The Water Problem

Michael E. Webber ｜ Unit 5: The Water Problem

每段四层递进：事实提取 → 因果推理 → 深层理解 → 评价延伸

设计说明

本设计覆盖课文全部 10 个段落，每段设 4 个层次的问题，由浅入深、抽丝剥茧：

◆ 第一层 事实提取（Fact Extraction）：定位原文信息，回答 What/When/Who

◆ 第二层 因果推理（Causal Reasoning）：分析 Why/How，建立信息间的逻辑关系

◆ 第三层 深层理解（Deep Understanding）：解读言外之意、语气态度、修辞意图

◆ 第四层 评价延伸（Evaluation & Extension）：联系实际、批判思考、个人迁移

每段另配语言练习（词汇语境、句意转述、翻译），供课堂或课后使用。

Paragraph 1 — 七岁女儿的节水课

> *In 2007, when my daughter was seven years old, we would brush our teeth together every night as part of our daily ritual. To conserve water, we would turn off the faucet after wetting our brushes and turn it back on only to rinse. One night I didn't turn off the water fast enough to her liking. She turned off the faucet, made an angry face at me, and growled "Turn off the water, Daddy. The scientists need time."*

L1 事实　Q1. When did this story take place? How old was the author's daughter?

→ In 2007. His daughter was seven years old.

L1 事实　Q2. What was their nightly ritual? How did they conserve water while brushing teeth?

→ They brushed teeth together every night. They turned off the faucet after wetting their brushes and turned it back on only to rinse.

L1 事实　Q3. What did the daughter do when the father didn't turn off the water fast enough? What did she say?

→ She turned off the faucet, made an angry face at him, and growled: "Turn off the water, Daddy. The scientists need time."

L2 推理　Q4. Why did the daughter say "The scientists need time"? What did she mean?

→ She meant that water is a problem scientists are trying to solve, and by wasting water, her father was reducing the time scientists have to find solutions. Conserving water = buying scientists time. A seven-year-old understood this causal chain.

L2 推理　Q5. Why does the author begin the essay with a personal anecdote about his daughter?

→ Starting with a personal story makes a global issue (water crisis) feel intimate and immediate. The reader connects with a father-daughter moment before being asked to think about geopolitics. The daughter's precociousness also establishes the theme: even a child knows water conservation is urgent.

L3 深层　Q6. "Growled" — Why not "said" or "told"? What does this word choice reveal?

→ "Growled" suggests animal-like, instinctive anger — not polite speech. The word reveals that the daughter's reaction was visceral, not calculated. She wasn't reciting a lesson; she was genuinely angry. The word also creates a slight humor: a seven-year-old growling at her father about water.

L3 深层　Q7. "Daily ritual" — Why "ritual" and not "habit" or "routine"?

→ "Ritual" implies something meaningful, almost sacred — not just a mechanical routine. Brushing teeth together was a bonding activity, not just hygiene. The word elevates the ordinary and foreshadows the essay's theme: water conservation should be a ritual, not just a habit.

L4 评价　Q8. The daughter understood water conservation at age seven. Do you think children understand environmental issues better than adults sometimes? Why or why not?

→ (Discussion) Students explore whether children's environmental awareness is sharper because they learn it in school, or whether adults understand complexity better. The question examines the role of education in shaping environmental consciousness.

L4 评价　Q9. "The scientists need time" — Is buying time through conservation enough? Or do we need more than time?

→ (Discussion) Students debate whether conservation alone can solve the water crisis or whether technological innovation is equally important. The essay argues for both: conservation buys time, but inventors must also find solutions.

语言练习 · **Para. 1**

① 词汇语境

a) "ritual" — A) 仪式/惯例　B) 随意　C) 偶尔

b) "conserve" — A) 节约/保护　B) 浪费　C) 忽视

c) "faucet" — A) 水龙头　B) 水管　C) 水池

d) "growled" — A) 低吼　B) 微笑　C) 低语

② 句意转述

"She turned off the faucet, made an angry face at me, and growled 'Turn off the water, Daddy. The scientists need time.'"

参考答案：She shut off the tap, glared at me with annoyance, and snapped, "Turn off the water, Daddy — the scientists need time to find solutions."

③ 翻译

"2007 年，我女儿七岁时，我们每天晚上一起刷牙，这是我们日常仪式的一部分。为了节约用水，我们会在弄湿牙刷后关掉水龙头，只在漱口时再打开。有一天晚上我关水不够快，她不满。她关掉水龙头，冲我做了个生气的表情，低吼道：'关掉水，爸爸。科学家们需要时间。'"

Paragraph 2 — 女儿的话至今回响

That statement still rings in my ears today, not only because of her precociousness but also because she was exactly right. We need to conserve our resources to buy ourselves time so scientists can find new solutions to our problems. And this is especially true for water.

L1 事实　Q10. Does the statement still affect the author today? Why?

→ Yes — it "still rings in my ears today." Because of her precociousness AND because she was exactly right.

L1 事实　Q11. What do we need to do? What will it achieve?

→ We need to conserve resources to buy ourselves time so scientists can find new solutions. This is especially true for water.

L2 推理　Q12. "Not only because of her precociousness but also because she was exactly right" — What are the two reasons? Which is more important?

→ (1) Her precociousness (impressive for a child) (2) She was exactly right (the content is true). The second is more important — the statement matters not because a child said it, but because it's correct. The "not only... but also" structure emphasizes content over cuteness.

L2 推理　Q13. "Buy ourselves time" — What does "buy time" mean? Why is time something you can "buy"?

→ "Buy time" means to delay a crisis through present action, giving others time to find solutions. Time is framed as a commodity — you "pay" for it with conservation, and you "spend" it on scientific research. The metaphor makes abstract urgency concrete.

L3 深层　Q14. "Rings in my ears" — What sensory metaphor is this? Why use sound rather than sight?

→ "Rings in my ears" means the words echo persistently — the author keeps hearing them. Sound is more involuntary than sight: you can close your eyes but not your ears. The metaphor suggests the daughter's words are inescapable — they haunt him, driving his commitment to water issues.

L3 深层　Q15. "And this is especially true for water" — Why does the author add this sentence? What does it achieve structurally?

→ The sentence narrows the focus from general conservation to water specifically. Structurally, it's a pivot: Para 1 is the anecdote, Para 2 is the reflection, and this sentence launches the essay's main argument. Without it, the essay could be about any resource; with it, the essay is about water.

L4 评价　Q16. The author's daughter was "exactly right." Do children sometimes see truths that adults miss? Can you think of an example?

→ (Discussion) Students explore whether children's simplicity allows them to see through adult rationalizations. Examples: climate change, inequality, honesty. The question examines the relationship between simplicity and wisdom.

语言练习 · **Para. 2**

① 词汇语境

a) "rings in my ears" — A) 在耳边回响　B) 戴耳环　C) 按门铃

b) "precociousness" — A) 早熟　B) 迟钝　C) 调皮

c) "conserve" — A) 节约　B) 消费　C) 生产

d) "especially" — A) 尤其　B) 排除　C) 偶尔

② 句意转述

"We need to conserve our resources to buy ourselves time so scientists can find new solutions to our problems."

参考答案：We must save our resources now to give researchers the time they need to develop new solutions to the challenges we face.

③ 翻译

"那句话至今仍在我耳边回响，不仅因为她的早熟，更因为她完全正确。我们需要节约资源，为自己争取时间，让科学家找到解决问题的新方案。这对水来说尤其如此。"

Paragraph 3 — 水：21 世纪最重要的资源

> *Water is on track to be the most important and most contentious resource of the 21st century. It could replace oil as the strategic resource that triggers geopolitical conflicts. But with the right solutions, it could also be the one that brings us all together.*

L1 事实　Q17. What is water "on track" to become? What two adjectives describe it?

→ The most important and most contentious resource of the 21st century.

L1 事实　Q18. What could water replace? What are the two possible outcomes?

→ It could replace oil as the strategic resource that triggers geopolitical conflicts. Two outcomes: (1) It triggers conflict (2) With the right solutions, it brings us all together.

L2 推理　Q19. Why does the author compare water to oil? What did oil represent in the 20th century?

→ Oil was the defining strategic resource of the 20th century — it triggered wars, shaped alliances, and drove geopolitics. By comparing water to oil, the author says water will play the same role in the 21st century. The comparison makes the stakes immediately clear.

L2 推理　Q20. "But with the right solutions, it could also be the one that brings us all together" — Why "also"? What does this word imply?

→ "Also" means: in addition to causing conflict, water COULD bring unity. The word acknowledges the negative possibility (conflict) before offering the positive one (unity). This balanced framing makes the essay constructive rather than alarmist.

L3 深层　Q21. "On track" — What does this phrase imply? Is the outcome predetermined?

→ "On track" means heading in a certain direction, like a train on rails. It implies momentum — water IS becoming the most important resource. But "on track" also suggests the track can be changed — the destination isn't fixed. The phrase balances inevitability with agency.

L3 深层　Q22. The paragraph presents a choice: conflict or cooperation. How does this structure function rhetorically?

→ Presenting both outcomes creates urgency AND hope. If only conflict were mentioned, the essay would be despairing. If only cooperation, it would be naive. By presenting both, the author says: the outcome depends on what we do. This frames the essay as a call to action.

L4 评价　Q23. Do you think water will replace oil as the trigger for geopolitical conflicts? Or is the comparison exaggerated?

→ (Discussion) Students evaluate whether water conflicts are likely. Examples: China-India water tensions, African dam disputes, California droughts. The question explores whether water is truly comparable to oil as a strategic resource.

L4 评价　Q24. "Brings us all together" — Can a shared crisis create unity? Can you think of examples where a common threat united people?

→ (Discussion) Students explore whether crises unite or divide. Examples: COVID-19 (mixed results), climate agreements, disaster relief. The question examines the relationship between shared threats and cooperation.

语言练习 · **Para. 3**

① 词汇语境

a) "on track" — A) 正在走向　B) 偏离轨道　C) 在轨道上

b) "contentious" — A) 有争议的　B) 无争议的　C) 内容的

c) "strategic" — A) 战略性的　B) 战术的　C) 无关的

d) "geopolitical" — A) 地缘政治的　B) 地理的　C) 政治的

e) "triggers" — A) 引发　B) 阻止　C) 忽视

② 句意转述

"It could replace oil as the strategic resource that triggers geopolitical conflicts."

参考答案：Water may take over from oil as the key resource that sparks international conflicts.

③ 翻译

"水正在成为 21 世纪最重要也最具争议的资源。它可能取代石油，成为引发地缘政治冲突的战略资源。但如果解决方案正确，它也可能成为将我们团结在一起的力量。"

Paragraph 4 — 斯莫利的人类十大问题

In 2003, the late Nobel Laureate Richard Smalley gave a lecture at Rice University's Energy & Nanotechnology Conference highlighting humanity's top 10 problems for the next 50 years. His list, in descending order of importance, was: energy, water, food, environment, poverty, terrorism and war, disease, education, democracy and population.

L1 事实　Q25. Who was Richard Smalley? When and where did he give his lecture?

→ He was a Nobel Laureate (now deceased). He gave the lecture in 2003 at Rice University's Energy & Nanotechnology Conference.

L1 事实　Q26. List Smalley's top 10 problems in order. Where does water rank?

→ (1) Energy (2) Water (3) Food (4) Environment (5) Poverty (6) Terrorism and war (7) Disease (8) Education (9) Democracy (10) Population. Water ranks second.

L2 推理　Q27. Why does the author cite a Nobel Laureate? What does Smalley's authority add?

→ Citing a Nobel Laureate gives the argument scientific authority — this isn't just the author's opinion; it's backed by a Nobel Prize winner. The citation also grounds the essay in expert consensus rather than personal speculation.

L2 推理　Q28. Why is water ranked second, after energy? Why not first?

→ As Para 5 explains, energy is ranked first because solving energy makes solving water easier (you need energy to pump, treat, and desalinate water). Water is second because it's the next most fundamental — without water, food, environment, and health all fail. The ranking reflects a causal chain, not just importance.

L3 深层　Q29. "The late" — Why does the author add "the late"? What does it achieve?

→ "The late" means deceased — Smalley died in 2005. Adding "the late" acknowledges his death and gives his words a sense of legacy — he is no longer alive, but his list endures. The phrase adds gravity and respect.

L3 深层　Q30. "In descending order of importance" — Why this ordering? What does it reveal about problem-solving?

→ Descending order means most important first. This reveals a problem-solving philosophy: tackle the biggest problems first because solving them makes subsequent problems easier. The ordering implies a hierarchy of intervention — you don't address education before energy.

L4 评价　Q31. Smalley's list was made in 2003 for the "next 50 years." We're now 20+ years in. Has the list changed? Should anything be added or re-ranked?

→ (Discussion) Students evaluate whether the list still holds. Should AI be added? Has climate change risen? Has terrorism fallen? The question explores how problem rankings evolve over time.

L4 评价　Q32. Do you agree with the ranking? Would you put water first? What would your top 3 problems be?

→ (Discussion) Students create their own rankings and defend them. The question encourages critical thinking about priorities and the relationship between problems.

语言练习 · **Para. 4**

① 词汇语境

a) "late" (the late...) — A) 已故的　B) 迟到的　C) 晚上的

b) "Nobel Laureate" — A) 诺贝尔奖得主　B) 诺贝尔　C) 学者

c) "highlighting" — A) 强调/突出　B) 隐藏　C) 忽略

d) "descending order" — A) 降序　B) 升序　C) 随机

② 句意转述

"His list, in descending order of importance, was: energy, water, food, environment, poverty, terrorism and war, disease, education, democracy and population."

参考答案：He ranked humanity's challenges from most to least critical: energy, water, food, environment, poverty, terrorism and war, disease, education, democracy, and population.

③ 翻译

"2003 年，已故诺贝尔奖得主理查德·斯莫利在莱斯大学能源与纳米技术会议上发表演讲，强调了未来 50 年人类面临的十大问题。他的列表按重要性降序排列为：能源、水、食物、环境、贫困、恐怖主义与战争、疾病、教育、民主和人口。"

Paragraph 5 — 能源与水的因果链

> *The reason energy and water sit at the top, ahead of food and poverty, is that addressing them makes subsequent problems easier to deal with. Developing abundant sources of clean, reliable, affordable energy enables an abundance of clean water. An abundance of clean water enables food production and protects the environment. And so forth.*

L1 事实　Q33. Why do energy and water sit at the top of the list? What is the principle?

→ Because addressing them makes subsequent problems easier to deal with. Solving the top problems creates a cascade that solves the rest.

L1 事实　Q34. Trace the causal chain: energy → ? → ? → ?

→ Energy → clean water → food production + environmental protection → (and so forth). Each solution enables the next.

L2 推理　Q35. Why does solving energy make solving water easier? What's the connection?

→ Energy is needed to pump, treat, transport, and desalinate water. Without abundant energy, clean water is expensive and scarce. With abundant clean energy, clean water becomes achievable — you can power desalination plants, pumping stations, and treatment facilities.

L2 推理　Q36. "And so forth" — What does this phrase imply? What comes after food and environment?

→ "And so forth" means the chain continues: clean water → food → health → reduced poverty → better education → etc. The phrase implies that the cascade is endless — solving the top problems creates a domino effect that addresses all subsequent problems.

L3 深层　Q37. The paragraph uses a chain structure: A enables B, B enables C, C enables D. Why this structure? What does it achieve?

→ The chain structure shows that problems are interconnected — you can't solve them in isolation. It also argues for a specific strategy: start at the top (energy) and the rest follows. The structure makes a complex world seem manageable — there is a logical order to intervention.

L3 深层　Q38. "Clean, reliable, affordable" — Why three adjectives? What would happen if one were missing?

→ All three are necessary: clean (not polluting), reliable (not intermittent), affordable (accessible to all). If energy is clean but not affordable, only rich nations benefit. If affordable but not clean, it worsens the environment. The three adjectives define the QUALITY of solution needed.

L4 评价　Q39. The causal chain assumes that solving top problems automatically solves the rest. Is this always true? Can you think of exceptions?

→ (Discussion) Students explore whether the cascade model always works. Are there problems that energy and water DON'T solve? Examples: education (requires teachers, not just resources), democracy (requires political will, not just water). The question examines the limits of technological solutions.

L4 评价　Q40. "Ahead of food and poverty" — Is it right to prioritize energy and water over poverty? Isn't poverty the root cause of suffering?

→ (Discussion) Students debate the ranking. The essay argues that solving energy and water REDUCES poverty, so they should be addressed first. But others argue that poverty is a political problem, not just a resource problem. The question explores the relationship between resources and inequality.

语言练习 · **Para. 5**

① 词汇语境

a) "addressing" — A) 解决/应对　B) 地址　C) 演讲

b) "subsequent" — A) 随后的　B) 之前的　C) 同时

c) "abundant" — A) 丰富的　B) 缺乏的　C) 适中的

d) "enables" — A) 使...成为可能　B) 阻止　C) 减少

e) "and so forth" — A) 等等/以此类推　B) 停止　C) 向前

② 句意转述

"Developing abundant sources of clean, reliable, affordable energy enables an abundance of clean water."

参考答案：Creating plentiful supplies of clean, dependable, and inexpensive energy makes it possible to produce large quantities of clean water.

③ 翻译

"能源和水排在食物和贫困之前的原因是，解决它们会使后续问题更容易处理。开发丰富、清洁、可靠、可负担的能源，就能获得充足的清洁水。充足的清洁水使粮食生产成为可能，并保护环境。以此类推。"

Paragraph 6 — 从能源冲突到水冲突

In many ways, the 1900s was the century of energy conflict. Now, the dawn of a new energy era is just around the corner — with the prices of solar power going down, and distributed generation and energy efficiency on the point of taking off — and we can foresee a time this century when water replaces energy as the next great challenge for humanity. Getting water right could clear the path to a fully liberated, healthy, and peaceful civilization.

L1 事实　Q35. What was the 20th century called? What is "just around the corner"?

→ The 1900s was "the century of energy conflict." A new energy era is "just around the corner" — solar power prices are dropping, distributed generation and energy efficiency are about to take off.

L1 事实　Q36. What will replace energy as the next great challenge? What could it lead to?

→ Water will replace energy as the next great challenge. "Getting water right could clear the path to a fully liberated, healthy, and peaceful civilization."

L2 推理　Q37. Why does the author say the new energy era is "just around the corner"? What evidence does he give?

→ Three signs: (1) solar power prices going down (2) distributed generation on the point of taking off (3) energy efficiency on the point of taking off. These trends suggest energy is becoming solved, which means water will become the next focus.

L2 推理　Q38. "Getting water right" — What does "getting right" mean? Why not "solving"?

→ "Getting right" means handling correctly — not just solving technically but managing politically, economically, and socially. "Solving" implies a single answer; "getting right" implies a process of correct management. The phrase acknowledges that water is not just a technical problem but a governance challenge.

L3 深层　Q39. "The dawn of a new energy era" — What metaphor is this? Why "dawn"?

→ "Dawn" = the beginning of daylight, symbolizing a new beginning. The metaphor suggests that the energy era is transitioning — the old (oil/coal) is ending, the new (solar/efficiency) is beginning. "Dawn" also implies hope: after the darkness of energy conflict, a brighter era is emerging.

L3 深层　Q40. "Fully liberated, healthy, and peaceful civilization" — Why three adjectives? What does each represent?

→ Liberated = freedom from scarcity and conflict. Healthy = physical well-being through clean water. Peaceful = no wars over resources. Together they describe a utopian outcome — solving water doesn't just fix water; it transforms civilization. The three adjectives make the stakes feel civilizational, not just practical.

L4 评价　Q41. The author says water will replace energy as the next great challenge. Do you agree? Or will energy remain the top challenge?

→ (Discussion) Students debate whether energy or water will be the defining challenge of the 21st century. Some argue energy (climate change, fossil fuels); others argue water (scarcity, pollution, conflict). The question explores the relationship between the two resources.

L4 评价　Q42. "Getting water right could clear the path to a peaceful civilization." Is this too optimistic? Can water alone bring peace?

→ (Discussion) Students evaluate whether solving water would truly bring peace. The essay suggests water is a gateway — solving it enables other solutions. But peace also requires political will, justice, and cooperation. The question explores the limits of resource solutions.

语言练习 · **Para. 6**

① 词汇语境

a) "just around the corner" — A) 即将到来　B) 在拐角　C) 很远

b) "distributed generation" — A) 分布式发电　B) 集中发电　C) 停电

c) "on the point of taking off" — A) 即将起飞/腾飞　B) 降落　C) 停止

d) "foresee" — A) 预见　B) 回顾　C) 忽视

e) "clear the path" — A) 铺平道路　B) 阻塞　C) 偏离

② 句意转述

"Getting water right could clear the path to a fully liberated, healthy, and peaceful civilization."

参考答案：Properly managing water could pave the way for a civilization that is fully free, healthy, and at peace.

③ 翻译

"在许多方面，20 世纪是能源冲突的世纪。如今，新能源时代的曙光就在眼前——太阳能价格下降，分布式发电和能源效率即将腾飞——我们可以预见，本世纪水将取代能源成为人类下一个巨大挑战。解决好水问题，将为一个完全解放、健康、和平的文明铺平道路。"

Paragraph 7 — 水的复杂性

But water is complicated. First, there's no alternative. There are alternatives to coal and petroleum, but water cannot be replaced. Second, water is intertwined with every other sector of society. Energy production requires water for cooling power plants and fracturing shale. Agriculture needs water for irrigation. Industry and cities use trillions of gallons of water for all sorts of purposes. Third, water demands are growing at the same time supplies are fluctuating. Climate change is expected to intensify droughts and floods while shifting where water will be and when. That means humanity will be confronted with decisions about whether to move people to water or water to people.

L1 事实　Q43. What three reasons make water complicated? List them.

→ (1) There's no alternative — water cannot be replaced. (2) Water is intertwined with every sector — energy, agriculture, industry, cities. (3) Demands are growing while supplies are fluctuating — climate change intensifies droughts and floods.

L1 事实　Q44. What does energy production need water for? What does agriculture need it for?

→ Energy: cooling power plants and fracturing shale. Agriculture: irrigation.

L1 事实　Q45. What decision will humanity face about water and people?

→ Whether to move people to water or water to people.

L2 推理　Q46. Why is "no alternative" the first and most fundamental complication? What does it mean for water's importance?

→ Coal can be replaced by solar; petroleum by electricity. But water has no substitute — there is no "alternative water." This makes water uniquely non-negotiable. You can transition away from oil; you cannot transition away from water. This is why water is the ultimate resource.

L2 推理　Q47. "Move people to water or water to people" — What does this mean? Give examples of each approach.

→ Move people to water: populations migrate to water-rich regions (e.g., climate refugees). Move water to people: build aqueducts, pipelines, canals to transport water to populated areas (e.g., China's South-North Water Diversion Project). Both approaches have enormous costs and consequences.

L3 深层　Q48. The paragraph uses a three-part structure (First, Second, Third). Why this organizational choice?

→ The three-part structure makes complexity feel manageable — it's not a chaotic problem but a structured one with three dimensions. Each "first/second/third" builds on the previous: no alternative (fundamental) → intertwined (systemic) → growing vs. fluctuating (dynamic). The structure moves from essence to system to change.

L3 深层　Q49. "Intertwined" — Why this word instead of "connected" or "related"?

→ "Intertwined" suggests threads woven together — you can't separate them without unraveling both. "Connected" is looser; "intertwined" implies deep, structural interdependence. The word makes water seem embedded in every aspect of society — pulling on water affects everything else.

L4 评价　Q50. "Move people to water or water to people" — Which approach do you think is better? What are the trade-offs?

→ (Discussion) Students debate the two approaches. Moving water: expensive, environmentally disruptive, but keeps communities intact. Moving people: socially disruptive, cultural loss, but less infrastructure. Examples: China's water diversion vs. migration. The question explores resource geography.

L4 评价　Q51. The paragraph says climate change will "shift where water will be and when." How might this affect your region?

→ (Discussion) Students consider local impacts of climate change on water — droughts, floods, seasonal shifts. The question connects global climate change to personal experience.

语言练习 · **Para. 7**

① 词汇语境

a) "complicated" — A) 复杂的　B) 简单的　C) 清楚的

b) "alternative" — A) 替代品　B) 选择　C) 两者都

c) "intertwined" — A) 交织/密切相关　B) 分开　C) 无关

d) "fracturing" — A) 压裂　B) 修复　C) 建造

e) "fluctuating" — A) 波动　B) 稳定　C) 上升

f) "confronted with" — A) 面临　B) 逃避　C) 解决

② 句意转述

"That means humanity will be confronted with decisions about whether to move people to water or water to people."

参考答案：This means humans will face a choice: relocate populations to where water is abundant, or transport water to where people already live.

③ 翻译

"但水很复杂。第一，没有替代品。煤炭和石油有替代品，但水无法被取代。第二，水与社会的每个部门都交织在一起。能源生产需要水来冷却发电厂和压裂页岩。农业需要水来灌溉。工业和城市使用数万亿加仑的水用于各种用途。第三，水需求在增长的同时，供应在波动。气候变化预计将加剧干旱和洪水，同时改变水在哪里、在什么时候。这意味着人类将面临一个决定：是把人搬到水那里，还是把水搬到人那里。"

Paragraph 8 — 解决方案：从大到小

Thankfully, there are solutions. Some are large, incredibly expensive, and energy-intensive, such as building cross-continent water-transfer aqueducts, new hydroelectric dams, and massive desalination

plants. Some are small, such as using micro water harvesters that condense water vapor out of the air. All of them take a while.

L1 事实　Q46. What two categories of solutions does the author describe? Give examples of each.

→ (1) Large, expensive, energy-intensive: cross-continent aqueducts, hydroelectric dams, massive desalination plants. (2) Small: micro water harvesters that condense water vapor from the air.

L1 事实　Q47. What does the author say about all solutions? What do they have in common?

→ "All of them take a while" — none are quick fixes; they all require time to implement.

L2 推理　Q48. Why does the author present both large and small solutions? What's the argument?

→ Presenting both scales shows that solutions exist at every level — from massive infrastructure to individual devices. The argument is that no single solution is sufficient; we need both. Large solutions handle scale; small solutions handle accessibility. The variety also makes the problem feel solvable.

L2 推理　Q49. "All of them take a while" — Why is this sentence important? How does it connect to Para 1?

→ This sentence connects back to the daughter's statement: "The scientists need time." The solutions exist, but they take time — which is why conservation is necessary. Conservation buys the time that solutions need. The essay comes full circle: the daughter's insight is validated by the technical reality.

L3 深层　Q50. "Thankfully" — Why does the author use this word? What tone does it set?

→ "Thankfully" shifts the tone from alarming (Para 7's complications) to hopeful. It acknowledges that the situation is dire but not hopeless. The word also creates a conversational tone — the author is talking WITH the reader, not lecturing. It makes the solutions feel accessible rather than intimidating.

L3 深层　Q51. The paragraph contrasts "large" and "small" solutions. Why this binary? What does it exclude?

→ The binary (large vs. small) excludes medium-scale solutions — policy changes, water pricing, community management. The binary simplifies the solution space into two extremes, which is rhetorically effective but practically incomplete. The question explores what's missing from the binary.

L4 评价　Q52. "All of them take a while" — Given that solutions take time, what should we do NOW? Is conservation enough?

→ (Discussion) Students explore the gap between solution and implementation. If desalination takes 20 years to scale, what do we do for 20 years? The question connects to the daughter's insight: conservation is the bridge between problem and solution.

L4 评价　Q53. Which type of solution — large or small — do you think is more promising? Why?

→ (Discussion) Students debate large vs. small solutions. Large: scale, impact, but slow and expensive. Small: fast, accessible, but limited scale. The question explores the trade-offs between infrastructure and innovation.

语言练习 · **Para. 8**

① 词汇语境

a) "incredibly" — A) 难以置信地　B) 稍微　C) 适度地

b) "energy-intensive" — A) 能源密集的　B) 节能的　C) 无能源的

c) "aqueducts" — A) 渡槽/水渠　B) 水坝　C) 水管

d) "desalination" — A) 海水淡化　B) 污染　C) 蒸发

e) "condense" — A) 凝结 B) 蒸发 C) 冷冻

f) "take a while" — A) 需要一些时间 B) 立即 C) 永远

② 句意转述

"All of them take a while."

参考答案：Every one of these solutions requires significant time to implement and take effect.

③ 翻译

"幸运的是，解决方案是有的。一些是大型、极其昂贵且能源密集的，比如建造跨大陆调水渠、新的水力发电大坝和大型海水淡化厂。一些是小型的，比如使用微型集水器从空气中凝结水蒸气。但所有这些都需要时间。"

Paragraph 9 — 肯尼迪的预言

In April 1961, President John F Kennedy said, "If we could ever competitively — at a cheap rate — get freshwater from saltwater, it would be in the long-range interest of humanity and would really dwarf any other scientific accomplishments." That was one month before his famous moon-shot speech. Before the decade was over, we sent man to the moon and back. But we still haven't found a solution as to how to get freshwater from saltwater without a lot of money and energy. That's mainly because our great innovation apparatus has not been dedicated to water. Research budgets have prioritized energy, defense, and health while mostly ignoring water, even though fixing water would help our energy, defense, and health problems. If we spent as much money looking for water on Earth as we do searching for it on Mars, the outcomes might be very different.

L1 事实 Q54. When did Kennedy make his statement? What was his famous speech one month later?

→ April 1961. One month later was his famous moon-shot speech — committing to send man to the moon before the decade was over.

L1 事实 Q55. What did Kennedy say about getting freshwater from saltwater? What would it achieve?

→ He said it "would be in the long-range interest of humanity and would really dwarf any other scientific accomplishments."

L1 事实 Q56. What is the irony? What did we achieve, and what did we fail to achieve?

→ We achieved the moon landing (within the decade) but still haven't solved desalination. We went to the moon but can't cheaply get freshwater from saltwater.

L2 推理 Q57. Why does the author compare desalination to the moon landing? What's the argument?

→ The comparison shows that humanity CAN achieve ambitious goals when it commits resources. We solved the moon challenge because we dedicated money and innovation to it. We haven't solved desalination because we haven't dedicated the same resources. The argument: the problem isn't capability, it's priority.

L2 推理　Q58. "Research budgets have prioritized energy, defense, and health while mostly ignoring water" — Why have these areas been prioritized? What does this reveal about priorities?

→ Energy, defense, and health are seen as immediate national security concerns. Water has been treated as a local issue, not a strategic one. This reveals a gap in strategic thinking: water underpins energy, defense, and health, but it hasn't been funded as a priority. The priorities are reactive, not systemic.

L3 深层　Q59. "If we spent as much money looking for water on Earth as we do searching for it on Mars" — What is the author's point? Is this a criticism of space exploration?

→ The author is highlighting a misallocation of resources: we spend billions searching for water on Mars while ignoring water scarcity on Earth. It's not necessarily anti-space exploration — it's pro-Earth priorities. The comparison is rhetorical: if we applied Mars-level funding to Earth's water, the outcomes would be transformative.

L3 深层　Q60. "Dwarf any other scientific accomplishments" — Why "dwarf"? What does this word imply about the scale of desalination?

→ "Dwarf" means to make seem small by comparison. Kennedy is saying desalination would be bigger than the moon landing, bigger than any scientific achievement. The word implies that solving water is the ultimate scientific challenge — more important than space, more impactful than any single discovery.

L4 评价　Q61. The author implies we should spend less on space and more on water. Do you agree? Or are both important?

→ (Discussion) Students debate resource allocation between space exploration and Earth's problems. Arguments for space: spin-off technologies, inspiration, long-term survival. Arguments for water: immediate need, lives at stake. The question explores the ethics of scientific priorities.

L4 评价　Q62. Kennedy made this statement in 1961 — over 60 years ago. Have we made progress on desalination? Or are we still where we were?

→ (Discussion) Students research current desalination technology. Progress: Israel, Saudi Arabia have large plants. But it's still expensive and energy-intensive. The question explores whether Kennedy's challenge has been partially met.

语言练习 · **Para. 9**

① 词汇语境

a) "competitively" — A) 有竞争力地　B) 竞争地　C) 合作地

b) "dwarf" — A) 使...相形见绌　B) 矮人　C) 增长

c) "moon-shot speech" — A) 登月演讲　B) 月亮　C) 射击

d) "apparatus" — A) 机构/体系　B) 设备　C) 工具

e) "prioritized" — A) 优先考虑　B) 忽视　C) 推迟

f) "outcomes" — A) 结果　B) 输出　C) 开始

② 句意转述

"If we spent as much money looking for water on Earth as we do searching for it on Mars, the outcomes might be very different."

参考答案：If we invested as much funding in finding water solutions on our own planet as we spend exploring for water on Mars, the results could be dramatically better.

③ 翻译

"1961 年 4 月，肯尼迪总统说：'如果我们能以竞争性的——低廉的——价格从海水中获取淡水，这将符合人类的长远利益，并将真正使任何其他科学成就相形见绌。'那是在他著名的登月演讲前一个月。在那个十年结束之前，我们送人登上了月球并返回。但我们仍然没有找到如何在不花费大量金钱和能源的情况下从海水中获取淡水的方案。这主要是因为我们伟大的创新体系还没有致力于水。研究预算优先考虑能源、国防和健康，而基本上忽视了水——尽管解决水问题有助于我们的能源、国防和健康问题。如果我们在地球上找水花的钱和我们在火星上找水一样多，结果可能会大不相同。"

Paragraph 10 — 结语：节约争取时间

In the end, we can solve the water problem. But we need aggressive conservation that will buy us time while our inventors get to work.

L1 事实　Q57. Can we solve the water problem? What do we need to do?

→ Yes, we can solve it. But we need aggressive conservation to buy us time while inventors get to work.

L1 事实　Q58. What are the two parallel actions needed? Who does each?

→ (1) Aggressive conservation (everyone) (2) Inventors getting to work (scientists/engineers). Conservation buys time; innovation solves the problem.

L2 推理　Q59. "Aggressive conservation" — Why "aggressive"? What does this word imply?

→ "Aggressive" means forceful, determined, not passive. It implies that conservation must be proactive and intense — not just turning off the faucet occasionally, but systematic, large-scale reduction. The word elevates conservation from a personal virtue to a strategic necessity.

L2 推理　Q60. How does this final paragraph connect to Para 1 (the daughter's statement)?

→ The daughter said "The scientists need time." The final paragraph says conservation "will buy us time while our inventors get to work." The essay comes full circle: the daughter's insight IS the essay's conclusion. Conservation buys time; time enables innovation; innovation solves the problem. The structure validates the daughter's wisdom.

L3 深层　Q61. "In the end" — Why this phrase? What does it achieve?

→ "In the end" signals the conclusion — after all the complexity (paras 3-9), the answer is simple: conserve and invent. The phrase creates a sense of finality and clarity. After pages of analysis, the reader gets a two-sentence summary. The brevity mirrors the daughter's simplicity in Para 1.

L3 深层　Q62. "While our inventors get to work" — Why "our" inventors? What does this pronoun achieve?

→ "Our" makes inventors belong to all of us — they are not distant experts but part of our collective effort. The pronoun creates shared responsibility: conservation is what WE do; invention is what OUR inventors do. Together, we solve the problem. The word builds solidarity.

L4 评价　Q63. The essay ends with a call for "aggressive conservation." What does aggressive conservation look like in practice? What would you change in your daily life?

→ (Discussion) Students propose specific conservation actions: shorter showers, fixing leaks, rainwater harvesting, reducing water-intensive foods. The question moves from theory to practice.

L4 评价　Q64. The essay argues that conservation + innovation = solution. Do you agree? Or is there a third element missing (e.g., policy, education, justice)?

→ (Discussion) Students explore what else is needed beyond conservation and innovation. Policy: water pricing, regulations. Education: awareness. Justice: equitable distribution. The question examines the limits of the essay's two-part solution.

语言练习 · **Para. 10**

① 词汇语境

a) "aggressive" — A) 积极的/大力度的　B) 攻击的　C) 被动的

b) "conservation" — A) 节约/保护　B) 消费　C) 生产

c) "buy us time" — A) 为我们争取时间　B) 买时间　C) 浪费时间

d) "inventors" — A) 发明家　B) 投资　C) 债务

② 句意转述

"But we need aggressive conservation that will buy us time while our inventors get to work."

参考答案：But we must aggressively conserve water to give our scientists and engineers the time they need to develop solutions.

③ 翻译

"最终，我们可以解决水问题。但我们需要大力度的节约来为我们争取时间，让发明家们开始工作。"

综合练习 · 全文

I. 课文填空（Cloze）

Complete the passage with words from the text.

The author's seven-year-old daughter once _____ at him for not turning off the water fast enough, saying "The scientists need _____." That statement still _____ in his ears today. Water is on track to be the most important and most _____ resource of the 21st century, potentially replacing _____ as the trigger for geopolitical conflicts. Nobel Laureate Richard Smalley ranked humanity's top problems: energy first, water _____. Solving energy enables clean water; clean water enables _____ and environmental protection. Water is complicated because there's no _____, it's _____ with every sector, and demands are growing while supplies _____. Solutions exist — from massive _____ plants to micro water _____ — but all take time. Kennedy predicted in 1961 that desalination would _____ any other scientific accomplishment, but research budgets have _____ energy, defense, and health over water. In the end, we need _____ conservation to buy time while inventors get to work.

参考答案：growled, time, rings, contentious, oil, second, food, alternative, intertwined, fluctuate, desalination, harvesters, dwarf, prioritized, aggressive

II. 判断题（True or False）

1. ___ The author's daughter was angry because he used too much toothpaste. (F — she was angry about wasting water)

2. ___ Water could replace oil as the strategic resource that triggers conflicts. (T)

3. ___ Smalley ranked water as the most important problem. (F — energy was first, water second)

4. ___ There are alternatives to water, just as there are alternatives to coal. (F — "there's no alternative" to water)

5. ___ Climate change will make water supplies more stable. (F — it will intensify droughts and floods, making supplies fluctuate)

6. ___ Kennedy made his desalination statement after the moon landing. (F — it was one month BEFORE the moon-shot speech)

7. ___ Research budgets have prioritized water over energy and defense. (F — they've prioritized energy, defense, and health, ignoring water)

8. ___ The author believes conservation alone can solve the water problem. (F — conservation buys time; inventors must also find solutions)

III. 讨论题（Discussion）

1. The essay opens with a child's insight and ends with a call for "aggressive conservation." How does the personal anecdote frame the global argument?

2. Smalley's list ranks energy first, water second. Do you agree with this ranking? Would you reorder any of the top 5?

3. "Move people to water or water to people" — Which approach does China's South-North Water Diversion Project represent? What are its pros and cons?

4. The author compares desalination funding to Mars exploration funding. Is this a fair comparison? Or are they fundamentally different types of investment?

5. If you could allocate $1 billion to solve one water problem, what would you fund: desalination, conservation education, infrastructure, or research? Why?

IV. 写作任务（Writing Task）

Write a short essay (150-200 words) on one of the following topics:

Topic A: Describe a water-related issue in your region. What is the problem, and what solutions would you propose?

Topic B: "The scientists need time." — Do you agree that conservation is primarily about buying time? Or does conservation have intrinsic value beyond time?

Topic C: Write a letter to your local government about water conservation. What policies would you recommend, and why?

要求：① 至少使用 3 个课文关键词(conserve, contentious, alternative, intertwined, fluctuate, desalination, aggressive 等) ② 包含至少 1 个 personal reflection ③ 语法正确，逻辑清晰