TINYBOP

# HOMES

## HANDBOOK

There are seven billion people in the world and just as many ways to make a house a home.

In **HOMES**, explore a sample of unique households around the world. This guide offers interaction hints, facts, and prompts for conversation as you and your child visit:

**A GER (YURT)**

Travel to Mongolia, the Country of Blue Skies, and experience life in a yurt.

**AN ADOBE HOUSE**

Visit the mountain highlands of Guatemala and investigate an adobe house.

**A ROW HOUSE**

Globe-trot over to Brooklyn, New York to visit a brownstone row house.

**A TOWER HOUSE**

Trek into desert cities of Yemen and wander up and down a tower house.

Like all apps in the *Explorer's Library*, there are no rules or levels in **HOMES**. Just make yourself at home!

## THINGS TO THINK ABOUT IN EVERY HOME

Homes are private spaces that offer comfort and shelter for us to sleep, play, work, socialize, cook, eat, and relax. As you roam every house in **HOMES**, see how landscape and the surrounding areas, architecture, materials, and division of space shape each residence. Inside, investigate electricity and utilities, make a meal, use the toilet, decorate, or play a game.

In every visit, consider:

*How is my home similar to and different from these homes?*

*How are these homes different from each other? What do they have in common?*

*How might people in these homes play, relax, socialize, decorate, cook, clean, sleep, and stay warm or cool?*

### Observations to make outside every home

#### LANDSCAPE AND SURROUNDING AREA

Before you step inside each house, there's a lot to be learned by looking at its location and surrounding landscape:

*Is the home in a rural or urban area?*

*Is there a lot of space or a little space for housing?*

*What kind of climate might this place have?*

*What kinds of resources are readily available here?*

*Do you spy animals or cars? Gardens or sidewalks?*

*What sounds do you hear?*

#### ARCHITECTURE

As you roam from home to home, consider how each is built:

*What shape and how tall or wide is the structure?*

*How big or small are the windows?*

*How thick or thin are the walls?*

*Are there any decorations on the exterior?*

For example, rural areas with fewer people allow for homes that sit low and wide. Homes in urban cities with dense populations climb high to make the most of smaller spaces.

The location and the abundance or ease of acquiring materials often determine what a home is made of. Materials' response to weather also dictates where and why they're used. Apply what you've observed about the landscape and surrounding area to think about:

*What resources are available nearby?*

*How might weather, climate, and culture influence architectural styles?*

For example, households in sunny climates take advantage of the outdoors for work and play. In the ger and adobe house, spaces for cleaning and washing are under the sun.

## Move the sliders to peek in each home

### ARCHITECTURE AND ORGANIZATION OF SPACE

As you look inside, note the shape and size of the rooms (or room) in each home and how they are arranged. Look at differences and similarities. For example, in the tower house and row house, rooms are stacked on top of each other. In contrast, a ger has one large room on the ground.

### UTILITIES

Pay attention to sparks and wires, pipes and plugs winding between the walls, in and out of every house.

How does every home light up? Natural gas, electricity, biomass (firewood and animal dung), and renewable (solar and wind) energy are at work in homes around the world. These resources help families stay warm and cool, provide light when it's dark, and help them cook food.

Where does water come and go? Water travels to and from groundwater wells, municipal pipes, tanks, and sinks.

Where does waste go? See which home has a flush toilet, a manual flush toilet, an outhouse, and a compost toilet. Try to spy trash cans and recycling bins.

## Take a closer look: tap ⊕ to discover interactive objects

### FUNCTIONAL OBJECTS AND DECORATIONS

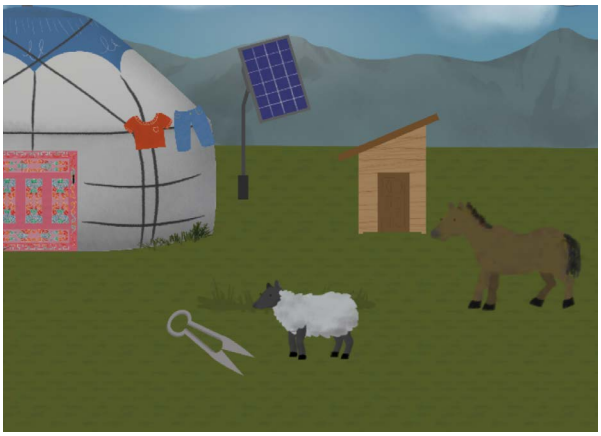
Each home is full of tools, utensils, and toys used for cooking, cleaning, working, and playing. Tap or drag the objects in each home to discover what they're for.

Peer into books. Pick up a musical instrument. Play games and make drawings. Go to the stove and see what there is to eat. Prepare dumplings or toss tortillas.

Clean up after yourself. Wash dishes and clothes outdoors and indoors, by hand or in the washer. Decorate with a variety of textiles, furniture, wall hangings, and art from around the world. Take a picture and add your portrait to a wall.

### ANIMALS

You'll find animals strolling around each home. See what they're up to! Tap to shear the sheep in Mongolia and feed the goat in Yemen. Wash dishes in Guatemala and let the chickens eat scraps. In the US, the cat and dog might convince you they own the place.



# Ger

## MONGOLIA

### ARCHITECTURE

Gers are the traditional dwellings of Mongolian nomads. In Mongolian, "ger" means "home." Also known as yurts, they're portable, circular, one-room structures with collapsible wooden frames, covered in canvas, and insulated with wool felt for weatherproofing. A crown supports the roof poles that meet the lattice wall. A tension rope prevents the wall from spreading.

Contemporary gers are found throughout Central Asia as well as in Inner Mongolia, Siberia, Afghanistan, Pakistan, Kazakhstan, Kyrgyzstan, Uzbekistan, and Tajikistan. They're also popping up in North America and Europe.

### UTILITIES

This house catches abundant sun (there are 280 sunny days in Mongolia) in solar panels to generate electricity. Some homes might also have wind turbines to capture wind energy (the Mongolian steppes are dry, flat, and windy). This energy powers lights and the television. To watch television, families might pick up radio waves with a satellite dish (see it outside).

Water is pumped up from ground wells (tap or swipe the pump handle to see it in action). The bathroom is a simple wooden structure, separate from the rest of the house, built on top of a hole.

Animals might also provide resources. Sheep wool can be used as insulation in walls. Dried horse dung may be burned as fuel in cookstoves for cooking, heat, and light.

MONGOLIA

CAPITAL

Ulaanbaatar

CURRENCY

Togrog (MNT)

POPULATION

2,796,000

KIDS (0-14 years)

27.3%

LANGUAGES

Khalkha Mongolian (official language)

Turkic languages

Russian

## EXPLORE FROM THE OUTSIDE IN

### Observe: what makes this house portable?

While their internal structure makes them sturdy, gers are light and easy to take down. They can be moved by vehicle or horseback and reconstructed in new places — in as little as 30 minutes! This is helpful if you need to move along with grazing livestock or like frequent changes of scenery.

The objects inside the yurt are also portable, in part because they're kept to a minimum. Each object in the home serves many purposes. For example, a large tin bowl might be used for preparing food, washing dishes, and bathing. The ropes on the side of the ger are also multifunctional, serving to keep the exterior canvas in place and as a built-in laundry line.

### Observe: how is this house suited for a windy, sunny climate with long winters?

Gers are well suited for the Mongolian climate. In the colder seasons, the round sides withstand high winds. Up to eight layers of wool felt insulate and the single room holds heat well. Waterproof canvas prevents rain from seeping in. Some homes also have wooden floors for more insulation from freezing temps. And rugs, wall coverings, and layered blankets help keep people warm indoors.

When it's warm outside, the door and open roof vent let in fresh air and extra layers of insulation can be removed.

## GET CLOSER

### Drag the shears to the sheep. What is their wool used for?

The wool from sheep is used to make the felt that keeps gers warm.

A yurt-living family might move often to allow their animals to graze. In return, animals provide resources needed to live, like the sheep's wool for warmth.

Food and drinks to feed a family often come from their own livestock. Horse dung might be burned as stove fuel. Horses may also be used for transportation. And their hair can be woven into rope to secure a ger.

### Drag wood to the stove and build a fire. What is the role of the stove?

The wood-burning stove sits right in the center of the ger. Once lit, it evenly heats the room and provides light in the evenings. It's also where all the cooking happens.

The stove is fueled by firewood or horse dung. As it warms, smoke is vented up the chimney and out through the open crown (the center of the roof). Made from patterns of wood, reeds, or fabric, the crown can be used and handed down for generations.

### Tap the dumplings to fill and fold them. Cook them on the stove. What other foods can you find?

Meat from livestock is dried (see it on the roof!) into jerky that will last and can be eaten through the winter. Dried meat provides the base for stews, dumplings, and other dishes.

Milk from the animals is used to make cheeses and various drinks, including Mongolian milk tea (suutei tsai), a salty beverage.

# Adobe House

## GUATEMALA

### ARCHITECTURE

Adobe, also known as earth brick or mud brick, is a natural building material made from soil, water, and other organic materials like sticks, straw, and sometimes, animal manure. The mixture is cast in wooden molds and dried in the sun (for up to four weeks). Adobe requires knowledge and patience to make because it requires just the right ratio of silt, sand, and clay for uncrackable bricks. Straw and animal dung can act as binders to make bricks stronger and more uniform.

Underground stone foundations support the earth bricks, often rising above ground level to buffer the bricks from moisture. Overhanging roofs made from kiln-fired clay tiles also protect adobe homes from rain.

Adobe is low-cost and readily available, making it one of the oldest and most common building materials. It's found all over the world: in West Asia, North Africa, West Africa, South America, Southwestern North America, Spain, Eastern Europe, and East Anglia.

### UTILITIES

Lights, sewing machines, and cell phones in this home beep to life thanks to a national power grid — and those cellular towers you can see in the background.

There are a few other systems at work here, too. In the kitchen, the stove burns firewood for cooking and a range burns propane. For cleaning, municipal pipes bring water to an outdoor multi-purpose sink. And for bathing, some homes may have toilets that flush and showers spouting water and some may have buckets for washing and compost toilets. A compost toilet has two compartments, one to collect urine and allow it to evaporate, and another to catch and compost poop with sawdust or wood ash.

GUATEMALA

CAPITAL
Guatemala City

CURRENCY
Quetzal (GTQ)

POPULATION
15,083,000

KIDS (0-14 years)
40.4%

LANGUAGES
Spanish (official language)
Amerindian languages

## EXPLORE FROM THE OUTSIDE IN

Drag the brush to paint the house.

Adobe requires maintenance. Protective layers of mud mortar, lime plaster, and paint are essential to building a lasting adobe home. Otherwise, the sun-dried bricks will naturally deteriorate as the weather and humidity change.

Observe: how does adode keep homes comfortable?

Adobe bricks have a high thermal mass thanks to their thickness: up to 40 to 60 centimeters. They can trap and store heat from the sun throughout the day, keeping the house cool. In the evening, the heat that gathered in the bricks all day is slowly released, warming the house at night. Adobe is a natural cooler *and* heater.

## GET CLOSER

Drag seeds to plant them. Drag the watering can to water them. What can you find to make a meal?

In this home, vegetables planted and harvested go straight from the garden to the kitchen. You can make tortillas on the wood-burning stove and boil rice and beans on the gas stove.

Tap the pedals on the treadle. Drag fabric to the sewing machine.
What can you make?

Weavers make blankets, tablecloths, bags, placemats, bookmarks, cushion covers, traditional clothing (especially *huipil*, a woman's blouse), and hair ribbons (*cintas*).

Some weavers in Guatemala today are descendants of the Maya. Geometric, animal, floral, striped, or bird patterns and colors specific to regions have been passed down through generations over centuries.

The loom in this home is a treadle (which means operated by foot). Treadle looms were introduced to the Mayans by Spanish colonists in the early 1500s. Other traditional looms and methods are also still used today.

Drag clothes and dishes to the pila to clean.

Dishes and clothes are both washed in the pila, a multi-purpose sink.

During the day, water is caught in the pila as it is available — in some places in rural central America, water doesn't run all the time. Water is kept clean in the center basin.

Plastic buckets (*guacal*) are used to scoop out clean water for use. Clothes are washed over built-in washboards. Water can drain out through small holes into the yard.

# Row House

## UNITED STATES

### ARCHITECTURE

Found in population-dense, urban areas around the world, row houses are tall and narrow. They can be constructed from wood, brick, or stone. In the northeastern USA, many are covered in a brown or pink sandstone (brownstone) from nearby quarries.

On the interior, shared walls are made of brick for sound- and fire-proofing. Rooms have high ceilings and large windows that let light in from the front and back.

Front stoops connect private interiors to the public street. With stairs rising up to the first level — which is above the street for more quiet — stoops are the most visible part of a row house. They're often fenced in for security, but the fences can be ornamental and beautiful. They can also be a perch for saying hi to the neighbors and watching passersby.

First built for single families, row houses may now be subdivided to house multiple families.

### UTILITIES

Lights, electronics, washers, and dryers are powered by a national grid. Underground municipal lines deliver electricity, gas, and water to each row house. Meters measure each family's energy usage, and utility companies charge them for it.

Water is heated by the boiler (find it in the basement) which sits on top of a fuel-burner. A hot water system pumps water or steam through pipes and radiators to deliver warmth throughout the home.

Toilets have three pipes of their own: a water-supply pipe, a waste pipe connected to the sewer, and a ventilation pipe to send sewer gases out of the house. But, beware! Vents blocked by leaves, dead animals, or ice can cause bubbling in the toilet bowl, slow drainage, and allow sewer gases to enter the house.

UNITED STATES

CAPITAL
Washington, D.C.

CURRENCY
U.S. Dollar (USD)

POPULATION
317,505,000

KIDS (0-14 years)
19.6%

LANGUAGES
English (unofficial language)
Spanish
Indo-European languages
Asian and Pacific island languages
Other languages

## EXPLORE FROM THE OUTSIDE IN

### Observe: what shape is this home? Why?

Row houses are tall rectangles, packing people and their living spaces side-by-side and on top of one another.

Row houses spring up in big cities during times of rapid population growth because they can be built quickly and efficiently, and can give one or multiple families private dwellings in a relatively small space.

Row houses line the streets of cities in urban areas of Europe, Latin America, North America, and Oceania. In the United States, row houses are the most common residences in older cities like Baltimore, Boston, Philadelphia, New Orleans, Chicago, San Francisco, and of course, New York City.

### Observe: are the row houses different or similar to each other?

Row houses on a city block were typically all built in the same design, at the same time, along the same property line. The classic brownstone style in Homes has two paneled, arched doors, a wide stoop, and cast-iron handrails and fences. Today, rules and regulations may prevent families from making changes to the outside of historic row houses.

But, families might put up flower boxes and other personal decorations. Here, you can draw with chalk all over the sidewalk.

## GET CLOSER

### Tap and turn on the appliances to make a meal.

The kitchen is full of appliances to make cooking and cleaning faster and easier. You'll find a toaster for bread, a refrigerator, a coffee maker, and dishwasher. Do you see anything else that might be useful?

A common expression in the U.S. is "breakfast is the most important meal of the day." Families might gather in the kitchen to cook and eat eggs, bacon or sausage, coffee, toasted bread, or fruit, all served with coffee. Eggs can be prepared in dozens of ways: hard boiled, soft boiled, deviled, scrambled, poached, baked, fried, or made into an omelette, frittata, or quiche.

### Tap and drag the washing machine, vacuum, or feather duster to clean.

Carpets need to be vacuumed, dishes and clothes washed, and shelves dusted. Sometimes American kids do these jobs as chores and sometimes to earn money. Money given to or earned by kids is called an allowance.

Kids can store their money in a piggy bank (also known as a "penny bank" or "money box"). The money is slipped into the top of the bank. To get the money out, there's usually a corked hole, but some piggy banks may be smashed (tap the piggy bank with a hammer!) instead.

### Tap instruments, toys, and crayons to play.

Leisure activities may include listening to music on a smartphone or record player. Kids might also play instruments like the trumpet, flute, guitar, drums, or tambourine. Drawing and making decorations are other popular activities.

# Tower House

## YEMEN

### ARCHITECTURE

Aptly named, tower houses are tall and narrow, sometimes looming eight or nine stories high. Constructed by master craftsmen from nearby materials — basalt for the foundation, stacked limestone for the ground floor, and sun-dried mud bricks, thinning as they get higher, for the upper floors — tower houses are built to last. Some have been standing for as long as 800 years.

Tower houses are tightly clustered, maximizing space for land to grow crops and providing shade to the narrow streets below (which were designed to be just wide enough for two camels to travel through side by side).

These homes blend into their surroundings. Look closely to see decorative details like stained glass windows, screens, metal doors, and limestone and gypsum coatings.

### UTILITIES

These tower houses are connected to municipal electricity — see the power lines winding through the dense streets — and water sources. Because service can be irregular, homes have tanks and generators.

In a dry, desert climate, the city water supply may run out. Rooftop water tanks collect water so homes don't go dry even when the city does. From the tanks, water flows down throughout the house to the kitchen and bathrooms. Two types of toilets in this home — one with a mechanical flush, and one with a manual flush — show how it might be modernized over time.

YEMEN

CAPITAL
Sana'a

CURRENCY
Yemeni Rial (YEM)

POPULATION
23,852,000

KIDS (0-14 years)
40.2%

LANGUAGES
Arabic (official language)

## EXPLORE FROM THE OUTSIDE IN

Observe: compare the color and texture of the tower houses to their surroundings.

Local geology determines what is used to build tower houses. As a result, the materials blend into the landscape. Tower houses can be built from stone (basalt or limestone, random or cut), mud bricks, rammed earth known as "zabur" or "midamark," fired bricks, and plaster.

The materials and construction suit the local climate. Thick walls (up to one meter at the base) provide support and help regulate temperature in the same way thick adobe walls do. Layers of limestone at the foundation and lime coatings on the interior and exterior prevent moisture from seeping in. Plaster on the roof protects the home during the rainy season.

Observe: study the decorative elements on each house.

The artistic techniques responsible for the ornate decorations and patterns you see on tower houses' plaster, doors, and windows have been developed over centuries.

The plaster details — sometimes depicting intricate latticework, jewelry, textiles, or animals and other representations of nature — are beautiful and functional, sealing the mudbrick to prevent water damage.

Traditionally, wood doors were carved with inscriptions noting the significance of passing inside. But more recently, elaborately patterned and brightly painted metal doors have started to replace them, bringing more color and decoration outside for public enjoyment.

Multiple window styles might adorn one house, again bringing both beauty and function. As an example, stained glass windows with geometric or floral patterns provide privacy while casting colorful patterns inside.

## GET CLOSER

Observe: how are the rooms organized?

The ground floor is the least formal room: a store room for grains, dried goods, charcoal, or possibly, a goat. The top floor is the most formal and fancy, for entertaining guests. The rooms in the middle are for family activities like cooking, eating, sleeping, and relaxing.

On the roof, family chores are done: dusting and cleaning furnishings, washing and drying clothing, and sometimes growing small plants and herbs.

Privacy is built into tower homes, from windows that screen families inside from passersby, all the way up to roof decks surrounded by high walls. Even stairwells are closed off — anyone moving up or down won't see into the other spaces.

In the mafraj, tap to serve tea. Tap the radio or the lute to play music.

The top room in the house, the mafraj, is a special space for entertaining guests. Walls are decorated by geometric drawings or poems carved into plaster.

Families and their guests might enjoy meals, tea, reading, and listening to or playing music in the mafraj. A *qanbus* (find it hanging on the wall) is a lute used to play traditional songs known collectively as *The Song of Sanaa* or *al-Ghina al-Sanani*, cultivated and passed down from the 14th century to celebrate social events.

**Observe: where do people eat and sleep? Tap and drag pillows.**

This is a trick question! Living spaces in Yemeni tower houses are flexible. The same room might be used for socializing, relaxing, eating, and sleeping.

You can rearrange the pillows to turn a seat into a bed — the decor is part of what makes these spaces so flexible. Rooms have floor mattresses or low couches along the walls (*farsh*), hard cushions to support the back, armrests, and smaller soft cushions for placing on top of the back cushions or arm rests.

The lower living room is a casual place for family members and close friends to socialize, watch TV, read, or enjoy a meal. At night, the TV may be removed and the space becomes a place to sleep.

Adults might have their own bedrooms but often people will sleep in one of the living rooms, using all those cushions for a bed. Sleeping arrangements might also change seasonally when people move to warmer rooms in winter or cooler ones in summer.

**Tap the stove to make curry and the tandoor to cook bread and fish.**

A tower house in Yemen might have a traditional tandoori oven, a modern gas or electric oven, or both.

A tandoori oven is a thick clay oven, used to cook fish, bread, and other foods. The bottom is filled with charcoal and lit with a match. Balls of bread dough are slapped onto the side of the oven where they cook into thin discs of bread.

On the stovetop, *saltah*, a meat stew with chillies, tomatoes, garlic, and herbs, simmers. Saltah, considered the national dish, is mainly served for lunch. Rice, potatoes, scrambled eggs, and vegetables are common additions. *Saltah* may be served with Yemeni flat bread, which can also be used as a utensil to scoop up the food. Meals are eaten off of shared plates.

## FURTHER READING

Want to explore more homes around the world? Start here.

*Built by Hand: Vernacular Buildings Around the World*, a book by Athena Swentzell Steen, Bill Steen, and Eiko Komatsu

*Families of the World*, a video series

*Material World: A Global Family Portrait*, photos by Peter Menzel

Index of countries A to Z, by *National Geographic*

*Daily life*, photos by UNICEF