod, fixtures and faucets are made of **stainless steel (\*)**. The bathroom floor and the tiles above the bathtub are **ceramic**, also made from **clay minerals**. **Copper** wiring powers your grooming appliances and the mineral **fluorite** in your toothpaste protects your teeth from decay!

# Minerals in Your Home

## Did you know?

Modern bathrooms would not exist without mining. The main parts of every bathroom - the sink, toilet and tub, are made of **porcelain**. **Porcelain** is a hard and shiny type of **ceramic**, or pottery, that is made from the clay mineral, **kaolin**, and the minerals **feldspar** and **quartz**. Its toughness and shine come from firing in a kiln at very high temperatures (1,200 - 1,400 °C). Porcelain is waterproof so it is perfect for the sink, tub and toilet.



Porcelain was first made in China more than 2,000 years ago.



Unscramble the words below to identify some of the many mineral products in a bathroom. In the column on the right, write the name of the main mineral ingredient(s) like: iron, copper, quartz sand, zinc, clay minerals, etc.

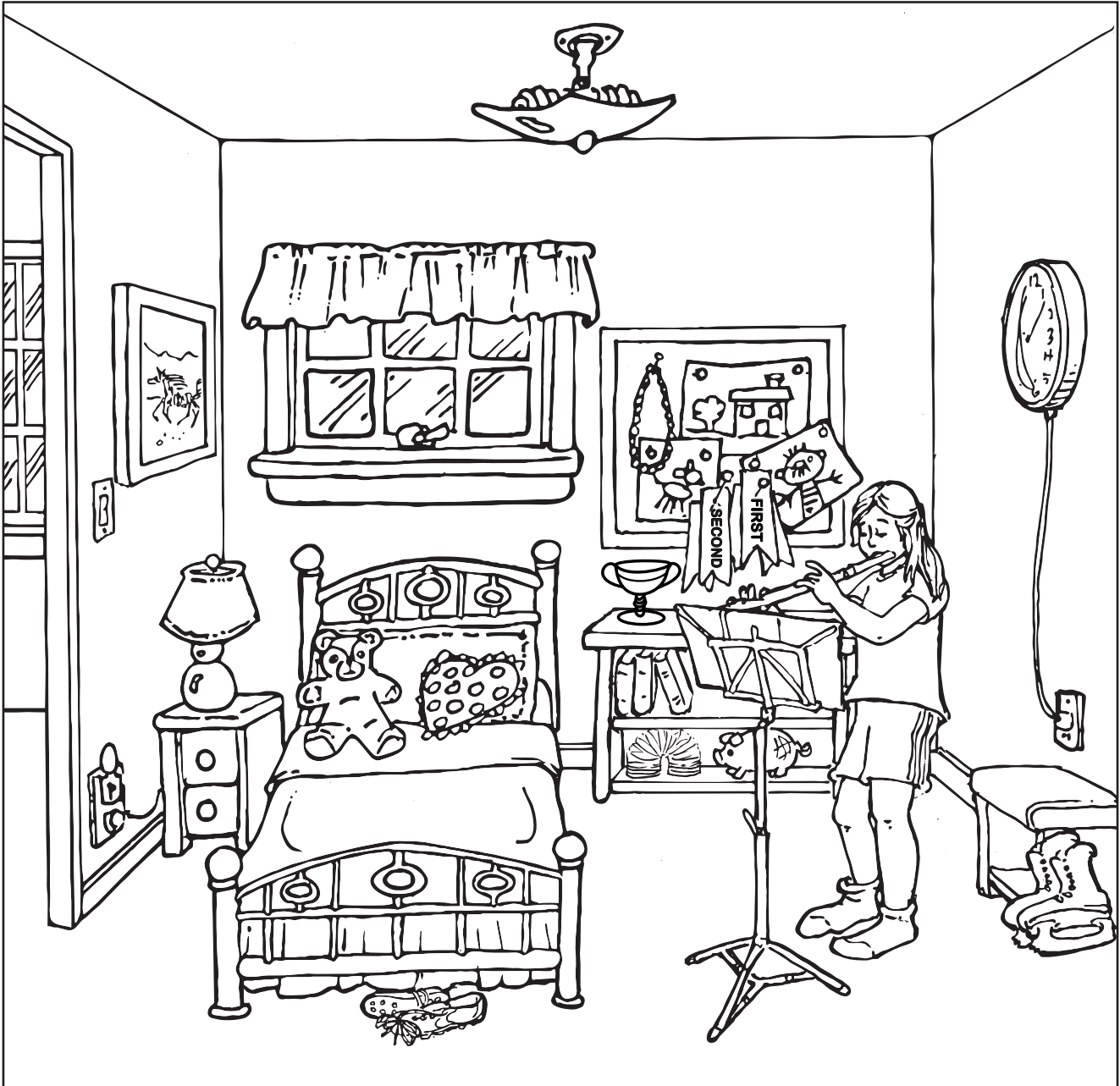
ehwosrhdae	s	_____	_____
rorirm	m	_____	_____
rheydrair	h	_____	_____
fetcau	f	_____	_____
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taphotose	t	_____	_____
naf	f	_____	_____
lotiet	t	_____	_____
skin	s	_____	_____
cursesenn	s	_____	_____
thlig	l	_____	_____



I am made from a **renewable resource**. I decompose, but I am not recycled. A bathroom would not be the same without me. What am I?

# The Bedroom

The bedroom is a comfy place where you can go to practice music, do crafts, build models, or sit with friends and talk. Mining products are found here too!



Look around this girl's bedroom. What activities does she enjoy that use things made in part from mineral resources?

\_\_\_\_\_

What do you keep in your bedroom for an activity that you do for fun?

# Minerals in Your Home

## Did you know?

The light fixture on this bedroom ceiling uses a *compact fluorescent light bulb*. These bulbs use less energy than incandescent bulbs. Also, they do not lose energy as heat when they are on.

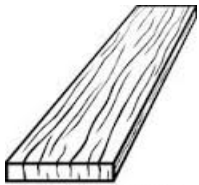


Compact fluorescent bulbs are made of a **glass** tube, have a **ceramic** and **metal** base, contain a powder that glows called **phosphor**, and a small amount of the metal **mercury**. All of these parts are made from mineral resources. Mining makes this energy-conserving bulb possible!



It is nice to have a window in your room to let in sunlight and fresh air. This window has three main parts, plus a curtain. List the parts and what they are made of. **Circle** the ones that come from mining.

1. \_\_\_\_\_ is made of \_\_\_\_\_.
2. \_\_\_\_\_ is made of \_\_\_\_\_.
3. \_\_\_\_\_ is made of \_\_\_\_\_.



Some of the furniture in this girl's room, like the stool, shelf and nightstand, are made from wood. Why do you think this is so?

The bedframe is made of shiny yellow **brass**. **Brass** is an **alloy** of two metals: **copper** and **zinc**. What about the bedding? Could it come from mining? Sheets and bedspreads can be made of **cotton** or a **cotton-polyester** blend. The pillow could be stuffed with **down feathers** or it could be stuffed with **polyester fibre-fill**. **Polyester** is a man-made material that comes from **crude oil** and **coal**, and is made into many things.



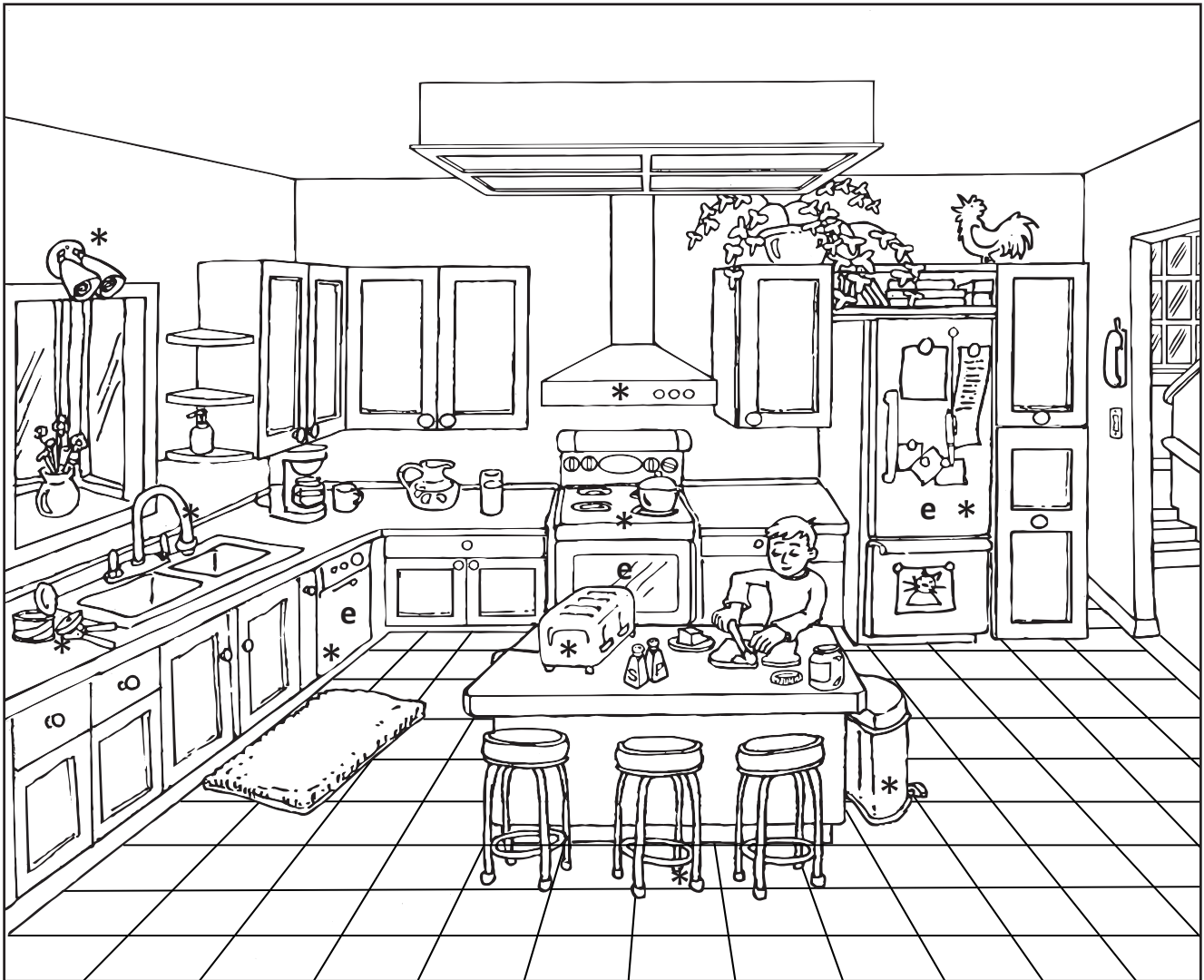
You see me where ever you look around this room. I am the girl's favourite colour, and I am made in part from minerals, especially the green ones that contain **chromium** or **copper**. What am I?

\_\_ \_ \_ \_ t

**FYI:** the special mineral ingredient in me that covers up the colour before is **talcl**!

# The Kitchen

Many important parts of your kitchen come from a mine. We cook with mineral products. We eat with mineral products. We eat some minerals. And we clean up with mineral products.



The three most important electrical appliances (**e**) in this kitchen are manufactured from mineral products. Name them.

r \_\_\_\_\_ r s \_\_\_\_\_ e d \_\_\_\_\_ r

The frames and outside panels of these appliances are made of **steel** (\*). The **iron** in steel makes it **magnetic**, so the refrigerator door is a good gallery to display school work. Is your refrigerator at home made of steel? Check it out!



The kitchen is **recycling** central. List some things you recycle in your kitchen. What are they made from? **M** for mined minerals, **O** for oil products, **P** for plant materials.

# Minerals in Your Home

*Did you know?*

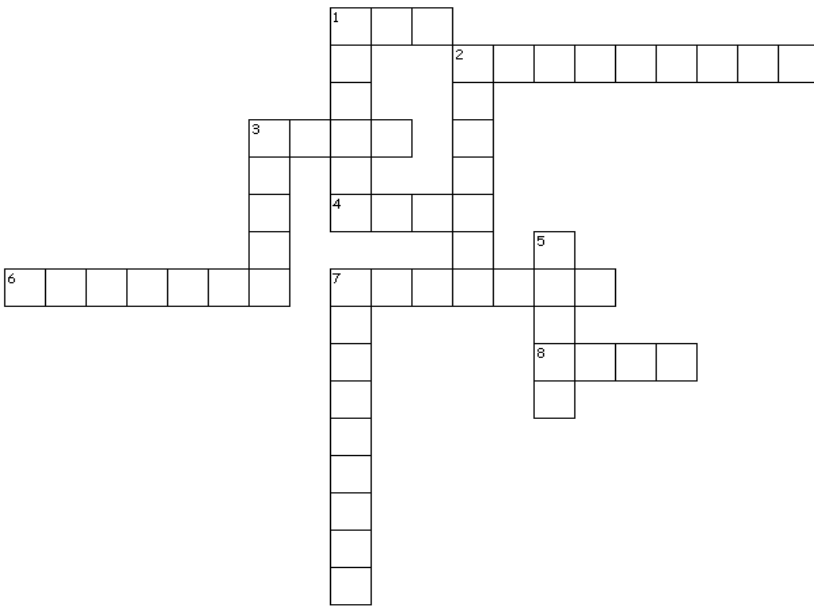
Your parents prepare nutritious food that provides you with the vitamins and **minerals** that you need to be healthy and to grow. *What are those minerals?* We don't just grind up rocks and eat them, except for table salt, which is the mineral **halite**.



When nutrition experts say **minerals**, they are referring to **elements**, like **calcium** and **iron**, and many others like **potassium**, **sodium**, and **zinc**. These **elements** are the *ingredients* in the food we eat, whether the food comes from a plant or an animal that eats plants, and they always originate from Earth materials - **rocks and minerals!**



## Mineral Products in the Kitchen Crossword



### Across

1. ceramic product that holds hot coffee
2. plastic and metal tool used to get to the tuna
3. steel basin for washing dishes
4. flooring made from clay mineral ceramic
6. cut and polished rock for counter tops
7. re-use a natural resource for another purpose
8. halite, a mineral that makes food taste good

### Down

1. the iron in this makes it stick to the fridge
2. steel tools you use to eat
3. cooking appliance made from many minerals
5. mineral product that holds cold drinks
7. resources that can be regrown



Write what the following things are made from. **M** for mined minerals, **O** for oil products, **P** for plant materials.

- |                   |                    |                      |
|-------------------|--------------------|----------------------|
| ___ bowl          | ___ coffee maker   | ___ electric mixer   |
| ___ toaster       | ___ drinking glass | ___ pepper           |
| ___ bread         | ___ jam jar        | ___ cookbook         |
| ___ cabinet doors | ___ wooden spoon   | ___ dish soap bottle |
|                   |                    | ___ peanut butter    |

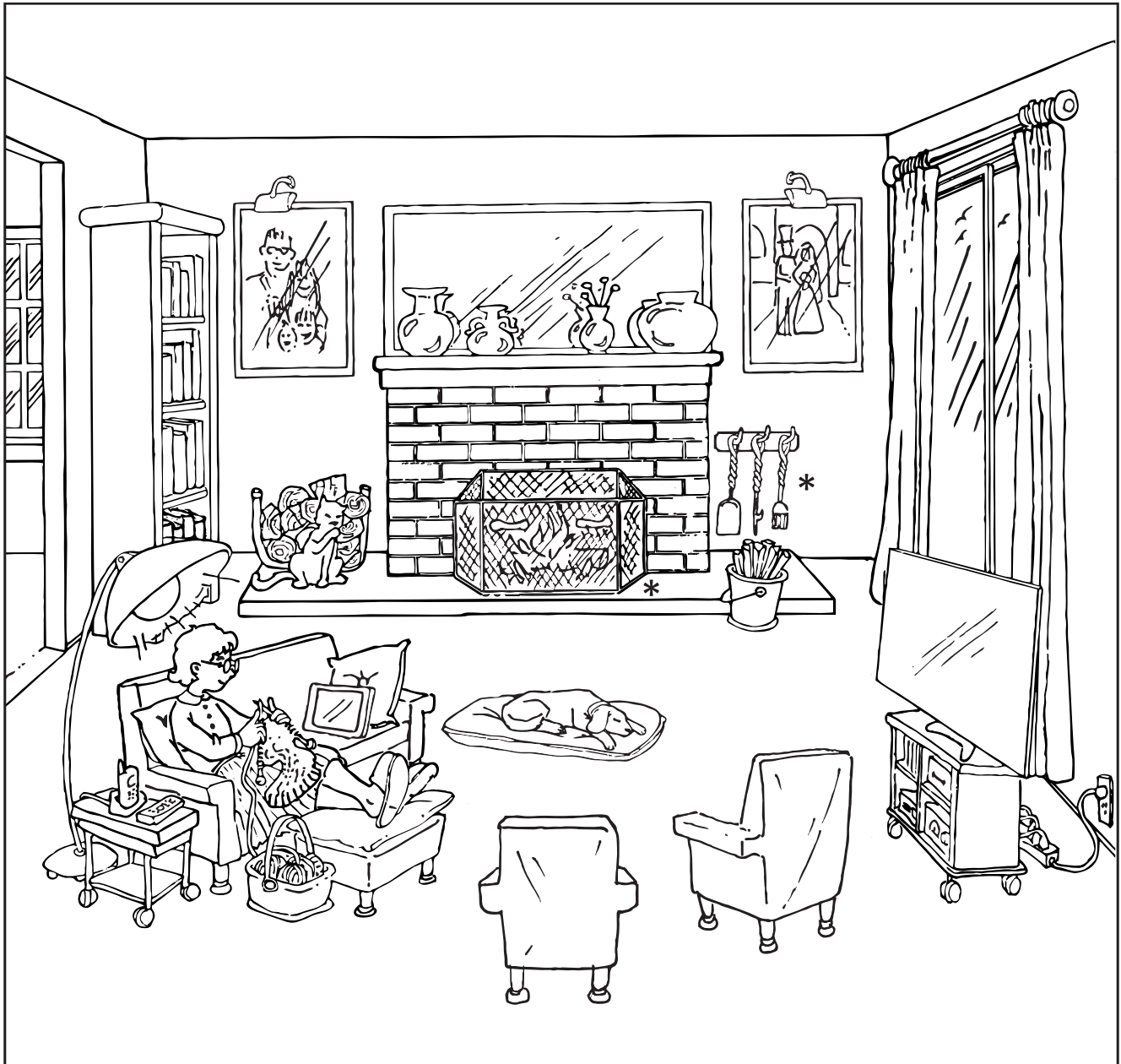


What edible mineral will you find in a kitchen but nowhere else in the house?



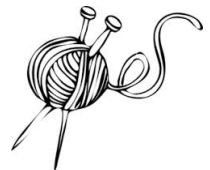
# The Living Room

Everyone loves to gather in the living room to relax - even the family pets. You can read a book, fold laundry, take a nap or daydream.



Some living room activities require products that come from mineral resources. Fill in the blanks to complete the sentences below.

- You use special needles made of the metal **aluminum** to **k** \_\_\_ \_\_\_ \_\_\_ a sweater, socks or a hat.
- Long-handled tools and a grate made of **steel (\*)** are needed to start a **f** \_\_\_ \_\_\_ \_\_\_ to make the room warm and cozy.





# Minerals in Your Home

● The best materials to build a wall around a fireplace *do not burn!* They can be either natural **stone** or **b** \_\_\_\_\_ made from **clay minerals**.

● **Copper** wire, many metals and **plastic** made from **crude oil** are needed make this wide-screen device so you can watch \_\_\_\_\_. Don't forget the remote! The outside is made of **plastic** that is made from **c** \_\_\_\_\_ **o** \_\_\_\_\_, while the electrical circuits inside are made of the metal **c** \_\_\_\_\_.

● You have some great news to share with your friend, so you use your **t** \_\_\_\_\_ to give them a call.



● Your tablet is a handy device you can use to connect to the **i** \_\_\_\_\_ and visit your favourite website or play a game with friends online.

● Family photos are in frames made of **wood**. However, to display them on the wall requires a metal **h** \_\_\_\_\_ and **n** \_\_\_\_\_.



The glass that protects the photos and the glass in the large mirror come from mining **quartz sand**.

What about the couch? The frames of the furniture are commonly made of wood, but the padding and cushions are commonly made of **polyester** batting or foam, which is made from **oil** and **coal**. The upholstery fabric may be cotton, linen or wool, but those fibres are also commonly blended with **polyester** to make them more durable.



Many things in the living room come from **renewable resources** and can be recycled. Find three and name them!

\_\_\_\_\_

## ***Did you know?***

More than 30 minerals are mined to create parts in a flat screen TV, including gold, silver, platinum, copper and iron.

A smartphone that you use to talk, text and surf the web, requires more than 62 metals that are mined in different parts of the world. They include everything in a TV plus many specialty **rare earth elements** with unusual names like **yttrium**, **lanthanum** and **europium**.



TVs, DVD players, Xbox game sets, tablets, computers and ipods: why is it so important to recycle these electronic devices?





**MineralsEd**

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