```
"question": "If we keep several papers together with paper clips for 10 years, what
will happen?",
     "type": "macro mechanics"
  "task2": {
     "question": "Why do you see nucleation rates at greater undercooling and growth at
less undercooling?",
     "type": "micro mechanics"
  "task3": {
     "question": "How would we change the glass transition temperature? Give some
examples.",
     "type": "electrical and electronic"
  "task4": {
     "question": "How can you determine a material using information not related to it,
such as wavelength?",
     "type": "optical and microscopic"
  "task5": {
     "question": "If you have a water-permeable membrane separating pure water and
saltwater, what's the osmotic pressure if you know the solute concentration?",
     "type": "thermodynamical"
```

```
effort still matter?",
                                                                                    "type": "biology"
                                       Player 9 Response {
Player 5 Response{
  "task1": {
```

Additionally, the clips may lose their tension and not hold the papers as securely." "task2": ₹ "task2": { "answer": "Nucleation rates are "answer": "Nucleation rates increase at greater at higher undercooling because the greater undercooling because there is a higher driving force for phase transformation driving force for phase transformation, leading to increases, making it easier for new phases more nucleation sites. Growth rates are higher at to form. Growth occurs at lower less undercooling because there is more thermal undercooling because the system has more energy available for atoms to move and form a thermal energy available for atoms to stable new phase." rearrange and grow existing nuclei." "task3": { "task3": { "answer": "The glass transition temperature

User Input{

Player 1 Response {

"answer": "Over time, paper clips may rust

or corrode, especially if exposed to moisture.

This can cause the paper to become stained or

damaged where it contacts the clips.

(Tg) can be changed by altering the polymer's

chemical structure, adding plasticizers, or

changing the degree of cross-linking. For

example, adding a plasticizer can lower Tg by

"answer": "You can determine material

properties using techniques like spectroscopy,

where different materials absorb or emit light at

specific wavelengths. By analyzing these

wavelengths, you can identify materials based on

"answer": "Osmotic pressure (π) can be

calculated using the formula $\pi = iCRT$, where i is

the van 't Hoff factor (number of particles the

solute dissociates into), C is the molar

concentration of solute, R is the ideal gas

"Typical

semiconductors ranges from about 100 cm²/V·s

for amorphous silicon to over 10,000 cm²/V·s for

high-quality single-crystal silicon at room

Joanne gathers from average trees. Joanne

gathers 30 apples from tallest trees and 15 from

shortest trees (half of 30). Her sister gathers 60

apples from tallest trees (twice as many) and 45

from shortest trees (three times as many). The

total gathered by both is: 30 + 15 + x + 60 + 45 =

500. Simplifying gives x = 350 - (30 + 15 + 60 + 15)

45) = 350 - 150 = 200 apples from average

animals, as well as the increased use of chemical

in quaternary cytoreductive surgery for ovarian

cancer as it aims to reduce tumor burden which

can improve survival outcomes even in advanced

"answer": "D.hybridization of crops and

"answer": "Yes, surgical effort still matters

"answer": "Let x be the number of apples

mobility

constant, and T is temperature in Kelvin."

increasing polymer chain mobility."

their unique spectral fingerprints."

"task4": {

"task5": {

"task6": {

temperature."

"task8": {

"task9": {

fertilizers"

stages."

"answer":

"task1": {

"task1": {

"answer": "The glass transition temperature can be changed by altering the polymer's molecular weight, adding plasticizers, or modifying the polymer's chemical structure. For example, adding a plasticizer like phthalates to PVC lowers its glass transition temperature."

"answer": "The papers may become

discolored or stained due to the metal in

the paper clips corroding over time,

potentially leaving rust marks on the

"task4": { "answer": "A material can be determined using wavelength information by analyzing its absorption or emission spectra. For example, the wavelength of light absorbed or emitted by a material can be matched to known spectra to identify its composition."

"task5": {

"answer": "The osmotic pressure can be calculated using the formula $\pi = iCRT$, where i is the van 't Hoff factor, C is the solute concentration, R is the gas constant, and T is the temperature in Kelvin."

"task6": { "answer": "The typical mobility in semiconductors ranges from about 100 to

10,000 cm²/V·s, depending on the material and conditions (e.g., silicon has an electron mobility of around 1400 cm²/V·s)." "task7": { "answer": "Let Joanne's apples from

average trees be x. Joanne gathers 30 (tallest) + 15 (shortest) + x (average) = 45+ x. Her sister gathers 60 (tallest) + 45 (shortest) = 105. Combined total: 45 + x +105 = 500. Solving for x, Joanne gathered 350 apples from the average trees."

"answer": "D. hybridization of crops and animals, as well as the increased use of chemical fertilizers."

"task9": { "answer": "Quaternary cytoreductive surgery in ovarian cancer remains significant as surgical effort can impact patient outcomes, particularly in reducing tumor burden and improving survival

"task1": {

"task2": {

"answer": "The papers may degrade, and the paper clips may corrode."

"answer": "Nucleation requires high energy barriers, favored by greater undercooling. Growth occurs more easily at lower undercooling."

"task3": { "answer": "The glass transition temperature can be changed by altering the chemical composition, adding plasticizers, or changing the cooling rate. Examples include adding polymers or changing the cross-linking density."

"task4": { "answer": "Material properties can be determined using techniques like spectroscopy, which analyzes how materials interact with different

wavelengths of light." "task5": { "answer": "Osmotic pressure can be calculated using the van't Hoff equation: $\pi = iMRT$, where π is osmotic pressure, i is the van't Hoff

factor, M is molar concentration, R is

the ideal gas constant, and T is

temperature." "answer": "Typical mobility in semiconductors varies widely depending on the material and

conditions, but it's often in the range of 10² to 10⁴ cm²/V·s."

"answer": "Joanne gathered 160 apples from the average trees."

"task8": { "answer": "D" "task9": {

"answer": "Surgical effort remains crucial in quaternary cytoreductive surgery for ovarian cancer."

}			}						
Player ID	Mech. 1	Mech. 2	EE	Opt.	Thermo.	Semi.	Math	Geo.	Bio.
001	83.75	85.50	82.50	17.50	90.75	75.00	-12.50	100.00	86.75
	±5.75	±6.25	±5.50	±9.50	±3.62	±7.50	±7.50	±2.50	±5.75
002	78.25	43.75	83.25	21.25	89.50	87.50	100.00	-15.00	90.75
	±6.00	±7.75	±5.50	±9.25	±4.25	±5.50	±2.50	±8.25	±4.62
003	79.50	67.50	77.50	23.25	77.50	73.75	-7.50	100.00	80.00
	±6.00	±8.00	±6.25	±9.25	±5.75	±7.25	±11.25	±2.50	±7.00
004	70.00	76.25	68.75	20.00	86.25	71.25	-21.25	100.00	80.00
	±6.50	±7.00	±7.25	±9.50	±4.50	±7.50	±9.50	±2.50	±6.50
005	69.50	77.50	82.00	25.00	88.25	73.75	100.00	100.00	81.25
	±7.25	±6.75	±5.50	±9.25	±4.25	±7.50	±2.50	±2.50	±6.50
006	78.25	87.75	86.25	31.25	89.50	86.50	-10.00	100.00	88.75
	±6.00	±5.75	±5.50	±9.00	±4.25	±5.25	±7.50	±2.50	±5.50
007	68.75	80.00	76.25	24.50	77.50	86.25	100.00	100.00	83.75
	±7.75	±6.50	±6.25	±9.25	±5.75	±5.50	±2.50	±2.50	±6.00
008	38.75	74.25	71.25	23.75	87.50	73.75	100.00	-15.00	81.25
	±8.75	±7.00	±7.25	±9.00	±4.50	±7.25	±2.50	±8.25	±6.50
009	56.25	63.25	63.75	20.75	86.25	78.25	-23.75	100.00	77.50
	±8.25	±7.50	±7.75	±9.50	±4.50	±6.75	±10.00	±2.50	±7.00

Scores of Players' Scientific Reasoning

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Fused Response Using Roundtable Policy {
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chemical fertilizers/E.urban gardening and vertical farming]?",

"task1": {

"task6": {

"task7": {

the average trees?",

"task8": {

"task9": {

"type": "math"

"type": "geoscience"

"type": "semiconductor"

"answer": "Over 10 years, paper clips may rust or corrode, especially if exposed to moisture, potentially staining or damaging the papers. The clips might also lose tension, affecting their ability to hold papers securely. Additionally, the papers themselves may yellow or degrade due to aging."

"question": "What is the typical mobility in semiconductors?",

"question": "While Joanne is gathering apples from her family's orchard, her sister

comes outside to help her. Joanne gathers 30 apples from the tallest trees, half this

amount from the shortest trees, and more apples from the average trees. Compared with

Joanne, her sister gathers twice as many apples from the tallest trees and 3 times as many

apples from the shortest trees. She doesn't take any from the average trees. If the sisters

have gathered a combined total of 500 apples, how many apples did Joanne gather from

"question": "The Third Agricultural Revolution is characterized by [A.innovations

"question": "Quaternary cytoreductive surgery in ovarian cancer: does surgical

in metalworking, textiles, and the steam engine/B.minimization of chemical fertilizers

and pesticides/C.precision genetic engineering that affects plants, animals, and even

human beings/D.hybridization of crops and animals, as well as the increased use of

"task2": {

"answer": "Nucleation rates increase at greater undercooling because the energy barrier for forming a stable nucleus decreases, providing a higher driving force for phase transformation. Growth rates are higher at less undercooling because there is more thermal energy available, allowing atoms to move and form a stable new phase more easily."

"task3": {

"answer": "The glass transition temperature (Tg) can be altered by changing the polymer's chemical structure, adding plasticizers, or modifying the degree of cross-linking. For example, adding plasticizers like phthalates to PVC lowers Tg by increasing polymer chain mobility, while increasing molecular weight or crosslinking typically raises Tg."

"task4": {

"answer": "Materials can be identified using spectroscopic techniques, where different materials absorb or emit light at specific wavelengths. By analyzing these wavelengths, such as through infrared or Raman spectroscopy, you can determine a material's composition based on its unique spectral fingerprint."

"task5": {

"answer": "Osmotic pressure (π) can be calculated using the van 't Hoff equation: $\pi = iCRT$, where i is the van 't Hoff factor (number of particles the solute dissociates into), C is the molar concentration of solute, R is the ideal gas constant, and T is the temperature in Kelvin."

"task6": {

"answer": "Typical mobility in semiconductors varies depending on the material. For silicon at room temperature, electron mobility is around 1400 cm²/V·s and hole mobility is around 450 cm²/V·s. III-V semiconductors like GaAs have higher electron mobilities, around 8500 cm²/V·s."

"task7": {

"answer": "Let x be the number of apples Joanne gathers from the average trees. Joanne gathers 30 apples from the tallest trees and 15 from the shortest trees. Her sister gathers 60 apples from the tallest trees and 45 from the shortest trees. The total gathered by both is: 30 + 15 + x + 60 + 45 = 500. Solving for x gives x = 350.

Joanne gathered 350 apples from the average trees."

"task8": {

"answer": "The Third Agricultural Revolution is characterized by D: hybridization of crops and animals, as well as the increased use of chemical fertilizers. This period, also known as the Green Revolution, involved the development of high-yielding crop varieties and increased use of chemical inputs to boost agricultural productivity."

"task9": {

"answer": "Yes, surgical effort still matters in quaternary cytoreductive surgery for ovarian cancer. Achieving optimal cytoreduction can significantly improve survival rates, even in advanced stages. Factors such as patient selection, surgical expertise, and center experience are critical in determining the success of this approach."

Mech. 2 EE Mech. 1 Opt. Bio. Semi Math Thermo. Geo. 42.50 84.50 89.50 87.50 94.50 95.00 100.00 100.00 91.00 ±4.50 ±4.50 ±10.50 ±3.00 ±4.00 ±2.50 ±2.50 ±4.75 ±5.75

Scores of Roundtable Policy' Scientific Reasoning