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## QUESTION NO: 1

Read the text attached.

### Passage 1

#### Critical information needed in fight to save wildlife

With global temperatures rising, an international group of 22 top biologists is calling for a coordinated effort to gather important species information that is urgently needed to improve predictions for the impact of climate change on future biodiversity. Current predictions fail to account for important biological factors like species competition and movement that can have a profound influence on whether a plant or animal survives changes to its environment, the scientists say in the September 9 issue of the journal *Science*. While more sophisticated forecasting models exist, much of the detailed species information that is needed to improve predictions is lacking.

“Right now, we’re treating a mouse the same way as an elephant or a fish or a tree. Yet we know that those are all very different organisms and they are going to respond to their environment in different ways,” says University of Connecticut Ecologist Mark Urban, the *Science* article’s lead author. “We need to pull on our boots, grab our binoculars, and go back into the field to gather more detailed information if we are going to make realistic predictions.”

The 22 top biologists affiliated with the article identify six key types of biological information, including life history, physiology, genetic variation, species interactions, and dispersal, that will significantly improve prediction outcomes for individual species. Obtaining that information will not only help the scientific community better identify the most at-risk populations and ecosystems, the scientists say, it will also allow for a more targeted distribution of resources as global temperatures continue to rise at a record rate.

Current climate change predictions for biodiversity draw on broad statistical correlations and can vary widely, making it difficult for policymakers and others to respond accordingly. Many of those predictions tend not to hold up over time if they fail to account for the full range of biological factors that can influence an organism’s survival rate: species demographics, competition from other organisms, species mobility, and the capacity to adapt and evolve.

“We haven’t been able to sufficiently determine what species composition future ecosystems will have, and how their functions and services for mankind will change,” says co-author Dr. Karin Johst of the Helmholtz Centre for Environmental Research and the German Centre for Integrative Biodiversity Research. “This is because current ecological models often do not include important biological processes and mechanisms: so far only 23 percent of the reviewed studies have taken into account biological mechanisms.”

Generating more accurate predictions is essential for global conservation efforts. Many species are already moving to higher ground or toward the poles to seek cooler temperatures as global temperatures rise. But the capacity of different organisms to survive varies greatly. Some species of frog, for instance, can traverse their terrain for miles to remain in a habitable environment. Other species, such as some types of salamander, are less mobile and capable of moving only a few meters over generations.

“New Zealand’s strong foundation in ecological research will help,” explains study co-author Dr.

William Godsoe, a Lincoln University lecturer and member of New Zealand’s Bio-Protection Research Centre. “One of our hopes is to build on these strengths and highlight new opportunities to improve predictions by explicitly considering evolution, interactions among species, and dispersal.” This will aid in the development of strategies to manage impacts on species and ecosystems before they become critical.

With more than 8.7 million species worldwide, gathering the necessary biological information to improve predictions is a daunting task. Even a sampling of key species would be beneficial, the authors say, as the more sophisticated models will allow scientists to extrapolate their predictions and apply them to multiple species with similar traits.

The researchers are calling for the launch of a global campaign to be spearheaded by the

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services or IPBES. The IPBES operates under the auspices of four United Nations entities and is dedicated to providing scientific information to policymakers worldwide. One thousand scientists from all over the world currently contribute to the work of IPBES on a voluntary basis. The scientists are also encouraging conservation strategies to support biodiversity such as maintaining dispersal corridors, and preserving existing natural habitats and genetic diversity.

“Our biggest challenge is pinpointing which species to concentrate on and which regions we need to allocate resources,” says UConn Associate Professor Urban. In an earlier study in *Science*, Urban predicted that as many as one in six species internationally could be wiped out by climate change. “We are at a triage stage at this point. We have limited resources and patients lined up at the door.”

## Passage 2

### Forecasting climate change's effects on biodiversity hindered by lack of data

An international group of biologists is calling for data collection on a global scale to improve forecasts of how climate change affects animals and plants. Accurate model predictions can greatly aid efforts to protect biodiversity from disturbances such as climate change and urban sprawl by helping scientists and decision-makers better understand, anticipate and respond to threats that imperil species and ecosystems.

In a paper published in *Science* on Thursday (Sept. 8), biologists cite a critical lack of data on key biological mechanisms – such as how animals and plants spread during their lifetime and how they evolve in response to changes in the environment – as the main obstacle to improving models' ability to forecast species' response to climate change.

“This paper is a call to arms,” said Patrick Zollner, article co-author and Purdue associate professor of wildlife science. “The world is in dire circumstances. We're losing a lot of species, and we're largely unaware why. How do we need to rethink the kind of data we're collecting so we can take advantage of modern modeling tools to understand the outcomes of climate change for ecological systems? This could help us forestall losing wildlife that we later deeply regret.”

The group outlines two key problems that hinder the capability of current models to make realistic predictions about biological responses to climate change.

Most models are descriptive, based on statistical correlations and observations, and fail to capture the underlying processes that produce observed changes. For example, a descriptive model might show that lynx in the northern U.S. are declining while bobcat populations in the same region are on the rise. Understanding what is driving this change requires a different sort of model, one that incorporates biological mechanisms. A mechanistic model that accounts for how warming temperatures affect snow depth, for instance, could provide insights into why bobcats – better adapted to habitats with less snow – are gaining a competitive edge over lynx. But 77 percent of current models of climate change's impacts on wildlife do not include biological mechanisms.

Another challenge is that as models have grown in sophistication, they have far outpaced data collection. Put another way, a model is like a state-of-the-art kitchen, but the cupboards are bare.

“We can now build videogame-like environments with computers where we can create multiple versions of Earth and ask what the implications under different scenarios are,” Zollner said. “But our ability to learn from these tools is constrained by the kinds of data we have.”

The group advanced several proposals on how to improve models, collect missing data and leverage available data to make broader predictions.

They identified six biological mechanisms that influence wildlife's responses to climate change: physiology; demography and life history; evolutionary potential and adaptation; interactions between species; movement over land or water; and responses to changes in the environment. They ranked the information needed to account for these mechanisms in models and suggested proxies for data that are missing or hard to collect.

A globally coordinated effort to fill data gaps could greatly advance improvements in models and informed conservation approaches, the researchers wrote. They point to the Intergovernmental Panel on Climate Change and its consistent improvements in climate change modeling as a valuable blueprint for such a project.

But local and regional conservation groups need not wait for a global body to coalesce to start using a mechanistic approach in their own region, Zollner said “If the ideas put forth in this paper start to be adopted and integrated into climate change work in a grass roots way, that could make a big difference in a region and could scale up over time,” he said.

Citizen scientists also have an important role to play in pitching in with data collection, he said.

Working with citizen scientists offers “an opportunity to get huge amounts of data, and it’s foolish not to take advantage of it,” Zollner said. “The data might not be as rigorous and needs to be treated differently, but it’s one more source of valuable information.

Overall, the tone of the attached passages could best be described as \_\_\_\_\_.

**A.** discouraged but defiant: “We haven’t been able to sufficiently determine what species composition future ecosystems will have...”; optimistic but cautious: “We can now build videogame-like environments with computers where we can create multiple versions of Earth and ask what the implications under different scenarios are.”

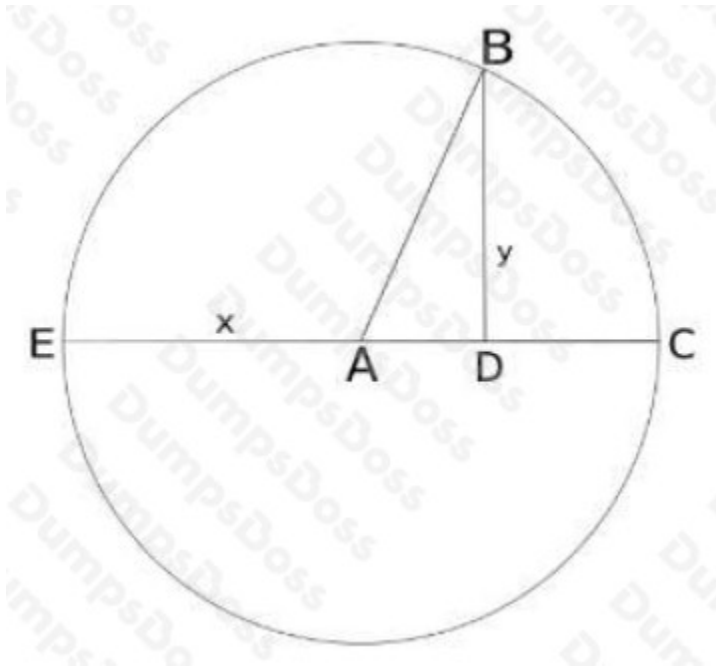
**B.** uncertain and unachievable: “We need to pull on our boots, grab our binoculars, and go back into the field to gather more detailed information if we are going to make realistic predictions”; Defensive and dire: “This paper is a call to arms...The world is in dire circumstances.”

**C.** urgent but hopeful: “We are at a triage stage at this point. We have limited resources and patients lined up at the door.”; Serious but optimistic: “If the ideas put forth in this paper start to be adopted and integrated into climate change work in a grass roots way, that could make a big difference in a region and could scale up over time, ’...”

**D.** happy and reassuring: “Even a sampling of key species would be beneficial...as the more sophisticated models will allow scientists to extrapolate their predictions and apply them to multiple species with similar traits.”; Defeated and hopeless: “Most models are descriptive, based on statistical correlations and observations, and fail to capture the underlying processes that produce observed changes.”

**ANSWER: C**

**QUESTION NO: 2**



The diagram shows a circle with a center at

**A.** ADB is a right angle. EC is a line segment. Points A and D lie on this segment. Segment AE has length  $x$ , segment BD has length  $y$ , and angle BAC has measure  $m$  degrees. Which of these expressions can be used to determine the area of circle

A?

$2\pi x^2$

**B.**  $2\pi x$

**C.**  $\pi x^2$

**D.**  $\pi 2x$

**ANSWER: C**

### QUESTION NO: 3

A student is writing a report for class about her favorite sport. Choose two sentences that are correctly punctuated.

**A.** Basketball is a fun and exciting sport to play; but it takes hard work and dedication to develop the necessary skills to become a star player.

**B.** To be a good basketball player, a person must be in good condition; basketball requires a great deal of running up and down the length of the court.

**C.** Having one really goof player on a basketball team is great; however, basketball is a team sport that requires each person to perform his or her role.

**D.** Only five players from each team can be on the court at the same time during a basketball game, other sports; such as football and soccer; allow more players to be on the field.

E. A high school basketball game consists of four quarters and two halves separated by halftime; with players usually going to their locker rooms so the coaches can go over plays for the second half.

F. Learning to dribble the ball; using the correct form to shoot the ball; and making sure one makes good passes are all important skills; players must practice these skills a great deal if the team is going to win.

**ANSWER: B C**

## QUESTION NO: 4

The tip of a wall clock's minute hand measures 2.0 m from the floor at 10:00. At 10:30 it measures 1.7 m from the floor. If the motion of the minute hand is modeled as a cosine graph over a time of several hours, what would be the period and amplitude of the graph?

- A. Period = 45 min Amplitude = 2.0 m
- B. Period = 30 min Amplitude = 0.30 m
- C. Period = 60 min Amplitude = 0.15 m
- D. Period = 15 min Amplitude = 0.15 m

**ANSWER: C**

## QUESTION NO: 5

A student is writing an article about safety in high school athletics. Read the draft of the article and complete the task that follows.

Just how safe are high school athletics? Critics would argue that most sports are highly dangerous to those teens who participate in them. Recently football has been the most closely scrutinized. The dangers of the high school gridiron are many: head injuries, knee injuries, and heat exhaustion. It seems as if every year more studies are released implicating the immediate and long-term effects of this highly physical sport. Football, however, is not the only sport that has drawn attention. Any sport that involves contact (basketball, hockey, lacrosse) can leave its players vulnerable to injury. The question then becomes: what is being done to prevent these injuries?

Steps are being taken to reduce the most serious complications of all sports. One way that these issues are being addressed is through the development of new equipment. Another way is through more stringent rules that govern practices as well as game time situations. Most importantly, educating players, coaches, and parents to the real dangers of athletics has taken a new priority. Through education, regulations, and equipment, high school sports can continue to be a source of entertainment, not danger.

Choose the two sentences that provide the best evidence to support the main idea of the paper.

- A. It has been estimated that nearly half of all high school participates in athletics on some level.
- B. This school district reports that each high school has a minimum of five varsity sports; this number does not include junior varsity or community leagues.

C. Bob Jones, Southern High's athletic director, added this comment: "We had a very successful season; injuries did not play a measurable role in our record."

D. District wide data indicates that students are injured on school property at a relatively low rate; last year only thirty-three accidents were reported that resulted in student injury.

E. One of the most visible educational campaigns has been launched by the National Football League (NFL); it is entitled "Heads UP" and trains coaches and student athletes on techniques to avoid head injuries.

F. In a 2010 study, American University found that close to 80 percent of high school athletes had reported injuries during their athletic careers; approximately 25 percent of these injuries were considered serious.

**ANSWER: E F**

## QUESTION NO: 6

Read the text attached.

"Declaration of Conscience" by Margaret Chase Smith June 1, 1950

Mr. President, I would like to speak briefly and simply about a serious national condition. It is a national feeling of fear and frustration that could result in national suicide and the end of everything that we Americans hold dear. It is a condition that comes from the lack of effective leadership either in the legislative branch or the executive branch of our government...

...I speak as a Republican. I speak as a woman. I speak as a United States senator. I speak as an American...

...I think that it is high time for the United States Senate and its members to do some real soul searching and to weigh our consciences as to the manner in which we are performing our duty to the people of America and the manner in which we are using or abusing our individual powers and privileges.

I think that it is high time that we remembered that we have sworn to uphold and defend the Constitution. I think that it is high time that we remembered that the Constitution, as amended, speaks not only of the freedom of speech, but also of trial by jury instead of trial by accusation.

Whether it is a criminal prosecution in court or a character prosecution in the Senate, there is little practical distinction when the life of a person has been ruined.

"The Basic Principles of Americanism"

Those of use who shout the loudest about Americanism in making character assassinations are all too frequently those who, by our own words and acts, ignore some of the basic principles of Americanism –

The right to criticize.

The right to hold unpopular beliefs.

The right to protest.

The right of independent thought.

The exercise of these rights should not cost one single American citizen his reputation or his right to a livelihood nor should he be in danger of losing his reputation or livelihood merely because he happens to know someone who holds unpopular beliefs. Who of us does not? Otherwise none of us could call our souls our own. Otherwise thought control would have set in.

The American people are sick and tired of being afraid to speak their minds lest they be politically smeared as “Communists” or “Fascists” by their opponents. Freedom of speech is not what it used to be in America. It has been so abused by some that it is not exercised by others.

The American people are sick and tired of seeing innocent people smeared and guilty people whitewashed. But there have been enough proved cases...to cause nationwide distrust and strong suspicion that there may be something to the unproved, sensational accusations.

## A Challenge to the Republican Party

As a Republican, I say to my colleagues on this side of the aisle that the Republican party faces a challenge today that is not unlike the challenge that it faced back in Lincoln’s day. The Republican Party so successfully met that challenge that it emerged from the Civil War as the champion of a united nation - in addition to being a party that unrelentingly fought loose spending and loose programs....

The Democratic administration has greatly lost the confidence of the American people by its complacency to the threat of communism here at home and the leak of vital secrets to Russia through key officials of the Democratic administration. There are enough proved cases to make this point without diluting our criticism with unproved charges.

Surely these are sufficient reasons to make it clear to the American people that it is time for a change and that a Republican victory is necessary to the security of this country.... Yet to displace it with a Republican regime embracing a philosophy that lacks political integrity or intellectual honesty would prove equally disastrous to this Nation. The nation sorely needs a Republican victory. But I do not want to see the Republican party ride to political victory... [using] fear, ignorance, bigotry, and smear... I do not want to see the Republican party win that way. While it might be a fleeting victory for the Republican party, it would be a more lasting defeat for the American people. Surely it would ultimately be suicide for the Republican party and the two-party system that has protected our American liberties from the dictatorship of a one-party system.

As members of the minority party, we do not have the primary authority to formulate the policy of our government. But we do have the responsibility of rendering constructive criticism, of clarifying issues, of allaying fears by acting as responsible citizens.

As a woman, I wonder how the mothers, wives, sisters, and daughters feel about the way in which members of their families have been politically mangled in Senate debate - and I use the word “debate” advisedly...

I do not like the way the Senate has been made a rendezvous for vilification, for selfish political gain at the sacrifice of individual reputations and national unity. I am not proud of the way we smear outsiders from the floor of the Senate and hide behind the cloak of congressional immunity and still place ourselves beyond criticism on the floor of the Senate.

As an American, I am shocked at the way Republicans and Democrats alike are playing directly into the Communist design of “confuse, divide, and conquer.” As an American, I don’t want a Democratic administration “whitewash” or “cover-up” any more than I want a Republican smear or witch hunt.

As an American, I condemn a Republican Fascist just as much as I condemn a Democrat

Communist. I condemn a Democrat Fascist just as much as I condemn a Republican Communist. They are equally dangerous to you and me and to our country. As an American, I want to see our nation recapture the strength and unity it once had when we fought the enemy instead of ourselves.

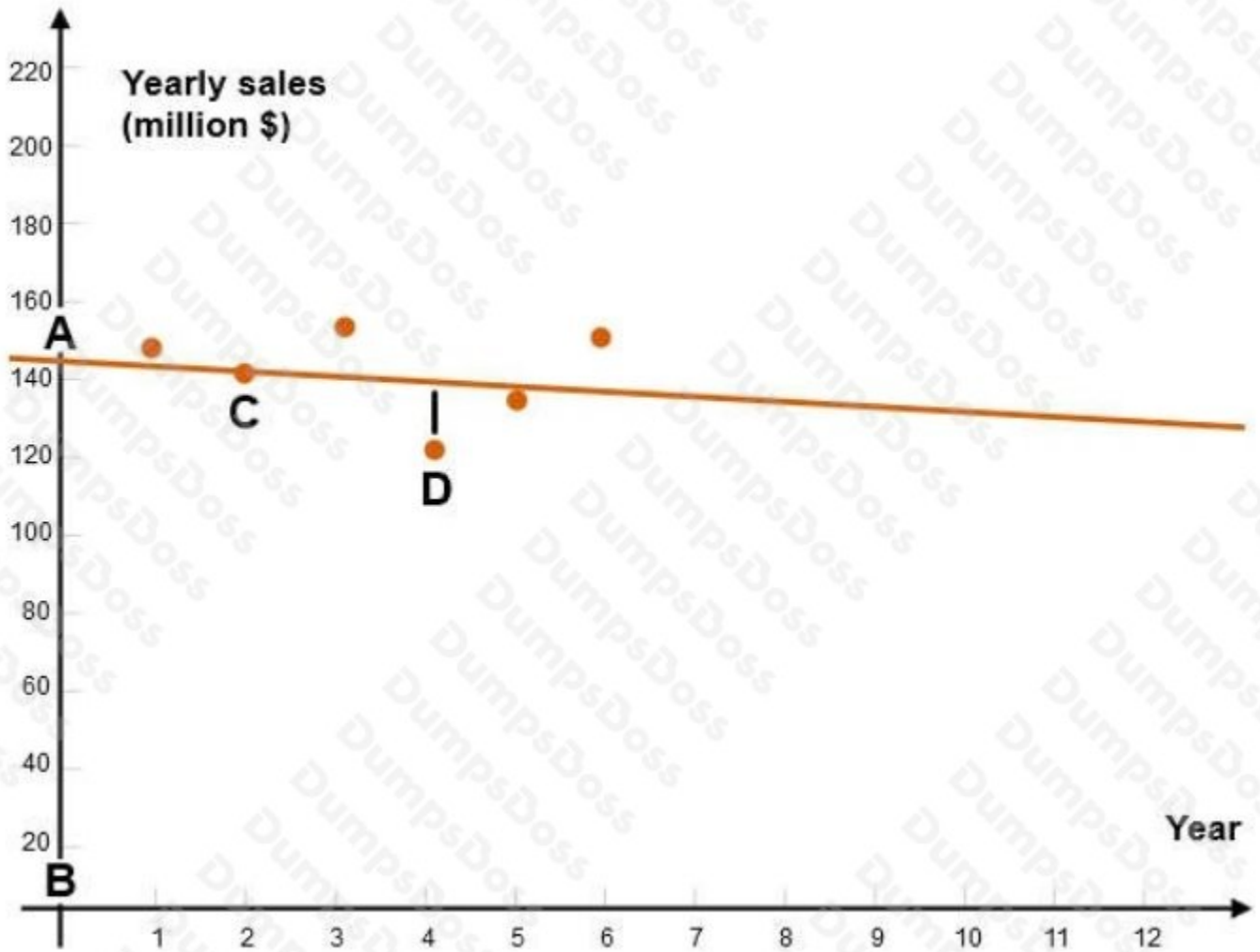
It is with these thoughts that I have drafted what I call a Declaration of Conscience. I am gratified that the senator from New Hampshire, the senator from Vermont, the senator from Oregon, the senator from New York, the senator from Minnesota and the senator from New Jersey have concurred in that declaration and have authorized me to announce their concurrence.

Read this selection from the attached text. What is the central idea of this section? “I do not like the way the Senate has been made a rendezvous for vilification, for selfish political gain at the sacrifice of individual reputations and national unity. I am not proud of the way we smear outsiders from the floor of the Senate and hide behind the cloak of congressional immunity and still place ourselves beyond criticism on the floor of the Senate.”

- A.** The speaker supports the idea of national unity at all costs. If this means needing to put forth one face while acting differently behind closed doors, so be it. The top consideration is the safety and security of the nation.
- B.** The speaker disagrees with the behavior of her colleagues in the Senate. She is disturbed by the negative energy and selfish political motivation she sees in some of her colleagues and suggests a need for transparency and for all people of the United States, including the politicians, to be held to the same standard of decorum.
- C.** The speaker wants to get rid of corrupt politicians she sees as taking advantage of the American people and who threaten national unity. She is tired of the lies and the negativity and is calling for her colleagues who behave badly to be replaced in upcoming elections to raise the sanctity of politics back to where it should be based on the ideas of the founders of this nation.
- D.** The speaker is concerned about backroom deals that are being made by some of her colleagues in the Senate. She is trying to expose the secrecy and bring to light the truth of what is happening in government at the moment.

**ANSWER: B**

**QUESTION NO: 7**



Students in a business class are studying the performance of XYZ Widgets over the past 6 years. This is a scatterplot of yearly sales and a linear model trend line of the data. Referring to the attached graph and information, which of these best describes the point on the line near label A?

- A. intercept
- B. slope
- C. correlation coefficient
- D. residual

**ANSWER: A**

**QUESTION NO: 8**

Read the text and answer the question.

## Blue Crabs Provide Evidence of Oil Tainting Gulf Food

Weeks ago, before engineers pumped in mud and cement to plug the gusher, scientists began finding specks of oil in crab larvae plucked from waters across the Gulf coast.

The government said last week that three-quarters of the spilled oil has been removed or naturally dissipated from the water. But the crab larvae discovery was an ominous sign that crude had already infiltrated the Gulf's vast food web—and could affect it for years to come.

"It would suggest the oil has reached a position where it can start moving up the food chain instead of just hanging in the water," said Bob Thomas, a biologist at Loyola University in New Orleans.

"Something likely will eat those oiled larvae . . . and then that animal will be eaten by something bigger and so on."

Tiny creatures might take in such low amounts of oil that they could survive, Thomas said. But those at the top of the chain, such as dolphins and tuna, could get fatal "megadoses."

Marine biologists routinely gather shellfish for study. Since the spill began, many of the crab larvae collected have had the distinctive orange oil droplets, said Harriet Perry, a biologist with the University of Southern Mississippi's Gulf Coast Research Laboratory.

"In my 42 years of studying crabs I've never seen this," Perry said.

She wouldn't estimate how much of the crab larvae are contaminated overall, but said about 40 percent of the area they are known to inhabit has been affected by oil from the spill. While fish can metabolize dispersant and oil, crabs may accumulate the hydrocarbons, which could harm their ability to reproduce, Perry said in an earlier interview with Science magazine. She told the magazine there are two encouraging signs for the wild larvae—they are alive when collected and may lose oil droplets when they molt.

Tulane University researchers are investigating whether the splotches also contain toxic chemical dispersants that were spread to break up the oil but have reached no conclusions, biologist Caz Taylor said.

If large numbers of blue crab larvae are tainted, their population is virtually certain to take a hit over the next year and perhaps longer, scientists say. The spawning season occurs between April and October, but the peak months are in July and August.

How large the die-off would be is unclear, Perry said. An estimated 207 million gallons of oil have spewed into the Gulf since an April 20 drilling rig explosion triggered the spill, and thousands of gallons of dispersant chemicals have been dumped.

Scientists will be focusing on crabs because they're a "keystone species" that play a crucial role in the food web as both predator and prey, Perry said.

Richard Condrey, a Louisiana State University oceanographer, said the crabs are "a living repository of information on the health of the environment."

Named for the light-blue tint of their claws, the crabs have thick shells and 10 legs, allowing them to swim and scuttle across bottomlands. As adults, they live in the Gulf's bays and estuaries amid marshes that offer protection and abundant food, including snails, tiny shellfish, plants and even smaller crabs. In turn, they provide sustenance for a variety of wildlife, from redfish to raccoons and whooping cranes.

Adults could be harmed by direct contact with oil and from eating polluted food. But scientists are particularly worried about the vulnerable larvae.

That's because females don't lay their eggs in sheltered places, but in areas where estuaries meet the open sea. Condrey discovered several years ago that some even deposit offspring on shoals miles offshore in the Gulf.

The larvae grow as they drift with the currents back toward the estuaries for a month or longer. Many are eaten by predators and only a handful of the 3 million or so eggs from a single female live to adulthood.

But their survival could drop even lower if the larvae run into oil and dispersants.

"Crabs are very abundant. I don't think we're looking at extinction or anything close to it," said Taylor, one of the researchers who discovered the orange spots.

Still, crabs and other estuary-dependent species such as shrimp and red snapper could feel the effects of remnants of the spill for years, Perry said.

"There could be some mortality, but how much is impossible to say at this point," said Vince Guillory, biologist manager with the Louisiana Department of Wildlife and Fisheries.

Perry, Taylor and Condrey will be among scientists monitoring crabs for negative effects such as population drop-offs and damage to reproductive capabilities and growth rates.

Crabs are big business in the region. In Louisiana alone, some 33 million pounds are harvested annually, generating nearly \$300 million in economic activity, Guillory said.

Blue crabs are harvested year-round, but summer and early fall are peak months for harvesting, Guillory said.

Prices for live blue crab generally have gone up, partly because of the Louisiana catch scaling back due to fishing closures, said Steve Hedlund, editor of SeafoodSource.com, a website that covers the global seafood industry.

Fishers who can make a six-figure income off crabs in a good year now are now idled – and worried about the future.

"If they'd let us go out and fish today, we'd probably catch crabs," said Glen Despaux, 37, who sets his traps in Louisiana's Barataria Bay. "But what's going to happen next year, if this water is polluted and it's killing the eggs and the larvae? I think it's going to be a long-term problem." Excerpt from "Blue Crabs Provide Evidence of Oil Tainting Gulf Food Web" by John Flesher.

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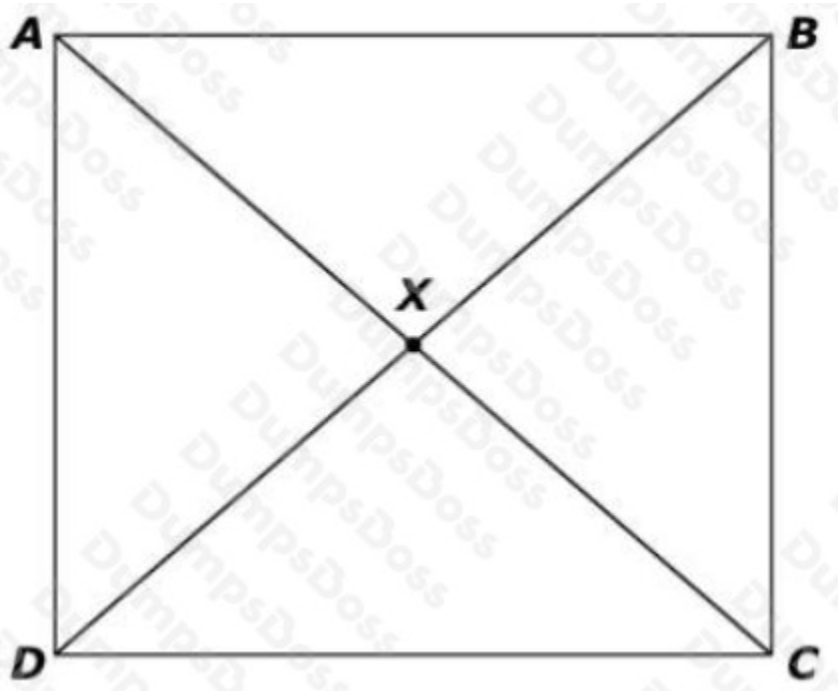
Choose the two sentences from the text that best support the inference that blue crabs may be less impacted by the oil spill than some scientists predict.

- A. Tiny creatures might take in such low amounts of oil that they could survive, Thomas said.
- B. "In my 42 years of studying crabs I've never seen this", Perry said.
- C. She told the magazine there are two encouraging signs for the wild larvae—they are alive when collected and may lose oil droplets when they molt.
- D. "Crabs are very abundant. I don't think we're looking at extinction or anything close to it," said Taylor, one of the researchers who discovered the orange spots.
- E. Still crabs and other estuary-dependent species such as shrimp and red snapper could feel the effects of remnants of the spill for years, Perry said.

**ANSWER: C D**

## QUESTION NO: 9

Consider parallelogram ABCD with point X at the intersection of diagonal segments AC and BD.



Evelyn claims that ABCD is a square. Choose all statements that must be true for Evelyn's claim to be true.

- A.  $AB = BD$
- B.  $AD = AB$
- C.  $AC = BX$
- D.  $m\angle ABC \neq 90^\circ$
- E.  $m\angle AXB = 90^\circ$

**ANSWER: B D**

### QUESTION NO: 10 - (HOTSPOT)

HOTSPOT

Student Directions

Mandatory Financial Literacy Classes Argumentative Performance Task Task:

In your economics class, you are discussing the importance of making smart financial decisions. Your teacher tells you that, in some school districts, students are required to take a financial literacy class before graduating. Your school board is hosting a meeting to decide whether to offer such a course for graduation, and wants students to contribute their perspectives. As part of your initial research, you have found four sources about financial literacy classes.

After you have reviewed these sources, you will answer some questions about them. Briefly scan the sources and the three questions that follow. Then, go back and read the sources carefully so you will have the information you will need to answer

the questions and finalize your research. You may click on the Global Notes button to take notes on the information you find in the sources as you read. You may also use scratch paper to take notes.

In Part 2, you will write an argumentative essay on a topic related to the sources.

Directions for Beginning:

You will now examine several sources. You can re-examine any of the sources as often as you like.

Research Questions:

After looking at the sources, use the rest of the time in Part 1 to answer three questions about them. Your answers to these questions will be scored. Also, your answers will help you think about the information you have read and looked at, which should help you write your argumentative essay.

You may click on the Global Notes button or refer back to your scratch paper to look at your notes when you think it would be helpful. Answer the questions in the spaces below the items.

Both the Global Notes on the computer and your written notes on scratch paper will be available to you in Part 1 and Part 2 of the performance task. Part 1

Sources for Performance Task: Source #1

This article, from April 9, 2010, is from the New York Times, and is about the potential benefits of financial literacy courses.

Working Financial Literacy in With the Three R's by Tara Siegel Bernard

Most Americans aren't fluent in the language of money. Yet we're expected to make big financial decisions as early as our teens— Should I take on thousands of dollars of student debt? Should I buy a car? – even though most of us received no formal instruction on financial matters until it was too late.

While no course in personal finance could have prevented many Americans from getting caught up in the housing bubble<sup>1</sup>, it's clear that most of us need some help, preferably starting when we're still in school. And I'm not just talking about learning to balance your checkbook. Its understanding concepts like the time value of money, risk and reward, and, yes, the importance of savings.

All of this raises the question: What's happening inside our classrooms? And how many schools even broach the topic? As it turns out, for a country that prizes personal responsibility, we're doing very little.

"We need to teach the basics of economics and finances so people can make financial decisions in a changing world," said Annamaria Lusardi, economics professor at Dartmouth College and a research associate at the National Bureau of Economic Research. "It's the compounding of interest<sup>2</sup>, the problem of inflation<sup>3</sup>. These are the principles. And these are really scientific topics."

While more states are beginning to require some sort of personal finance instruction, there aren't enough that do, financial literacy experts say, and there is little consistency in the quality of the education. Just 13 states require students to take a personal finance course or include the subject in an economics course before they graduate from high school, up from seven states in 2007, according to the Council for Economic Education. Meanwhile, 34 states (including those 13) have personal finance within their curriculum guidelines, up from 28 states in 2007...

But that hasn't stopped enterprising teachers like Mathew Frost, who teaches 11th and 12th graders American history and economics at Sunset High School in Dallas, from working the topic into his student's school day. The Texas economics curriculum carves out time for personal finance, but it doesn't test students on the material. Mr. Frost says it's just too important to ignore. So he tries to bring the lesson to life for his students by pairing them up as married couples and giving them a couple of children. The students must then create a budget based on the average income range for their neighborhood, or about \$21,000 to \$40,000 a year. As in the board game "Life," the students are dealt real-world circumstances.

Mr. Frost has them randomly pick "chance cards" from a bag, which might tell them they need new brakes for their car, broke an arm, suffered a death in the family, or found \$20.

"I try to make it as realistic as possible," he said. "We talk about building budgets, expenses, investing money," he added, as well as "how to use credit wisely, insurance and careers."

One of his students later wrote about the experience. The 11th grader, who simulated life with a wife and two children on \$21,000 a year, told of balancing needs versus wants, trying to find an apartment in a safe neighborhood that fit the family budget, and the effect of an unexpected rent increase on their savings.

"I first learned that real life isn't going to be as nice as this game," he said. "I also learned that good budgeting has to be maintained throughout a person's life no matter the income, no matter the living conditions."

Research shows that this type of financial education tends to resonate with the students later.

Michael S. Gutter, an assistant professor of family financial management at the University of Florida, studied the issue in 2009, after he surveyed 15,700 students at 15 universities who came from states with different (or nonexistent) personal finance schooling requirements. The study was financed by the National Endowment for Financial Education, a nonprofit organization in Denver that provides financial education curriculums.

"College students who came from states where there was a course required were more likely to budget, were more likely to be saving, and were less likely to have maxed out their credit cards in the last year and were more likely to be paying off their credit cards fully," Professor Gutter said. But his research also suggested that "social learning is also very powerful as well," he said. "What your parents tell you matters."

"It's hard because there is no silver bullet to get this into every school," said Matthew Yale, deputy chief of staff to Education Secretary Arne Duncan. "It's not as simple as saying, 'We're going to institute this in the 100,000 public schools in America.' But our plan for reauthorization does make room for financial literacy in schools, which is a really big, big deal." Mr. Yale was referring to the Obama administration's plan to revise the Elementary and Secondary Education Act, commonly known as No Child Left Behind.

He said the Department of Education's next step is to work with districts and teachers and help them find the money they need, whether it's through the many literacy-minded nonprofits or the private sector. Mr. Yale also said that department officials were working on competitive grant programs, which would allow schools to compete for money to pay for the financial

literacy programs. As a joint effort with the Treasury Department, the Education Department is currently running the National Financial Capability Challenge, an online exam for high school students that measures financial know-how and recognizes outstanding performers, to help raise awareness.

President Bush created the first Advisory Council on Financial Literacy in 2008, and President Obama plans to assemble his own team. In its annual report, the first council recommended that Congress or state legislatures mandate financial education in all schools

for students in kindergarten through 12th grade. But the new administration follows through with that recommendation? Mr. Yale said education officials were "not interested in introducing unfunded mandates."

So what can we do? According to Scott Truelove, who teaches personal finance as part of a work-study program for seniors at Chesterton High School in Indiana, "It will take a parent movement."

Mr. Truelove has already seen the power of financial education in his school's hallways, where a student told him and another personal finance teacher that she set up a Roth 1.R.A.\* given what she learned in class.

"That, to me, is huge," Mr. Truelove said.

ousing bubble: when housing prices rapidly increase to unsustainable levels and then collapse



2compound interest: interest paid on both the original amount of money invested and on the interest it has already earned

3inflation: a general increase in prices that decrease the purchasing power of money

4“Roth I.R.A.: a type of individual retirement account

Bernard Siegal, Tara. (2010, April 9). Working

Financial Literacy in With the Three R's. The New York

Times. Retrieved from <http://www.nytimes.com/2010/04/10/your-money/10money.html>

Source #2

In this article from February 6, 2009, the Chicago Tribune discusses problems with financial literacy education.

Financial Education Leaving Americans Behind by Greg Burns

With so many personal finance decisions turning into disasters, a chorus of voices is singing the praises of financial-literacy education.

Make every American a financial whiz, the thinking goes, and credit bubbles never will bedevil us again.

Trouble is, growing evidence suggests that financial-literacy courses don't work. Worse, they may actually hurt, in part by making their graduates overconfident about limited skills. Few want to hear that message, according to Lauren Willis, a professor at Loyola Law School in Los Angeles, whose recent paper, "Against Financial Literacy

Education," shook up all sorts of vested interests. . . .

Plenty of people make a living off these courses, and lawmakers love them, since they give the impression that something is being done about the intractable problem of financial ignorance.

Utah, Missouri, and Tennessee require students to take a semester-long personal-finance class before graduating from high school. Illinois and 16 other states incorporate financial education into other subjects—by decree, of course.

The Indiana Senate this month approved a bill that would require "personal financial responsibility" to be taught from kindergarten through high school. Its sponsor described it as an appropriate response to "difficult times." Other states are mulling expanded mandates

These measures don't affect only youth. Adults face similar obligatory instruction when they seek bankruptcy protection or, in some cases, apply for loans.

Academics have known for years about the scant evidence in support of the programs, but few are willing to go as far as Willis in bluntly denouncing them as a counterproductive racket."

She cites examples, such as the high school students who took a semester-long personal finance course and tested worse than those who didn't. Or the graduates of retirement-planning classes who thought their literacy had increased, when their financial test scores had not.

Now comes a study from Harvard Business School raising more doubts. Using rigorous methodology, it concluded that programs in widespread use during the past two decades were no use at all.

"They weren't effective in changing people's financial decisions," said Shawn Cole, one of two professors behind the report, titled "If You Are So Smart, Why Aren't You Rich?" "We find no effect," he said. "My gut feeling is that teaching math or statistics would be more useful."

Still, Cole believes it may be possible to design an effective program. That's a common theme among those who favor financial education: Just because no one has proven these courses work is no reason to give up searching for the right formula.

Willis has other ideas. She wants to forget about making Americans capable of handling their credit and investment needs – most will never get there, especially given the fast-moving, complicated nature of financial services.

She favors pro-consumer regulation and one-on-one counseling with unbiased advisers. Sure, those could be tough to come by. But no one said saving Americans from themselves would be easy.

■ **1racket:** a dishonest scheme or business activity

Burns, Greg. (2009, February 6). Financial Education Leaving Americans Behind. Chicago Tribune. Retrieved from [http://articles.chicagotribune.com/2009-02-16/news/0902150143\\_1\\_financialliteracy-financial-literacy-education-financial-ignorance](http://articles.chicagotribune.com/2009-02-16/news/0902150143_1_financialliteracy-financial-literacy-education-financial-ignorance).

Source #3

This October 6, 2013 article from the New York Times is about the drawbacks of financial literacy courses, and what the research shows about teaching financial literacy skills.

Financial Literacy, Beyond the Classroom by Richard

H. Thaler

Even if we grade on a very generous curve, many Americans flunk when it comes to financial literacy. Consider this three-item quiz:

- Suppose you had \$100 in a savings account and the interest rate was 2 percent a year. After five years, how much do you think you would have if you left the money to grow? More than \$102, exactly \$102 or less than \$102?
- Imagine that the interest rate on your savings account was 1 percent a year and that inflation was 2 percent. After one year, would you be able to buy more than, the same as, or less than you could today with the money?
- Do you think this statement is true or false: "Buying a single company stock usually provides a safer return than a stock mutual fund"?

Anyone with even a basic understanding of compound interest, inflation and the answers to these questions are "than" and "false." Yet in a survey of Americans over age 50 conducted by the economists Annamaria Lusardi of George Washington University and Olivia S Mitchell of the Wharton School of the University of Pennsylvania, only a third could answer all three questions correctly.

This is particularly troubling given the inherent complexity of our modern economy. Whether in taking out a student loan, buying a house, or saving for retirement, people are being asked to make decisions that are difficult even if they have graduate training in finance and economics. Throwing the financially illiterate into that maelstrom is like taking students currently enrolled in driver's education and asking them to compete in the Indianapolis 500.

A popular approach to this problem is to work harder to improve financial literacy – for example, by including household finance in the basic high school curriculum. One reason to think this solution will have big payoffs is that people who are more knowledgeable about financial matters, as measured by a test, perform better at tasks like saving for retirement and staying out of debt. This may seem a straightforward argument in support of financial literacy courses. Unfortunately, it isn't.

The problem is that measured financial literacy is highly correlated with other factors, most notably higher education in general, so it's hard to sort out causes. (The ability to solve the Sunday crossword puzzle is probably also positively correlated with good financial outcomes.) So to see whether a financial education curriculum is likely to pay dividends, we should review specific efforts to shore up financial skills in those who are deficient, and not just measure what people already know.

A new paper by three business school professors – Daniel Fernandes of Erasmus University in the Netherlands and the Catholic University of Portugal, John

G. Lynch Jr. of the University of Colorado, and Richard Netemeyer of the University of Virginia – presents a discouraging assessment of attempts to teach people how to deal with money. Their article uses a technique called meta-analysis,<sup>1</sup> looking at results from 168 scientific studies of efforts to teach people to be financially astute, or at least less clueless.

The authors' conclusions are clear: over all, financial education is laudable,<sup>2</sup> but not particularly helpful. Those who receive it do not perform noticeably better when it comes to saving more, for example, or avoiding ruinous debt. . . .

Don't get me wrong. I am all for trying to teach household finance in schools, starting as early as possible. And when it comes to high school, I think learning about compound interest is at least as important as trigonometry or memorizing the names of all 50 state capitals. If we try enough approaches, and evaluate what works, we may improve such programs' effectiveness. But we shouldn't fool ourselves into thinking that adding a household finance class to a high school curriculum will in itself create knowledgeable consumers who can understand today's wide array of financial products.

...In the meta-analysis, even the most time-intensive programs – those with more than 24 hours of education and training, almost the length of a college course – had no discernible effects just two years later.

It would be premature to conclude that all efforts at improving financial literacy are futile. But it is a fair conclusion that simply doing more of the training commonly used now will not produce significant results. So what else might we try? Although no approach offers a panacea,<sup>3</sup> three types of efforts seem worthy of more attention.

The first is what Professor Lynch, one of the authors of the meta-analysis, calls just-in-time education.

■ Because learning decays quickly, it's best to provide assistance just before a decision is made. High school seniors should receive help in how to think about a student loan and how to make sure that the education bought with the loan offers good prospects for repayment. Just-in-time education can be offered at other crucial moments—when taking out a mortgage or figuring out when to retire. But unless such education is compulsory, many of the consumers most in need of help don't take advantage of it. And we need to be sure not to confuse self-serving marketing<sup>4</sup> with objective advice.

■ Another approach is to offer simple rules of thumb to help people cope. Because few people can calculate how much they need to save for a comfortable retirement, it might help to offer simple guidelines like "invest as much as possible in your 401(k) plan, H6 "save 15 percent of your income," or "get a 15-year mortgage if you are over 50."

■ One example comes from a field experiment involving microentrepreneurs<sup>7</sup> in the Dominican Republic. Of those who expressed an interest in receiving help, some were offered training in basic accounting principles while others were given simple rules of thumb. The accounting education did not have apparent effects, but simple rules – like keeping personal money and business money in separate drawers – led to better outcomes. This seemingly trivial concept helped small-business owners keep better track of how their businesses were faring.

The third approach, and the one I believe offers the best prospects of immediate help, is to make our financial system more user-friendly. You don't need to be a computer scientist to use a smartphone. If we made choosing a suitable mortgage as easy as checking the weather in Timbuktu, fewer households would find themselves underwater\* when real estate markets tumble... The same principle can be used in other areas, from credit cards to checking accounts. The financial services industry – either on its own or as required by government regulators – needs to find ways to make it easier for people to make sound decisions. And those financial firms that engage in fraudulent practices should be prosecuted and stopped.

1 diversification: investing in different assets in order to minimize risk

2 meta-analysis: an analysis of several separate but similar studies to determine if an observed effect is not due to chance alone

3 laudable: praiseworthy

4 panacea: a solution or remedy for all difficulties or diseases

5 self-serving marketing: surveys, top 10 lists, and technical papers that contain seemingly useful consumer information but are being used as a marketing strategy



6 401(k) plan: a retirement savings plan in which deductions are automatically made from an employee's paycheck before taxes are deducted and that are sometimes matched by the employer

7 microentrepreneur: operator of a microenterprise, or very small business; microenterprises typically employ fewer than ten people and have relatively low start-up costs

8 underwater: when an individual owes more on a loan than the market value of the loan; this term is typically applied to home mortgages

Thaler, Richard

H. (2013, October 6). Financial Literacy, Beyond the Classroom. New York Times. Retrieved from <http://www.nytimes.com/2013/10/06/business/financial-literacy-beyond-theclassroom.html>.

Source #4

This article, from October 15, 2006, is from the Baltimore Sun and is about concerns surrounding mandated financial literacy classes.

Finance Course Prompts Debate by Gina Davis

While Carroll County students will be required to take a financial literacy course to graduate starting next year, concerns linger over whether mandating the course is the most effective way to teach money matters to teens.

"The course is likely a good thing, but I am convinced it is not the best thing," school board President Thomas

G. Hiltz said last week. "One course is not a panacea and, alone, will not make our students financially literate."

After a lengthy debate about requiring the class, board members voted 4-1 to require students beginning next school year to take the half-credit course. It will cover concepts such as money management, consumer rights and responsibilities, credit, savings, and investing.

Carroll joins a handful of Maryland school systems – including Harford, St. Mary's, Talbot and Baltimore counties—with a similar requirement.

The financial course was one of several changes to the high school program of studies that the board approved.

During last week's meeting, Hiltz joined Cynthia L. Foley in supporting a motion to amend the proposal that would have eliminated financial literacy as a required course. The motion to amend failed in a 3-2 vote.

■Foley was the lone dissenter<sup>1</sup> when the original proposal came to a vote. Hiltz said he voted to approve the high school program of studies that included the financial literacy requirement because he supported the overall plan.

"While it did not turn out the way I may have wanted... unless I believe there has been an egregious mistake in judgment, a vote against the entire high school program of studies is, in my view, sour grapes," Hiltz said in an email.

During the meeting, Hiltz suggested the board needed more time to consider alternatives, such as incorporating elements of the course into already required classes or developing a comprehensive "financial literacy program," not a single course.

Hiltz also said a required course would necessitate about 10 teachers each year and cost the system about \$600,000 annually.

"My overwhelming concern is not cost – it is effectiveness," Hiltz said. "The \$600,000 is a low cost if the course is effective. An effective course will return that investment. It is a high cost if it is ineffective."

School officials said statistics suggest teens and young adults are assuming too much credit card debt and are not knowledgeable about finances.

About one in five students gets a personal finance course during high school, according to the JumpStart Coalition for Personal Financial Literacy, which surveys high school seniors every other year to gauge financial aptitude.

Of the 5,775 high school seniors in 37 states who participated in that survey this year, students on average scored 52.4 percent on 30 questions, according to the group.

A 2004 poll of college administrators found that excessive credit card debt was the primary reason students dropped out and the secondary reason was low grades, according to the Maryland Coalition for Financial Literacy.

Carroll school officials said last week that in a "pre-test" given to about 30 students taking the financial literacy elective this semester, the highest score was about 60 percent—with some students scoring much lower.

"Personal finances are not being taught in the home," said Patricia Hummel, a parent who also teaches financial literacy at Winters Mill High as a permanent substitute. "Studies have shown that only 26 percent of 13- to 21-year-olds reported that their parents actively taught them how to manage money."

Hummel supported a required financial literacy course because, "unless this class is mandated, students will not take advantage of the class."

Hiltz said that while the district has piloted [tested] a financial literacy course; no local data has been collected on its effectiveness.

"We all agree that financial literacy is essential," he said. "The lack of a real consideration of other options ... troubled me greatly. I am concerned that we picked low-hanging fruit, which may be the most expensive and least effective option."

■<sup>1</sup>dissenter: someone who disagrees with a particular view

Davis, Gina. (2006, October 15). Finance Course Prompts Debate. Baltimore Sun. Retrieved from [http://articales.baltimoresun.com/2006-10-15/news/0610140104\\_1\\_hiltz-high-school-programfinancial-literacy](http://articales.baltimoresun.com/2006-10-15/news/0610140104_1_hiltz-high-school-programfinancial-literacy).

Click on the boxes to show the claim(s) that each source supports. Some supports will have more than one box selected.

**Hot Area:**

	<b>Source #1: Working Financial Literacy in With the Three R's</b>	<b>Source #2: Financial Education Leaving Americans Behind</b>	<b>Source #3: Financial Literacy, Beyond the Classroom</b>	<b>Source #4: Finance Course Prompts Debate</b>
<b>People should take financial literacy classes when they are young so they are prepared to make good financial decisions as young adults.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Some people support financial literacy despite evidence that it does not work.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Financial literacy education could be effective if we rethink the way it is taught.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Resources for improving financial literacy should be spent on financial regulation instead.</b>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

ANSWER:

	Source #1: Working Financial Literacy in With the Three R's	Source #2: Financial Education Leaving Americans Behind	Source #3: Financial Literacy, Beyond the Classroom	Source #4: Finance Course Prompts Debate
People should take financial literacy classes when they are young so they are prepared to make good financial decisions as young adults.	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Some people support financial literacy despite evidence that it does not work.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial literacy education could be effective if we rethink the way it is taught.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Resources for improving financial literacy should be spent on financial regulation instead.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Explanation:

**QUESTION NO: 11**

There are 125 adults and children attending a movie in a theatre. The cost for an adult to attend the movie is \$5.75 and a child pays 3.50. The theatre raised \$617.50 in total sales for the movie. If  $a$  represents the number of adults and  $c$  represents the number of children that attend the movie, which of the following systems of equations can be used to find the number of adults and children that attended the movie?

- A.  $a + c = 125$   $5.75a + 3.50c = 617.50$
- B.  $5.75a + 3.50c = 125$   $a + c = 617.50$
- C.  $a + c = 125$   $3.50a + 5.75c = 617.50$

D.  $a + c = 617.50$   $3.50a + 5.75c = 125$

**ANSWER: A**

**Explanation:**

$$g(x) = -\frac{1}{3}x - \frac{5}{3}$$

$$g(x) = \frac{1}{3}x - \frac{3}{5}$$

$$g(x) = \frac{1}{3}x - \frac{5}{3}$$

$$g(x) = 5x + 3$$

**QUESTION NO: 12**

Which of these sentences uses the passive voice?

- A. The band played as the students shuffled into the auditorium.
- B. Our principal addressed the student body at the beginning of the assembly.
- C. Students from all over campus walked quickly to the auditorium for the assembly.
- D. Carlos' speech was read by him during the assembly.

**ANSWER: D**

**QUESTION NO: 13**

A student is writing a persuasive speech for his speech class about the value of fine arts programs in public education, Read the paragraphs from the student's draft and complete the task that follows.

Value of the Arts

Fine arts programs in public education furnish critical thinking. Artists must evaluate their work for form and substance to ensure it accurately represents their vision and make any adjustments that are needed. Musicians must practice their skills continually and evaluate accuracy of their performance.

Arts programs also encourage goal setting. Both artists and musicians must make a vision of what they want their skills to be, and work to achieve that vision. They must constantly evaluate their abilities and decide what they must do to reach their goals. Goal setting is a skill that will be valuable to them not only in the arts, but also in other areas of life.

What are more concrete or specific words to replace the two underlined words? (Choose two.)

- A. promote

- B. provide
- C. supply
- D. establish
- E. implement
- F. start

**ANSWER: A D**

## QUESTION NO: 14

Read the text and answer the question.

### Blue Crabs Provide Evidence of Oil Tainting Gulf Food

Weeks ago, before engineers pumped in mud and cement to plug the gusher, scientists began finding specks of oil in crab larvae plucked from waters across the Gulf coast.

The government said last week that three-quarters of the spilled oil has been removed or naturally dissipated from the water. But the crab larvae discovery was an ominous sign that crude had already infiltrated the Gulf's vast food web – and could affect it for years to come.

"It would suggest the oil has reached a position where it can start moving up the food chain instead of just hanging in the water," said Bob Thomas, a biologist at Loyola University in New Orleans.

"Something likely will eat those oiled larvae . . . and then that animal will be eaten by something bigger and so on."

Tiny creatures might take in such low amounts of oil that they could survive, Thomas said. But those at the top of the chain, such as dolphins and tuna, could get fatal "megadoses."

Marine biologists routinely gather shellfish for study. Since the spill began, many of the crab larvae collected have had the distinctive orange oil droplets, said Harriet Perry, a biologist with the University of Southern Mississippi's Gulf Coast Research Laboratory.

"In my 42 years of studying crabs I've never seen this," Perry said.

She wouldn't estimate how much of the crab larvae are contaminated overall, but said about 40 percent of the area they are known to inhabit has been affected by oil from the spill. While fish can metabolize dispersant and oil, crabs may accumulate the hydrocarbons, which could harm their ability to reproduce, Perry said in an earlier interview with Science magazine. She told the magazine there are two encouraging signs for the wild larvae – they are alive when collected and may lose oil droplets when they molt.

Tulane University researchers are investigating whether the splotches also contain toxic chemical dispersants that were spread to break up the oil but have reached no conclusions, biologist Caz Taylor said.

If large numbers of blue crab larvae are tainted, their population is virtually certain to take a hit over the next year and perhaps longer, scientists say. The spawning season occurs between April and October, but the peak months are in July and August.

How large the die-off would be is unclear, Perry said. An estimated 207 million gallons of oil have spewed into the Gulf since an April 20 drilling rig explosion triggered the spill, and thousands of gallons of dispersant chemicals have been dumped.

Scientists will be focusing on crabs because they're a "keystone species" that play a crucial role in the food web as both predator and prey, Perry said.

Richard Condrey, a Louisiana State University oceanographer, said the crabs are "a living repository of information on the health of the environment."

Named for the light-blue tint of their claws, the crabs have thick shells and 10 legs, allowing them to swim and scuttle across bottomlands. As adults, they live in the Gulf's bays and estuaries amid marshes that offer protection and abundant food, including snails, tiny shellfish, plants and even smaller crabs. In turn, they provide sustenance for a variety of wildlife, from redfish to raccoons and whooping cranes.

Adults could be harmed by direct contact with oil and from eating polluted food. But scientists are particularly worried about the vulnerable larvae.

That's because females don't lay their eggs in sheltered places, but in areas where estuaries meet the open sea. Condrey discovered several years ago that some even deposit offspring on shoals miles offshore in the Gulf.

The larvae grow as they drift with the currents back toward the estuaries for a month or longer. Many are eaten by predators and only a handful of the 3 million or so eggs from a single female live to adulthood.

But their survival could drop even lower if the larvae run into oil and dispersants.

"Crabs are very abundant. I don't think we're looking at extinction or anything close to it," said Taylor, one of the researchers who discovered the orange spots.

Still, crabs and other estuary-dependent species such as shrimp and red snapper could feel the effects of remnants of the spill for years, Perry said.

"There could be some mortality, but how much is impossible to say at this point," said Vince Guillory, biologist manager with the Louisiana Department of Wildlife and Fisheries.

Perry, Taylor and Condrey will be among scientists monitoring crabs for negative effects such as population drop-offs and damage to reproductive capabilities and growth rates.

Crabs are big business in the region. In Louisiana alone, some 33 million pounds are harvested annually, generating nearly \$300 million in economic activity, Guillory said.

Blue crabs are harvested year-round, but summer and early fall are peak months for harvesting, Guillory said.

Prices for live blue crab generally have gone up, partly because of the Louisiana catch scaling back due to fishing closures, said Steve Hedlund, editor of SeafoodSource.com, a website that covers the global seafood industry.

Fishers who can make a six-figure income off crabs in a good year now are now idled – and worried about the future.

"If they'd let us go out and fish today, we'd probably catch crabs," said Glen Despaux, 37, who

sets his traps in Louisiana's Barataria Bay. "But what's going to happen next year, if this water is polluted and it's killing the eggs and the larvae? I think it's going to be a long-term problem." Excerpt from "Blue Crabs Provide Evidence of Oil Tainting Gulf Food Web" by John Flesher.

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How does the last paragraph affect the presentation of information? (Choose three.)

- A. It illustrates the possible economic effects of the Gulf oil spill.
- B. It makes the report more personal by showing its effects on one individual.
- C. It provides a contrasting point of view to those expressed earlier in the text.

- D. It reinforces the idea that the oil contamination in the Gulf will have long-lasting effects.
- E. It summarizes the main types of damage scientists have identified in the Gulf ecosystem.
- F. It provides predictions about the length of time scientists expect the effects of the oil spill to last.

**ANSWER: A B D**

## QUESTION NO: 15

Read the text and answer the question.

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If large numbers of blue crab larvae are tainted, their population is virtually certain to take a hit over the next year and perhaps longer, scientists say. The spawning season occurs between April and October, but the peak months are in July and August.

How large the die-off would be is unclear, Perry said. An estimated 207 million gallons of oil have spewed into the Gulf since an April 20 drilling rig explosion triggered the spill, and thousands of gallons of dispersant chemicals have been dumped.

Scientists will be focusing on crabs because they're a "keystone species" that play a crucial role in the food web as both predator and prey, Perry said.

Richard Condrey, a Louisiana State University oceanographer, said the crabs are "a living repository of information on the health of the environment."

Named for the light-blue tint of their claws, the crabs have thick shells and 10 legs, allowing them to swim and scuttle across bottomlands. As adults, they live in the Gulf's bays and estuaries amid marshes that offer protection and abundant food, including snails, tiny shellfish, plants and even smaller crabs. In turn, they provide sustenance for a variety of wildlife, from redfish to raccoons and whooping cranes.

Adults could be harmed by direct contact with oil and from eating polluted food. But scientists are particularly worried about the vulnerable larvae.

That's because females don't lay their eggs in sheltered places, but in areas where estuaries meet the open sea. Condrey discovered several years ago that some even deposit offspring on shoals miles offshore in the Gulf.

The larvae grow as they drift with the currents back toward the estuaries for a month or longer. Many are eaten by predators and only a handful of the 3 million or so eggs from a single female live to adulthood.

But their survival could drop even lower if the larvae run into oil and dispersants.

"Crabs are very abundant. I don't think we're looking at extinction or anything close to it," said Taylor, one of the researchers who discovered the orange spots.

Still, crabs and other estuary-dependent species such as shrimp and red snapper could feel the effects of remnants of the spill for years, Perry said.

"There could be some mortality, but how much is impossible to say at this point," said Vince Guillory, biologist manager with the Louisiana Department of Wildlife and Fisheries.

Perry, Taylor and Condrey will be among scientists monitoring crabs for negative effects such as population drop-offs and damage to reproductive capabilities and growth rates.

Crabs are big business in the region. In Louisiana alone, some 33 million pounds are harvested annually, generating nearly \$300 million in economic activity, Guillory said.

Blue crabs are harvested year-round, but summer and early fall are peak months for harvesting, Guillory said.

Prices for live blue crab generally have gone up, partly because of the Louisiana catch scaling back due to fishing closures, said Steve Hedlund, editor of SeafoodSource.com, a website that covers the global seafood industry.

Fishers who can make a six-figure income off crabs in a good year now are now idled – and worried about the future.

"If they'd let us go out and fish today, we'd probably catch crabs," said Glen Despaux, 37, who sets his traps in Louisiana's Barataria Bay. "But what's going to happen next year, if this water is polluted and it's killing the eggs and the larvae? I think it's going to be a long-term problem."

Excerpt from "Blue Crabs Provide Evidence of Oil Tainting Gulf Food Web" by John Flesher.

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Read the sentence from the text.

The government said last week that three-quarters of the spilled oil has been removed or naturally dissipated from the water.

What does the use of the word dissipated suggest? (Choose two.)

- A.** Some of the spilled oil has left the Gulf waters.
- B.** Some of the spilled oil has been made non-toxic.

- C. Some of the spilled oil has intensified in strength.
- D. Some of the spilled oil has separated into smaller parts.
- E. Some of the spilled oil has been consumed by ocean organisms.

**ANSWER: A D**