

Water Underground (pages 80–85)

How Water Moves Underground

(pages 80–81)

Key Concept: Water underground trickles down between particles of soil and through cracks and spaces in layers of rock.

- Rock and soil have spaces between their particles. The spaces between particles of rock or soil are called pores.
- When the pores of a material are connected, water can pass through easily. A material that water can pass easily through is called a **permeable** material. Sand and gravel are permeable materials.
- Some materials have few or no pores or cracks. A material that water cannot pass through easily is called an **impermeable** material. Clay and granite are impermeable materials.
- When water reaches an impermeable layer underground, the water is trapped. The water then fills up permeable rock or soil above. An area of permeable rock or soil that is totally filled with water is called the **saturated zone**. The top of the saturated zone is called the **water table**.
- Soil and rocks above the water table also contain water. The layer of rocks and soil above the water table is called the **unsaturated zone**.

Answer the following questions. Use your textbook and the ideas above.

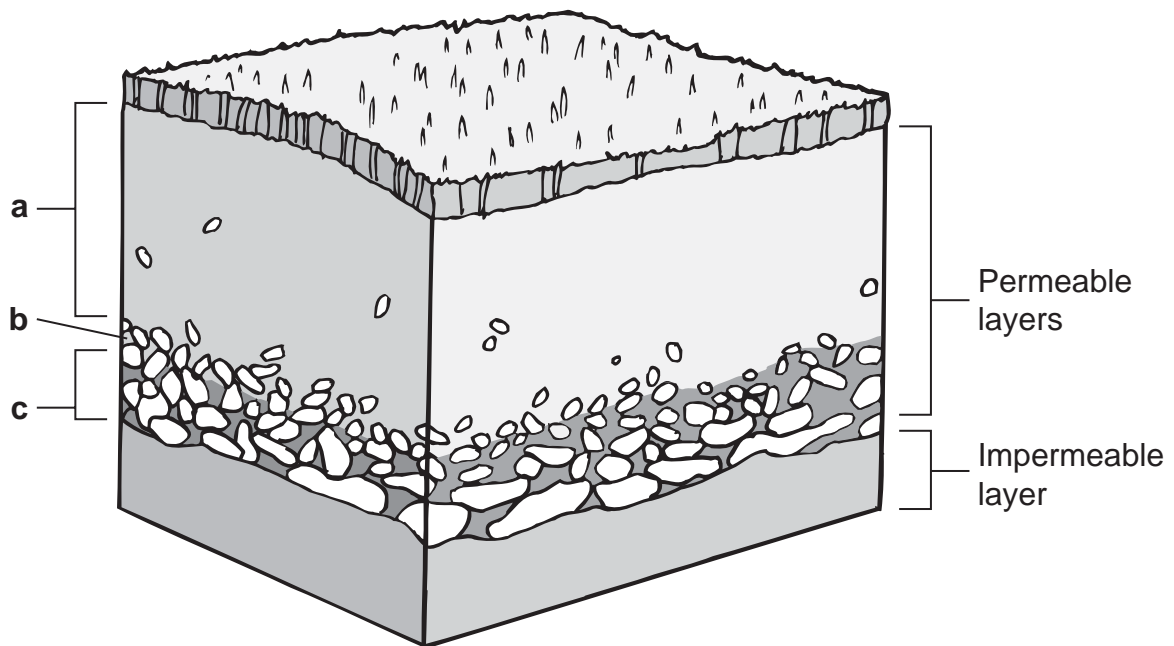
1. Is the following sentence true or false? When the pores of a material are connected, water can pass through easily. _____

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2. Draw a line from each term to its meaning.

Term	Meaning
permeable material	a. the top of the saturated zone
impermeable material	b. the layer of rocks and soil above the water table
water table	c. a material that water can pass through easily
saturated zone	d. an area of permeable rock or soil that is totally filled with water
unsaturated zone	e. a material that water cannot pass through easily

3. The picture below shows the different materials that form layers underground. Circle the letter that points to the water table.



Bringing Up Groundwater (pages 82–85)

Key Concept: People can obtain groundwater from an aquifer by drilling a well below the water table.

- The water table in an area might be a few meters underground. In other areas it might be deep underground.
- An **aquifer** is an underground layer of rock or pieces of rock that holds water. An aquifer can be a small underground area, or it can be an area that includes many states.
- Since ancient times, people have brought groundwater to the surface by digging a well. A well must reach into the saturated zone.
- Most wells are dug with well-digging equipment. Pumps bring the groundwater to the surface.
- Sometimes, water underground is under great pressure. An **artesian** (ahr TEEZH un) **well** is where water rises to the surface because of natural pressure within the aquifer.
- Sometimes, groundwater comes to the surface naturally. A spring is a place where groundwater flows out of cracks in rock. A geyser is a hot spring where water sometimes gushes.

Answer the following questions. Use your textbook and the ideas above.

4. Is the following sentence true or false? An aquifer can be an area that includes many states. _____

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5. Read each word in the box. In each sentence below, fill in the correct word or words.

artesian well wetland aquifer

- a. An underground layer of rock or pieces of rock that holds water is a(an) _____.
- b. A well in which water rises to the surface because of natural pressure within the aquifer is a(an) _____.
6. Circle the letter of each sentence that is true about bringing up groundwater.
- a. Most wells are dug with well-digging equipment.
- b. A spring is a place where groundwater flows out of cracks in rock.
- c. For a well to work, the bottom of the well must reach into the unsaturated zone.