Name & Surname: _____ Class: _____ Date: _____

THE WATER CYCLE IN MOTION



Model how sun and gravity move Earth's water

About 45 minutes Level ★★★☆☆

WATER CYCLES AGAIN AND AGAIN

The water cycle is the continuous movement of water between ocean, land, and atmosphere. Water exists as solid ice, liquid water, and invisible **vapor**. **Sunlight** provides energy that lifts water up, and **gravity** pulls water back down.

- Pools store water: oceans, lakes, rivers, glaciers and snow, groundwater, soil moisture, and vapor in the atmosphere. Oceans hold about 96% of all water, and about 97.5% of Earth's water is salty.
- Fluxes move water: evaporation, transpiration from plants, condensation, precipitation, runoff, infiltration into soil, and streamflow.
- The sun drives evaporation and transpiration. Warm vapor rises, cools, and condenses into cloud droplets.
- Gravity drives precipitation, runoff downhill, infiltration, and flow back to the ocean. The total amount of water stays almost the same.



KEY WORDS

evaporation: liquid water changing to invisible vapor

condensation: vapor cooling to make liquid droplets and clouds

runoff: water flowing over land toward streams

transpiration: water released as vapor from plant leaves

precipitation: water falling as rain, snow, sleet, or hail

infiltration: water soaking down into soil and rock

TASK A

Example done for you

/7

Sort each box by where the water is going. Color up boxes one color and down boxes another.

● **Up to the sky with the sun**: colour it blue or draw ●

▲ **Down to Earth with gravity**: colour it orange or draw ▲

Evaporation from the ocean ●	Transpiration from leaves	Warm vapor rising	Condensation into cloud droplets
Precipitation as rain	Precipitation as snow or hail	Runoff flowing downhill	Infiltration soaking into soil

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ARGUE THE CYCLE

Plan a strong science explanation.

TASK B

Plan a paragraph that proves the cycle never runs out. Use facts from page 1.

Goal **Show that the sun and gravity keep Earth's water cycling without using it up**

Reason 1

The sun heats oceans, lakes, and plants so water evaporates and rises as vapor

Fact 1a _____

Fact 1b _____

Fact 1c _____

Reason 2

Gravity pulls condensed droplets down as precipitation and moves runoff downhill to the ocean

Fact 2a _____

Fact 2b _____

Fact 2c _____

Reason 3

The total amount of water stays almost the same as it moves between pools

Fact 3a _____

Fact 3b _____

Fact 3c _____

Conclusion

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PUDDLE MYSTERY SOLVED

Use clues to explain where water went.

TASK C

/3

Read the 9 clues. Cross out what does not help and use the rest to explain the puddle.

Why did the sunny puddle disappear by 3 p.m.?

Cut out the cards.

No drain or ditch carried water away from that flat spot.	Water vapor rose into the warmer air above the school.	A student left a soccer ball near the fence at lunch.
The day was sunny with a high of 77°F and no rain after 8 a.m.	At 8 a.m. a wide puddle covered the blacktop after night rain.	Later the vapor cooled high up and condensed into tiny cloud droplets.
A thermometer in the shade read higher at noon than at 8 a.m.	Liquid water in the puddle gained energy and evaporated into invisible vapor.	The blacktop felt hot in direct sunlight by 11 a.m.

Your answer, using the clues:

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WATER CYCLE NUMBERS

Use percents and gallons to track water.

◎ TASK D

/6

Show your working for each water amount. Write the answer with its unit.

1. A model uses 100 cups to show all Earth's water. If **salt** water fills 97.5 cups, how many cups are fresh water?

   Working

   Answer

   _____ **cups**

2. A family uses about 300 **gallons** of water at home per day. About 70 percent is used indoors. How much is used indoors?

   Working

   Answer

   _____ **gallons**

3. Air holds 100 units of **moisture**. Evaporation from oceans supplies nearly 90 units. How many units come from other sources?

   Working

   Answer

   _____ **units**

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STORM OVER PLAYGROUND

Explain one storm from start to finish.

TASK E /6

Answer each question about the storm to build your model.

Who?
Who saw and was affected?

What?
What happened to the water?

Where?
Where did water collect and flow?



the afternoon thunderstorm that flooded the school playground

When?
When did each stage happen?

Why?
Why did water move that way?

How?
How did sun and gravity drive it?

TASK F /4

Complete the model by filling each empty What happens or Main driver cell.

Stage	What happens	Main driver
Evaporation		Energy from the sun
Condensation	Vapor cools into cloud droplets	
Precipitation		Gravity pulling down
Runoff and streamflow	Water flows downhill to rivers and ocean	

HOW DID I DO?

Circle a face for each line.

I can name the main stages of the water cycle.

I can explain how the sun and gravity drive the cycle.

I can trace water through pools and fluxes in a model.

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Answer sheet: The Water Cycle in Motion

Task A

Up to the sky with the sun (blue ●): Evaporation from the ocean, Transpiration from leaves, Warm vapor rising, Condensation into cloud droplets

Down to Earth with gravity (orange ▲): Precipitation as rain, Precipitation as snow or hail, Runoff flowing downhill, Infiltration soaking into soil

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Task B

Answers will vary, e.g. The sun heats oceans, lakes, and plants so water evaporates and rises as vapor; Gravity pulls condensed droplets down as precipitation and moves runoff downhill to the ocean; The total amount of water stays almost the same as it moves between pools

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Task C

The sun's heat evaporated the puddle into vapor that rose and later condensed into clouds, so the liquid was gone even though nothing flowed away downhill.

Red herring: A student left a soccer ball near the fence at lunch.

Task D

1. 2.5 cups (100 - 97.5 = 2.5)
2. 210 gallons (300 x 0.70 = 210)
3. 10 units (100 - 90 = 10)

Task E

Who: Students and teachers on the playground

What: Heavy precipitation flooded blacktop, then runoff and infiltration drained it

Where: Clouds above school, playground surface, soil edges, storm drain leading toward river

When: Sun evaporated water in morning, clouds built midday, rain fell in afternoon

Why: Vapor cooled and condensed, then gravity pulled heavy droplets down

How: Sun lifted vapor by evaporation, gravity pulled rain down and moved runoff downhill

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Task F

Evaporation | Liquid water becomes vapor and rises | Energy from the sun

Condensation | Vapor cools into cloud droplets | Cool air high up after sun lifted vapor

Precipitation | Droplets fall as rain, snow, or hail | Gravity pulling down

Runoff and streamflow | Water flows downhill to rivers and ocean | Gravity pulling downhill

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