15

NAME _____ DATE _____ PERIOD _____

Chapter 15 Cumulative Review

1. Write an equation for the sentence below. *(Lesson 1–1)*
   The product of a number k and 17 is equal to 68. 1. _____

2. Find $-15 + (-3)$. *(Lesson 2–3)* 2. _____

3. Write $\frac{3}{8}$, 4.2, 0.95, 1.7, and -3 in order from least to greatest. *(Lesson 3–1)* 3. _____

4. Find $-\frac{3}{8}\left(-\frac{1}{3}\right)$. *(Lesson 4–1)* 4. _____

5. Use the percent proportion to find 8% of 250. *(Lesson 5–3)* 5. _____

6. If y varies inversely as x and $y = 4$ when $x = 9$, find y when $x = 2$. *(Lesson 6–6)* 6. _____

7. Write an equation in point-slope form of the line with slope $-\frac{1}{3}$ and y-intercept 7. *(Lesson 7–2)* 7. _____

8. Simplify $-\sqrt{\frac{25}{49}}$. *(Lesson 8–5)* 8. _____

9. Find $(x + 2y)(2x + y)$. *(Lesson 9–4)* 9. _____

10. Factor $7k^3 - 7k$. *(Lesson 10–5)* 10. _____

11. Describe how the graph of $y = \frac{1}{2}x^2$ changes from its parent graph of $y = x^2$. Then name the vertex. *(Lesson 11–2)* 11. _____

12. Solve $-\frac{1}{2} \leq a + \frac{1}{3}$. *(Lesson 12–2)* 12. _____

13. What is the solution of the system $y = x + 5$ and $3x = -2y$? *(Lesson 13–3)* 13. _____

For Questions 14–15, solve each equation. (Lesson 14–5)

14. $\sqrt{\frac{x}{3}} + 2 = 7$ 14. _____

15. $\frac{\sqrt{y-3}}{y} = \frac{1}{4}$ 15. _____

16. Simplify $\frac{m^2 - 25}{m^2 - 3m - 10}$. *(Lesson 15–1)* 16. _____

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Name _____ Class _____ Date _____

What do we know about Mars?

Lesson Review

Complete the following.

1. What gas makes up most of the atmosphere of Mars? _____

2. What do scientists think are the reasons that there is no liquid water on Mars now? _____

_____

3. What is Mars's orbital period? _____

4. Why does Mars have seasons similar to those on Earth? _____

_____

5. Describe the surface of Mars. _____

_____

6. What is the name of the large volcano on Mars? _____

7. What is Vallis Marineris? _____

Skill Challenge

Skills: *comparing, classifying*

Decide whether each feature belongs to Earth or Mars or both. Place a check mark in the correct column.

Feature	Earth	Mars	Both
1. Polar ice caps			
2. 687-day orbit period			
3. 24-hour day			
4. Liquid water			
5. Volcanoes			
6. Seasons			
7. Dust storms that cover the entire planet			
8. Largest known volcano in the solar system			
9. Reddish surface			
10. Thin atmosphere of carbon dioxide			

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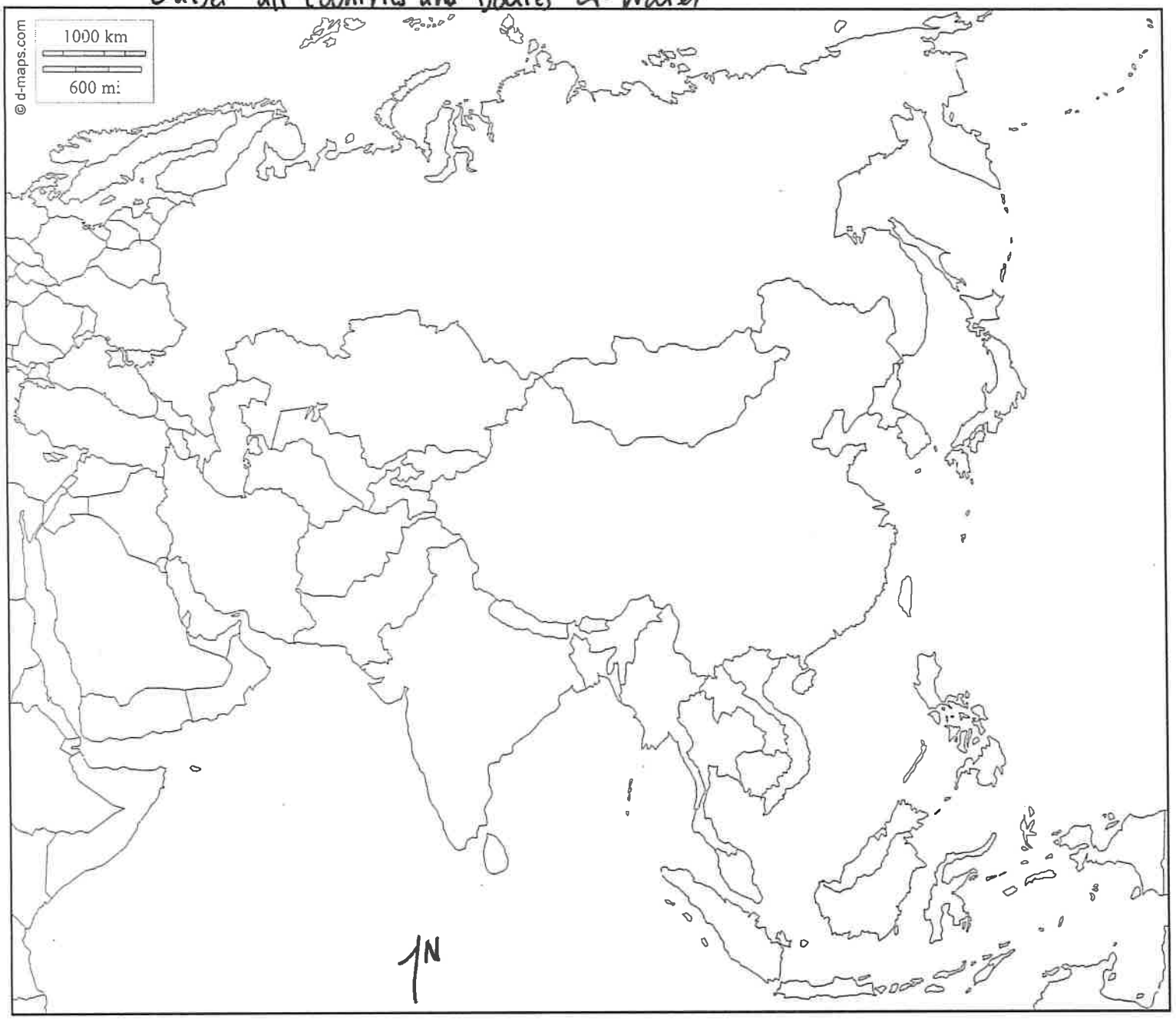
Label all countries and bodies of water



Questions 20-28 are based on the following passage and supplementary material.

This passage is adapted from Tina Hesman Saey, "Lessons from the Torpid." ©2012 by Society for Science & the Public.

Understanding how hibernators, including ground squirrels, marmots and bears, survive their long winter's naps may one day offer solutions for problems such as heart disease, osteoporosis and muscular dystrophy.

Nearly everything about the way an animal's body works changes when it hibernates, and preparations start weeks or months in advance. The first order of business is to fatten up.

"Fat is where it's at for a hibernator," says Matthew Andrews, a molecular biologist at the University of Minnesota Duluth who studies 13-lined ground squirrels. "You bring your own lunch with you." Packing lunch is necessary because the animals go on the world's strictest diet during the winter, surviving entirely off their white fat. "They have their last supper in October; they don't eat again until March," Andrews says.

Bigger fat stores mean a greater chance of surviving until spring. "If they go in really chunky, nice and roly-poly, that's going to be a good hibernator," he says.

Bears also watch their waistlines expand in the months before settling in for the season. The brown bears cardiologist Ole Fröbert studies pack on the pounds by chowing down on up to 40 kilograms of blueberries a day. Such gluttony among humans could have severe consequences: Obesity is associated with a greater risk of heart attack and diabetes, among other ailments.

To see how fattening up affects Scandinavian brown bears, Fröbert and his colleagues ventured into the wilds of Sweden following signals given off by radio transmitters or GPS devices on tagged bears.

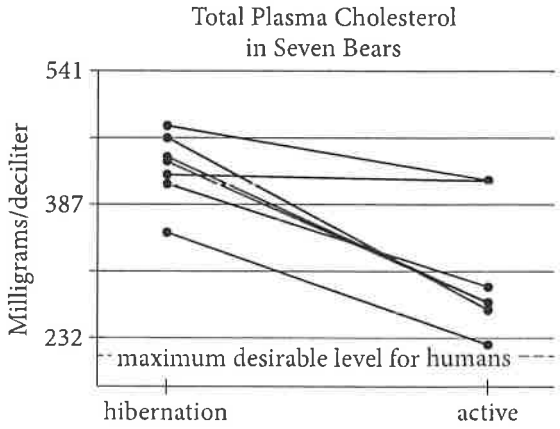
Bears can be dangerous close-up. Even hibernating bears can rouse to action quickly, so scientists tracking down bears in the winter use darts to tranquilize the animals from a distance. Scientists studying the bears in the summer tranquilize them from a helicopter.

Once a bear is under the tranquilizer's influence (which takes about five minutes), the scientists have 60 minutes max to get the animal from its den, weigh and measure it, draw blood samples and do minor surgeries to collect fat and other tissues. The bear is returned to its den by minute 61.

Precious materials collected during this high-pressure encounter need to be analyzed within 24 hours, so the researchers often test for levels of cholesterol or certain proteins in the blood while working in the snow or at a nearby research station. A pilot sometimes flies samples from field sites to a lab in Denmark in order to meet the deadline, Fröbert says. Samples such as bones and arteries that can't be collected from live bears come from bears killed by hunters during the legal hunting season.

Recent analyses revealed that Scandinavian brown bears spend the summer with plasma cholesterol levels considered high for humans; those values then increase substantially for hibernation, Fröbert and his colleagues reported. These "very, very fat" bears with high cholesterol also get zero exercise during hibernation. Lolling about in the den pinches off blood vessels, contributing to sluggish circulation. "That cocktail would not be advisable in humans," Fröbert says. It's a recipe for hardened arteries, putting people at risk for heart attacks and strokes.

Even healthy young adult humans can develop fatty streaks in their arteries that make the blood vessels less flexible, but the bears don't build up such artery-hardening streaks. "Our bears, they had nothing," Fröbert says. It's not yet clear how the bears keep their arteries flexible, but Fröbert hopes to find some protective molecule that could stave off hardened arteries in humans as well.



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CONTINUE

26

Which choice provides the best evidence for the answer to the previous question?

A) Lines 19-20 ("Bigger . . . spring")

B) Lines 24-27 ("The brown . . . day")

C) Lines 69-72 ("Even . . . streaks")

D) Lines 73-76 ("It's . . . well")

27

What information discussed in paragraph 10 (lines 58-68) is represented by the graph?

A) The information in lines 58-62 ("Recent . . . reported")

B) The information in lines 62-64 ("These . . . hibernation")

C) The information in lines 64-65 ("Lolling . . . circulation")

D) The information in lines 67-68 ("It's . . . strokes")

28

Which statement about the effect of hibernation on the seven bears is best supported by the graph?

A) Only one of the bears did not experience an appreciable change in its total plasma cholesterol level.

B) Only one of the bears experienced a significant increase in its total plasma cholesterol level.

C) All of the bears achieved the desirable plasma cholesterol level for humans.

D) The bear with the lowest total plasma cholesterol level in its active state had the highest total plasma cholesterol level during hibernation.

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CONTINUE

29

Which choice best describes the structure of the first paragraph?

A) A personal history is narrated, historical examples are given, and a method is recommended.

B) A position is stated, historical context is given, and earnest advice is given.

C) Certain principles are stated, opposing principles are stated, and a consensus is reached.

D) A historical period is described, and its attributes are reviewed.

30

The author most strongly implies which of the following about "the ties of brotherhood" (line 2)?

A) They were always largely fictitious and are more so at present.

B) They are stronger at present than they ever were before.

C) They are more seriously strained in the present than in the past.

D) They will no longer be able to bring together the rich and the poor.

31

The author uses "dwelling, dress, food, and environment" (lines 7-8) as examples of

A) things more valued in the present than in the past.

B) bare necessities of life.

C) things to which all people are entitled.

D) possible indications of differences in status.

32

The author describes the people who live in the "houses of some" (line 15) as interested in the

A) materials from which their houses are constructed.

B) size of their homes.

C) advantages of culture.

D) pedigree of their guests.

33

Which choice provides the best evidence for the answer to the previous question?

A) Lines 9-10 ("the palace . . . laborer")

B) Lines 15-16 ("all . . . arts")

C) Lines 18-19 ("Much . . . squalor")

D) Lines 19-20 ("Without . . . Maecenas")

34

The author uses the phrase "good old times" (line 20) as an example of

A) a cliché that still has life and usefulness left in it.

B) a bit of folk wisdom from his childhood.

C) something said by those who have acquired great riches.

D) something said by people who do not share his viewpoint.

35

What is the author's main point about the disadvantages of the modern economic system?

A) It provides only a few people with the advantages of culture.

B) It replicates many of the problems experienced in the past.

C) It creates divisions between different categories of people.

D) It gives certain people great material advantages over others.

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CONTINUE

Questions 38-47 are based on the following passages.

Passage 1 is adapted from Stewart Brand, "The Case for Reviving Extinct Species." ©2013 by the National Geographic Society. Passage 2 is adapted from the editors at *Scientific American*, "Why Efforts to Bring Extinct Species Back from the Dead Miss the Point." ©2013 by Nature America, Inc.

Passage 1

Many extinct species—from the passenger pigeon to the woolly mammoth—might now be reclassified as "bodily, but not genetically, extinct." They're dead, but their DNA is recoverable from museum specimens and fossils, even those up to 200,000 years old.

Thanks to new developments in genetic technology, that DNA may eventually bring the animals back to life. Only species whose DNA is too old to be recovered, such as dinosaurs, are the ones to consider totally extinct, bodily and genetically.

But why bring vanished creatures back to life? It will be expensive and difficult. It will take decades. It won't always succeed. Why even try?

Why do we take enormous trouble to protect endangered species? The same reasons will apply to species brought back from extinction: to preserve biodiversity, to restore diminished ecosystems, to advance the science of preventing extinctions, and to undo harm that humans have caused in the past.

Furthermore, the prospect of de-extinction is profound news. That something as irreversible and final as extinction might be reversed is a stunning realization. The imagination soars. Just the thought of mammoths and passenger pigeons alive again invokes the awe and wonder that drives all conservation at its deepest level.

Passage 2

The idea of bringing back extinct species holds obvious gee-whiz appeal and a respite from a steady stream of grim news. Yet with limited intellectual bandwidth and financial resources to go around, de-extinction threatens to divert attention from the modern biodiversity crisis. According to a 2012 report from the International Union for Conservation of Nature, some 20,000 species are currently in grave danger of going extinct. Species today are vanishing in such great numbers—many from hunting and habitat destruction—that the trend has been called a sixth mass extinction, an event on par with such die-offs as the one that befell the dinosaurs 65 million years ago. A program to restore extinct species poses a risk of selling the public on a false promise that technology alone can solve our ongoing environmental woes—an implicit assurance that if a species goes away, we can snap our fingers and bring it back.

Already conservationists face difficult choices about which species and ecosystems to try to save, since they cannot hope to rescue them all. Many countries where poaching and trade in threatened species are rampant either do not want to give up the revenue or lack the wherewithal to enforce their own regulations. Against that backdrop, a costly and flamboyant project to resuscitate extinct flora and fauna in the name of conservation looks irresponsible: Should we resurrect the mammoth only to let elephants go under? Of course not.

That is not to say that the de-extinction enterprise lacks merit altogether. Aspects of it could conceivably help save endangered species. For example, extinct versions of genes could be reintroduced into species and subspecies that have lost a dangerous amount of genetic diversity, such as the black-footed ferret and the northern white rhino. Such investigations, however, should be conducted under the mantle of preserving modern biodiversity rather than conjuring extinct species from the grave.

38

The author of Passage 1 suggests that the usefulness of de-extinction technology may be limited by the

A) amount of time scientists are able to devote to genetic research.

B) relationship of an extinct species to contemporary ecosystems.

C) complexity of the DNA of an extinct species.

D) length of time that a species has been extinct.

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CONTINUE

46

How would the authors of Passage 2 most likely respond to the "prospect" referred to in line 21, Passage 1?

A) With approval, because it illustrates how useful de-extinction could be in addressing widespread environmental concerns.

B) With resignation, because the gradual extinction of many living species is inevitable.

C) With concern, because it implies an easy solution to a difficult problem.

D) With disdain, because it shows that people have little understanding of the importance of genetic diversity.

47

Which choice would best support the claim that the authors of Passage 2 recognize that the "imagination soars" (line 24, Passage 1) in response to de-extinction technology?

A) Lines 28-30 ("The . . . news")

B) Lines 30-33 ("Yet . . . crisis")

C) Lines 58-59 ("That . . . altogether")

D) Lines 61-63 ("For . . . diversity")

STOP

If you finish before time is called, you may check your work on this section only. Do not turn to any other section.

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