Natural Resources: Renewable or Not?

Grades 6-8

Name _____ Date _____

Directions: Nature replaces a **renewable** resource within years or a few decades. A **nonrenewable** resource takes so long to form that people cannot wait for more of it. Use Chart 1 for item 1 and Table 1 for items 2 to 5.

Chart 1: renewable (R) or nonrenewable (N)?

a	Tides: the sea rises and falls twice a day	→ ☐
b	Helium: it built up in rock over millions of years	→ ☐
c	Maple sap: a tree makes more every spring	→ ☐
d	Phosphate rock: it formed on ancient sea floors	→ ☐
e	Lithium ore: a mineral in very old rock	→ ☐
f	Cork: the bark regrows about 10 years after peeling	→ ☐

Table 1 (REAL data)

U.S. electricity, billion kilowatt-hours (kWh)

Source	2010	2025
Coal	1,847	737
Natural gas	988	1,807
Nuclear	807	785
Hydropower	260	247
Wind	95	464
Solar	1	296

Table 1 source: U.S. Energy Information Administration, Monthly Energy Review, Table 7.2a (net generation, all sectors), read in November 2026. The six largest sources of 2025 are shown, rounded to the nearest billion kWh. Solar counts large power plants only, not rooftop panels.

1. Fill in Chart 1. Write R or N in each small box.

2. Which source made the most electricity in 2010? _____ in 2025? _____

3. (a) Three sources in Table 1 are renewable. Circle their names in the table. (b) Together they made _____ billion kWh in 2010 and _____ in 2025.

4. (a) Coal: the 2010 amount minus the 2025 amount is _____ billion kWh. (b) Which source grew by the largest amount from 2010 to 2025? _____

5. A headline says, "Wind and solar together now make more U.S. electricity than coal does." (a) Is this true for 2025? Give the two numbers you compare. (b) Was it true in 2010?

6. Invented numbers: a bay holds 900 tonnes of herring. Each year the stock grows by 120 tonnes and boats catch 180 tonnes. (a) Change in one year: _____ tonnes (b) Herring left after 5 years: _____ tonnes (c) Fish are renewable. Why is this stock shrinking?

7. A town on a river plans to build a dam that makes hydropower. Every choice like this is a trade-off: a gain that comes with a cost. Name one gain and one cost of the dam.

8. Steel beams and diesel fuel both come from nonrenewable resources. After it has been used, which one can be collected and used again? _____ How does that change how long the resource in the ground will last?

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Answer key

Points for items 1 to 8: 6, 2, 3, 2, 2, 3, 2, 2. Total 22. In Table 1, "billion kWh" means billion kilowatt-hours.

1. **a R; b N; c R; d N; e N; f R**
   Tides, sap and cork come back within a day, a year and about ten years. Helium, phosphate rock and lithium ore took millions of years to collect, so what is in the ground is all there is. Also accept the full words.

2. **2010: coal; 2025: natural gas**
   Coal 1,847 in 2010; natural gas 1,807 in 2025.

3. **(a) hydropower, wind and solar; (b) 356 and 1,007 billion kWh**
   2010: 260 + 95 + 1 = 356. 2025: 247 + 464 + 296 = 1,007. One point for (a) and one for each sum. Rivers, wind and sunlight keep coming. Coal, natural gas and the uranium ore used in nuclear plants are dug or pumped from deposits that do not refill. If a student circles other rows, give the points in (b) for correct sums of the rows circled.

4. **(a) 1,110; (b) natural gas**
   (a) 1,847 − 737 = 1,110. (b) Natural gas +819, Wind +369, Solar +295. Solar grew by the largest factor, which is a different question.

5. **(a) Yes: 760 is more than 737. (b) No: 96 is far less than 1,847.**
   2025: 464 + 296 = 760. 2010: 95 + 1 = 96. One point for each part; part (a) needs both numbers. The headline says nothing about natural gas, which is still the largest row.

6. **(a) a loss of 60 tonnes; (b) 600 tonnes; (c) The boats take fish faster than the stock can replace them.**
   120 − 180 = −60; 900 − 5 × 60 = 600. A catch of 120 tonnes a year or less would let the stock last. Accept −60 or 60 with the word "less" for (a).

7. **Gain, any one: the river keeps flowing, so the source does not run out; no fuel is burned, so the plant gives off no smoke. Cost, any one: the lake behind the dam floods farms, homes and habitat; fish can no longer swim upstream; a dry year means less electricity.**
   One point for a gain and one for a cost. Accept other sound answers, such as stored water for the town (gain) or the price of building (cost).

8. **Steel. Old steel can be melted and shaped again, so less new iron ore has to be mined and the ore in the ground lasts longer.**
   Burned fuel turns into gases that drift away, so it cannot be used twice. One point for steel, one for the reason.