

Name \_\_\_\_\_

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**3<sup>rd</sup> grade**  
**English**  
**Week 7**  
**May 11-15<sup>th</sup>**

# Incredible Icebergs

A Reading A-Z Level S Leveled Book

Word Count: 1,295

LEVELED BOOK • S

## Connections

### Writing

Research the saying "That's just the tip of the iceberg." Write about what this saying means and how it relates to the information presented in this book.

### Math

If an iceberg travels 0.8 kilometers (0.5 mi.) per hour, how long would it take an iceberg to travel 350 kilometers (217 mi.)? Solve the problems two ways.

# Incredible Icebergs

Written by Cynthia Kennedy Henzel

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# Incredible Icebergs



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## Focus Question

How do icebergs affect people?  
How do they affect the environment?

## Words to Know

calve	glaciers
compacts	icebergs
currents	monitors
dense	satellite
endanger	

Page 3: A glacier in Alaska calves into the sea. Soon it will be an iceberg.

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Incredible Icebergs  
Level 5 Leveled Book

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## Correlation

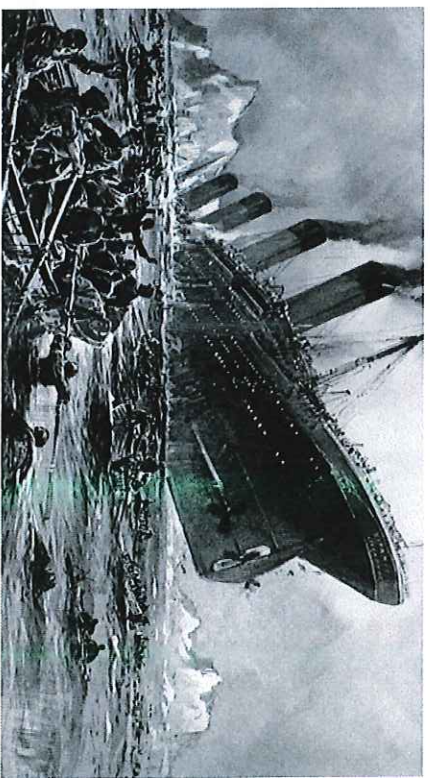
### LEVEL 5

Fountas & Pinnell	○
Reading Recovery	34
DRA	34



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This painting depicts the *Titanic* as it sinks. The iceberg that sank the ship was 15–30 meters (50–100 ft.) high and 61–122 meters (200–400 ft.) long, according to 1912 newspaper estimates.

## Introduction

For centuries, **icebergs** have frightened sailors in cold seas—and for good reason.

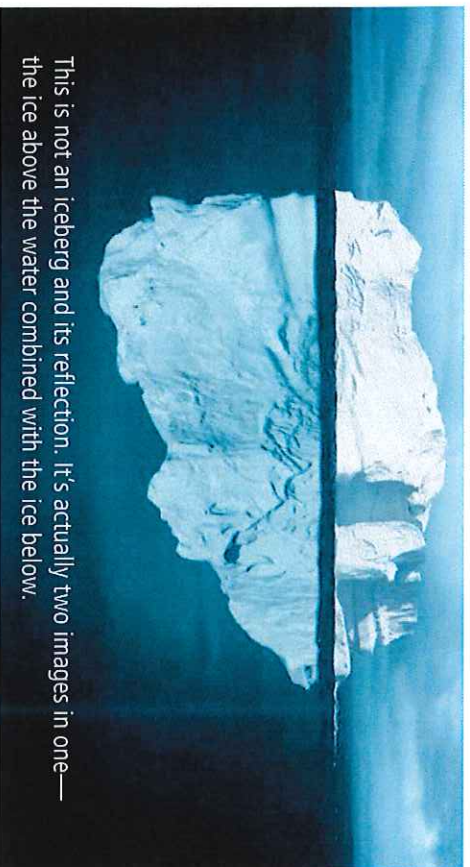
When the ship *Titanic* made its first voyage in 1912, the ship hit an iceberg off the northeastern coast of Canada. The ship sank less than three hours later, taking about 1,500 people with it beneath the icy water.

Icebergs rise from the ocean like mysterious white whales or snowy mountains. They are amazing to see, and yet what we see is just the small part that floats above the water’s surface. That tip only hints at the massive amount of ice beneath the surface, hidden from view.

## All About Icebergs

Icebergs come from the ends of the Earth—Antarctica in the south and the Arctic in the north. Ice sheets and glaciers there form when snow falls, then **compacts** over thousands of years. They move slowly downhill and break off, or **calve**, when they reach the sea. This separation from land creates an iceberg. By definition, an iceberg is floating ice that rises at least 5 meters (16 ft.) above the sea's surface.

Why does it float like that? When water freezes, it develops crystals that spread the same amount of water over a larger area. For this reason, ice is about 10 percent less **dense** than water. It's why about 10 percent of an iceberg floats above the surface.



This is not an iceberg and its reflection. It's actually two images in one—the ice above the water combined with the ice below.

Many Antarctic icebergs are broad and flat like a tabletop because they break off from flat sheets of ice. Many are also huge. The largest known iceberg, B15, was 295 kilometers (183 mi.) long and 35 kilometers (23 mi.) wide. It was large enough for everyone in the world to stand on!

Icebergs in the Arctic are smaller and often pointed. They travel down valleys to the sea.

### Big and Bigger Bergs

Icebergs come in many sizes.

Some of those sizes have surprising names.

**Growlers:** the size of a grand piano

**Bergy bits:** as big as a garage

**Small berg:** as big as a mansion

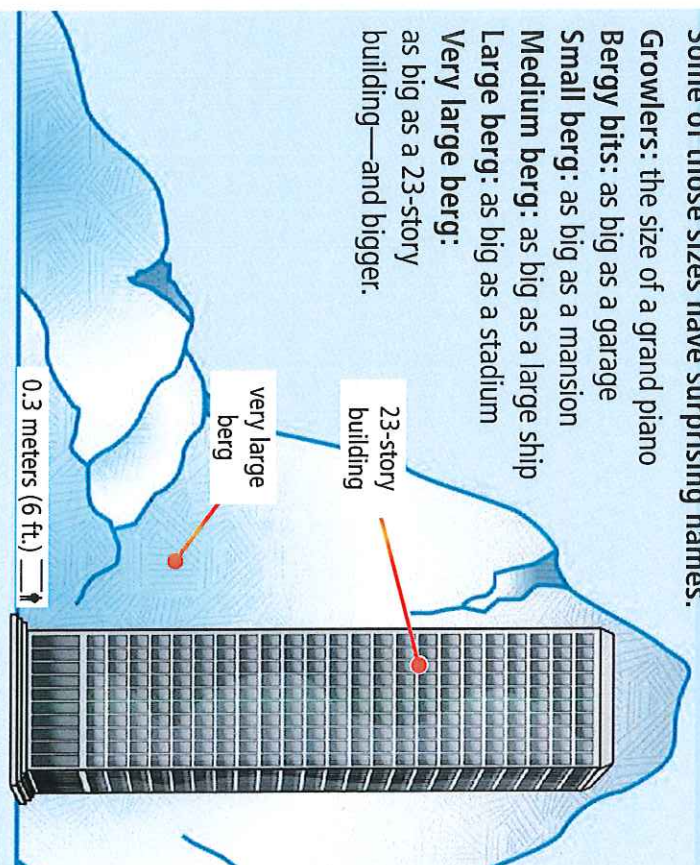
**Medium berg:** as big as a large ship

**Large berg:** as big as a stadium

**Very large berg:**

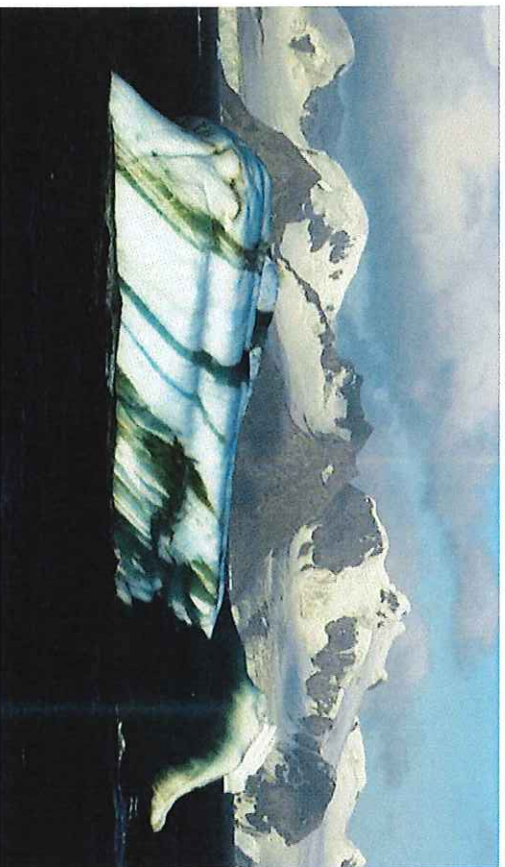
as big as a 23-story

building—and bigger.



Most icebergs are white because they contain air bubbles. Because the air inside is so compacted, those bubbles may hold twenty times more pressure than a car tire! When an iceberg melts, it makes a fizzing sound like soda as ten-thousand-year-old air slowly escapes.

Blue icebergs are made of old ice that has pressed out the air bubbles or of ice that has melted and frozen again. Green icebergs, which are rare, contain organic matter—matter from once-living animals or plants—frozen into the ice.



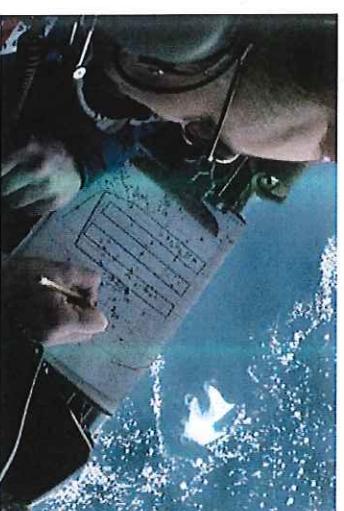
This green- and blue-striped iceberg floats near Antarctica. The different colors appear because the different layers of ice formed in different conditions. Blue stripes are the most common.

### Watch Out!

Because icebergs are so compacted, the ice found in them is much harder than ice from your freezer. It's hard enough to sink a ship, if a ship hits one.

The *Titanic* was not the first ship sunk by an iceberg. Between 1882 and 1890, fourteen ships were lost and forty were damaged by icebergs. The loss of the *Titanic*, however, spurred the United States and a handful of other nations to form the International Ice Patrol (IIP) in 1912.

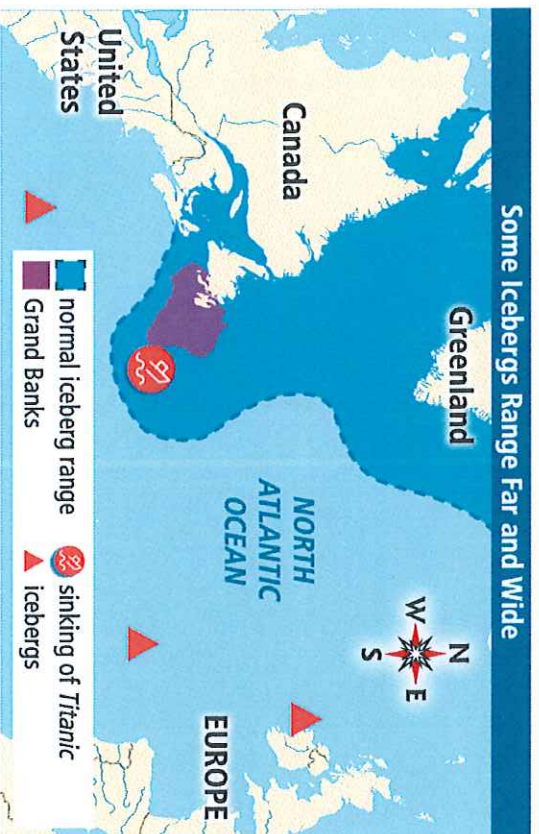
In the North Atlantic, ice season runs from late winter through late summer. This is the period when icebergs break off from Greenland glaciers. Their journey takes several months and moves through a busy shipping area called the Grand Banks. It is the only location in the world where icebergs **endanger** a major shipping route.



From the air, an IIP officer surveys the sea below and notes the location of an iceberg.

The IIP monitors the Grand Banks. It uses airplanes, reports sent from ships, and satellite images to create maps showing where icebergs have been seen. It spots about six hundred icebergs a year. Some years have many more; a record two thousand icebergs were spotted in 1984. Other years—like 1966—have none. No one knows why the number of icebergs changes.

Since the IIP began, no ship that heeded its warnings has hit an iceberg. However, some captains take their chances. Trying to take a shortcut through the icebergs has sunk several ships.



Source: Cambridge University Press

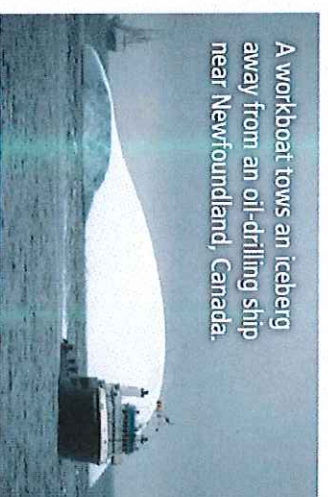
Occasionally, icebergs drift far beyond their normal range. Those shown are three that traveled the farthest.

## The Upside of Icebergs

Icebergs could have some handy uses. Glaciers and ice sheets contain almost 70 percent of the world's fresh water—and it's very pure water. These types of ice formed thousands of years before air and water pollution. Someday, icebergs might supply water to places that need it, like the Middle East or Southern California. The problem is how to move icebergs to where water is needed.

Icebergs can be towed. People working on oil platforms, for instance, lasso icebergs and tow them away from the platforms. If moved into warm waters, though, icebergs melt. People are trying to find a way to insulate icebergs to keep them frozen.

Another idea is to fill tankers—ships designed to carry large amounts of liquid—with iceberg chips, then ship the melted chips across the ocean. However, like towing icebergs, this method is still too expensive to be practical.



**Math Minute**  
A good-sized iceberg contains about 76 billion liters (20 billion gal.) of fresh water. If 1 million people each use about 38 liters (10 gal.) of water a day, how long would the water from one iceberg last?

Answer: 2,000 days

Some companies use pure iceberg water to make things—skin-care products, for instance. First, though, someone must harness the icebergs. Canada now has “iceberg cowboys” who round up icebergs. These icebergs aren’t going to hot places, so cowboys don’t have to worry about them melting. However, iceberg harvesting can be dangerous work: an iceberg can roll over and crush a ship.



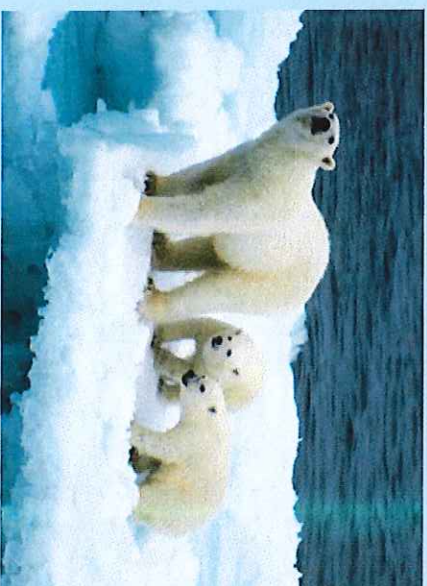
Sometimes icebergs attract admirers. In April 2017, Ferryland, Canada, became a tourist magnet when a 46-meter (150 ft.) iceberg grounded just offshore.

## Scientists Afloat

Along with companies and cowboys, some scientists take an interest in icebergs. Some study to understand how melting icebergs may affect ocean currents—or be affected by them. A big iceberg can spend ten years drifting through the ocean, pulled by tides and deep ocean currents. It may break into pieces as it collides with other icebergs or ice shelves. Finally, most will drift into warmer water and melt.

## Animals Afloat

Arctic seals rely on icebergs as refuge from predators and as a spot to give birth. Polar bears hunt Arctic seals, so they spend time on icebergs, too. In fact, as many as twenty polar bears were observed living on an iceberg off the Canadian Arctic coast.



A mother and two cubs travel on a drifting iceberg near Russia.





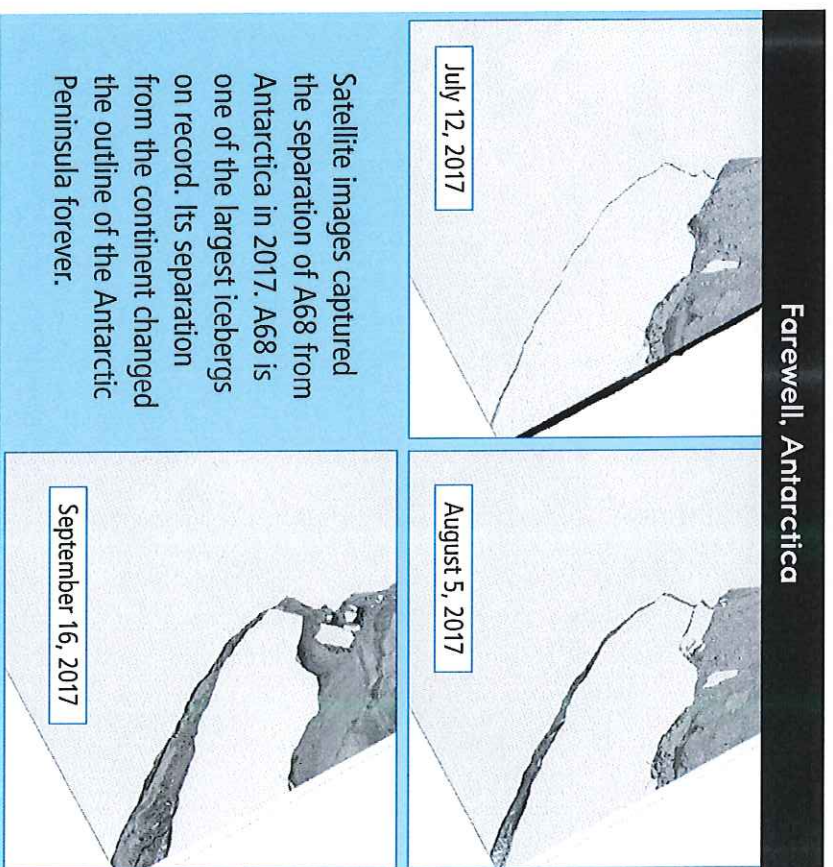
Two scientists drag a sled across their test iceberg, named Chipp.

Today, the ice in the Arctic and Antarctic is shrinking because Earth is getting warmer. More icebergs are calving. In order to better understand this melting process, one team of scientists landed on an iceberg to study it.

In February 2017, another team of scientists flying over Antarctica photographed a rift, or crack, in an ice shelf. An ice shelf is a large sheet of ice that is attached to land but sits in the water. That July, the cracked shelf broke off from the continent. It formed A68, an iceberg almost the size of the U.S. state of Delaware.

## Do You Know?

On average, icebergs travel slower than most people walk.



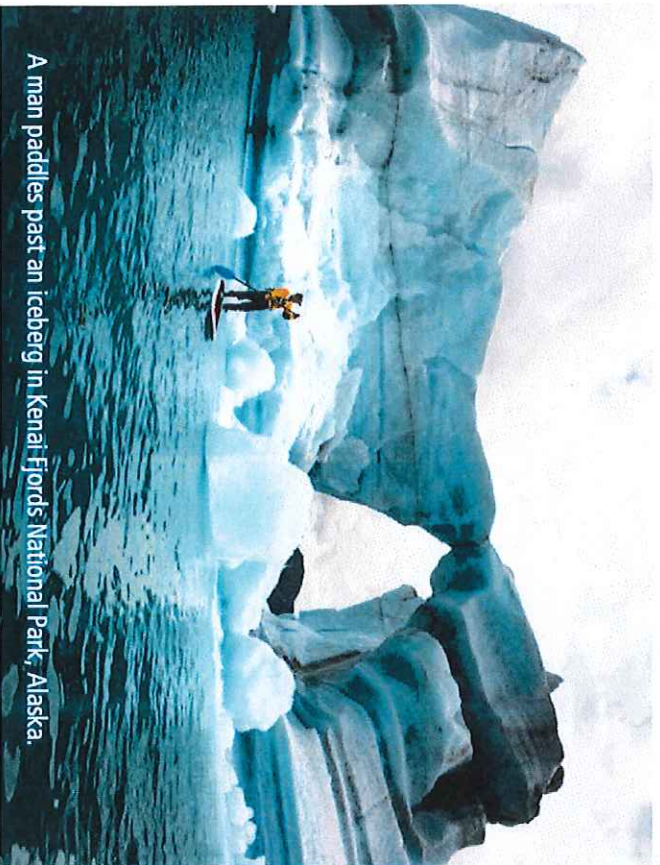
Farewell, Antarctica

Satellite images captured the separation of A68 from Antarctica in 2017. A68 is one of the largest icebergs on record. Its separation from the continent changed the outline of the Antarctic Peninsula forever.

In the short term, calving of icebergs like A68 adds little to rising sea levels. That's because most of the ice is already beneath the water when the iceberg breaks off. However, ice sheet calving speeds the movement of glaciers off the land, and glacier ice moving into the sea makes sea levels rise much more. This, in turn, floods coasts around the world. It's one reason scientists study icebergs: to help predict future sea level rise and help humans plan for it.

## Conclusion

Icebergs have troubled us since people first set sail through chilly waters, but our relationship with them has changed. Today, more people worry about what melting icebergs mean for coastal cities than for sailors at sea. We may come to rely on these giants of nature for fresh drinking water—or some other use we haven't even dreamed of yet. As research continues, we may find that what we know about them today is really just the tip of the iceberg.



A man paddles past an iceberg in Kenai Fjords National Park, Alaska.

## Glossary

- calve** (*v.*) to break off and separate from an ice mass (p. 5)
- compacts** (*v.*) presses together to become denser and tighter (p. 5)
- currents** (*n.*) waters that flow in a certain direction (p. 12)
- dense** (*adj.*) having parts that are crowded or closely packed together; compact (p. 5)
- endanger** (*v.*) to put someone or something in a harmful or dangerous situation (p. 8)
- glaciers** (*n.*) large bodies of accumulated ice and compacted snow that are found year-round and that slowly move downhill (p. 5)
- icebergs** (*n.*) large pieces of ice that have broken away from a glacier and float in the sea (p. 4)
- monitors** (*v.*) observes or checks the progress of something over time (p. 9)
- satellite** (*n.*) a natural or human-made object that orbits Earth or another object in space (p. 9)

Name \_\_\_\_\_ Date \_\_\_\_\_

Instructions: Read each question carefully and choose the best answer.

1. Icebergs have frightened sailors for centuries because \_\_\_\_\_.
  - (A) they have appeared out of nowhere
  - (B) they have grown larger over the centuries
  - (C) they have formed in warm and cold waters
  - (D) they have sunk numerous ships
  
2. Ice sheets and glaciers form in Antarctica and the Arctic after \_\_\_\_\_.
  - (A) ice breaks
  - (B) ice melts
  - (C) snow compacts
  - (D) snow melts
  
3. Approximately how much of an iceberg floats above the water's surface?
  - (A) 50 percent
  - (B) 10 percent
  - (C) 40 percent
  - (D) 20 percent
  
4. How do Antarctic icebergs compare to Arctic icebergs?
  - (A) Antarctic icebergs are smaller and formed from flat sheets of ice.
  - (B) Antarctic icebergs are larger and formed from flat sheets of ice.
  - (C) Antarctic icebergs are smaller and travel down valleys to the sea.
  - (D) Antarctic icebergs are larger and travel down valleys to the sea.
  
5. What makes a green iceberg unique?
  - (A) It contains ice that has melted and frozen again.
  - (B) It contains old ice that has pressed out the air bubbles.
  - (C) It contains organic matter frozen into the ice.
  - (D) It contains ice from the coldest parts of the Earth.

Quick Check continued on following page

Name \_\_\_\_\_ Date \_\_\_\_\_

6. When a glacier **calves**, it \_\_\_\_\_.
- Ⓐ breaks off and separates from an ice mass
  - Ⓑ forms crystals below the sea's surface
  - Ⓒ floats into warm water and begins to melt
  - Ⓓ melts and refreezes to form blue stripes on the surface
7. What is the purpose of the International Ice Patrol (IIP)?
- Ⓐ to photograph icebergs and publish the pictures in a monthly magazine
  - Ⓑ to record the number of icebergs there are in the world
  - Ⓒ to study icebergs and the wildlife that live on them
  - Ⓓ to monitor the Grand Banks for icebergs
8. Based on this text, if an iceberg sank a ship in the Grand Banks, what conclusion might you draw about the captain of the ship?
- Ⓐ The captain did not follow the warnings of the IIP.
  - Ⓑ The captain took a shortcut through waters near Southern California.
  - Ⓒ The captain was trying to carry iceberg chips across the ocean.
  - Ⓓ The captain did not take the shortcut through the Grand Banks.
9. What is the author's point of view about icebergs?
- Ⓐ Icebergs create both worry and wonder.
  - Ⓑ Icebergs create much concern for sailors at sea.
  - Ⓒ Icebergs result in more benefits than damages.
  - Ⓓ Icebergs are easy to track because the number of them stays the same each year.

Name \_\_\_\_\_ Date \_\_\_\_\_

10. The movement and melting of icebergs can cause \_\_\_\_\_.

- Ⓐ air temperatures to cool
- Ⓑ sea levels to rise
- Ⓒ less calving
- Ⓓ more home for Arctic seals

11. **Extended Response:** Name one potential benefit and one potential risk an iceberg can cause to humans.

12. **Extended Response:** Why did the author write this book about icebergs? What evidence from the text supports your answer?

*Quick Check continued on following page*

1 Look at the table below.

Mountain	Height (ft)
Trivor	24,859
Kongur Tagh	25,095
Shispare	24,970

Which compares the height of Shispare to the height of Trivor?

- A 24,970 < 24,859    C 25,095 > 24,859  
 B 24,970 < 25,095    D 24,859 < 24,970

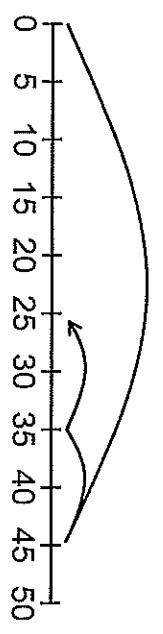
20

2 A box contains 4 packages of crackers and 6 tubs of cheese. There are 32 crackers in each package and 5 ounces of cheese in each tub. How many crackers are in the box?

- F 192    G 128    H 160    J 118

46

4 Hannah drew the model below.

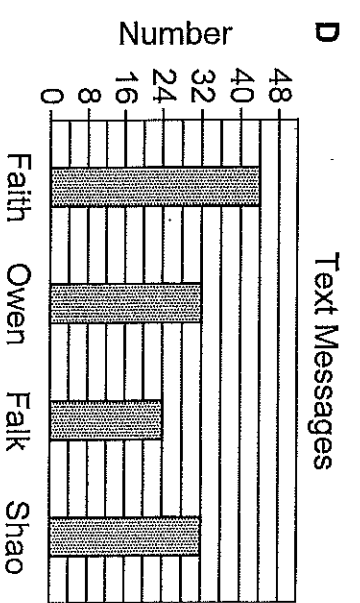
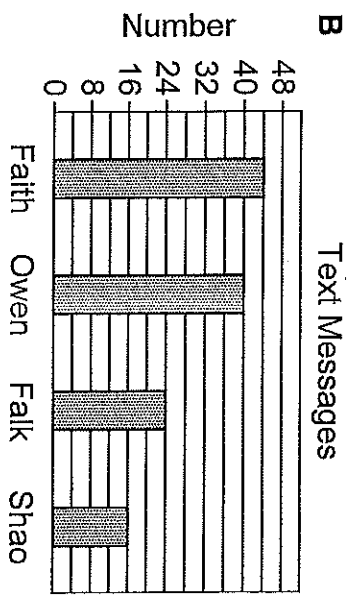
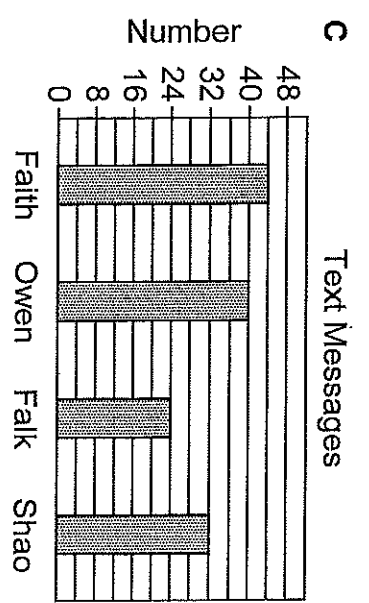
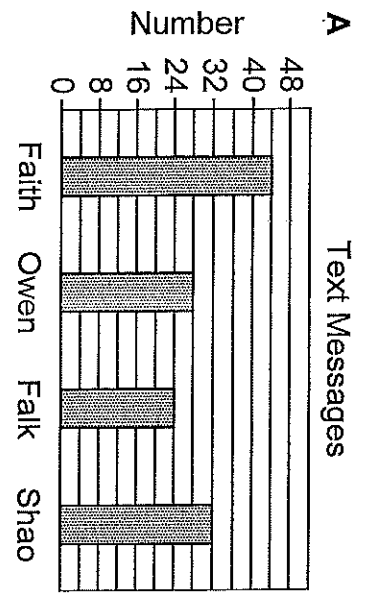


The model best represents –

- F 45 minus 10 minus 10  
 G 25 plus 35  
 H 45 minus 35 minus 25  
 J 45 minus 35

5A

3 Faith sent 44 text messages yesterday. Owen sent 4 fewer messages than Faith. Falk sent 24 messages. Shao sent 8 more messages than Falk. Which graph represents this information?



5 The table shows the number of days that are equivalent to different numbers of weeks.

Weeks	3	7	12	?
Days	21	49	84	?

Which could complete the table?

- A 

13	78
----	----

    B 

14	98
----	----

    C 

13	85
----	----

    D 

14	119
----	-----

5E

6 Which figure could be a face of a cube?

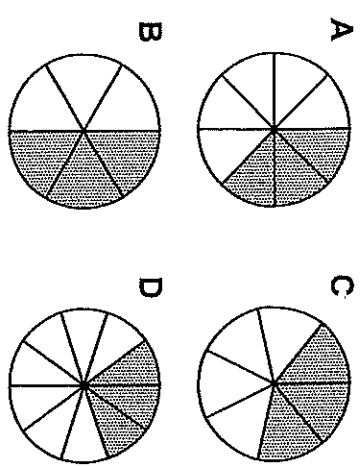
- F    H    G    J

6A

1 Mark wrote the expression below.

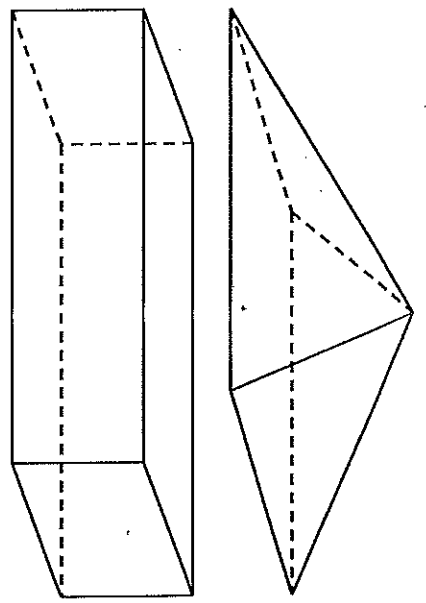
$$\frac{1}{8} + \frac{1}{8} + \frac{1}{8}$$

Which model represents the expression?



3D

2 Look at these 3-D figures.

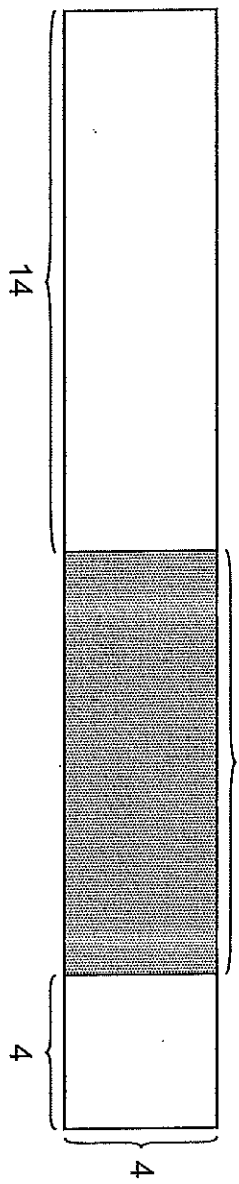


What is the difference between the numbers of edges on these figures?

- F 1    G 6    H 3    J 4

6A

4 Look at the model below.



What is the area of the gray rectangle in square units? F 44    G 56    H 30    J 40

6C

5 When Phillip entered a shopping mall he had \$274. He bought a skateboard for \$49 and a helmet for \$24. In dollars, how much money did Phillip have after buying the two items?

①	①	①	①	①	①
②	②	②	②	②	②
③	③	③	③	③	③
④	④	④	④	④	④
⑤	⑤	⑤	⑤	⑤	⑤
⑥	⑥	⑥	⑥	⑥	⑥
⑦	⑦	⑦	⑦	⑦	⑦
⑧	⑧	⑧	⑧	⑧	⑧
⑨	⑨	⑨	⑨	⑨	⑨

4A

6 There were 238 bottles of water in a large cooler at a party. The adults took 143 of the bottles and the children took 89 of the bottles. Which expression shows the best way to estimate the number of bottles that were left in the cooler?

- F 230 - 100 - 90    H 240 - 130 - 100  
 G 240 - 140 - 90    J 230 - 140 - 50

4B

3 Yolanda walks 42 miles each week. The box in the equation below represents the number of miles she walks each day.

$$42 \div 7 = \square$$

Which number sentence can help Yolanda find the number that goes in the box?

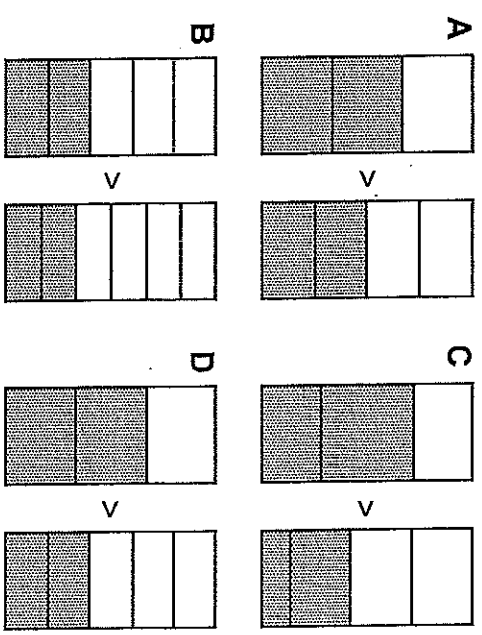
- A  $42 - 7 = 35$     C  $7 \times 7 = 49$   
 B  $6 \times 7 = 42$     D  $21 \div 7 = 3$

4J

7 The table shows the weights of Mr. Lee's truck and Ms. Hân's truck.

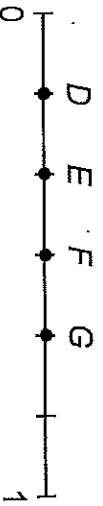
Mr. Lee's truck	$\frac{2}{3}$ ton
Ms. Hân's truck	$\frac{2}{4}$ ton

Mr. Lee believes his truck is heavier than Ms. Hân's truck. Which model justifies his conclusion?



3H

1 Anderson placed points D, E, F, and G on the number line below.



Point G represents which fraction?

- A  $\frac{4}{5}$       C  $\frac{2}{5}$
- B  $\frac{4}{6}$       D  $\frac{2}{4}$

3B

4 Federico wrote the 4-digit number shown here.

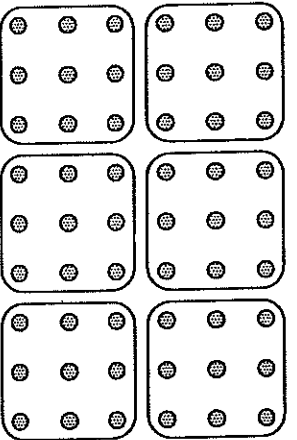
9, 933

Which statement is true?

- F The value of the 9 in the thousands place is 1,000 times the value of the 9 in the hundreds place.
- G The value of the 9 in the hundreds place is 100 times the value of the 9 in the thousands place.
- H The value of the 3 in the tens place is 10 times the value of the 3 in the ones place.
- J The value of the 3 in the ones place is 10 times the value of the 3 in the tens place.

2B

2 Eustacia drew the gel below to help her solve a math problem.



Which number sentence does the model represent?

- F  $54 \div 6 = 9$       H  $48 \div 6 = 9$
- G  $6 \times 9 = 56$       J  $7 \times 6 = 42$

5B

5 Each of the 23 students in Mrs. Lang's class hang a backpack on a hook in the back of the classroom. Each backpack has 2 large pockets and 5 small pockets. What is the total number of pockets the backpacks have?

(A)	(B)	(C)	(D)	(E)
(1)	(7)	(2)	(1)	(6)
(2)	(1)	(2)	(2)	(2)
(3)	(3)	(3)	(3)	(3)
(4)	(4)	(4)	(4)	(4)
(5)	(5)	(5)	(5)	(5)
(6)	(6)	(6)	(6)	(6)
(7)	(7)	(7)	(7)	(7)
(8)	(8)	(8)	(8)	(8)
(9)	(9)	(9)	(9)	(9)

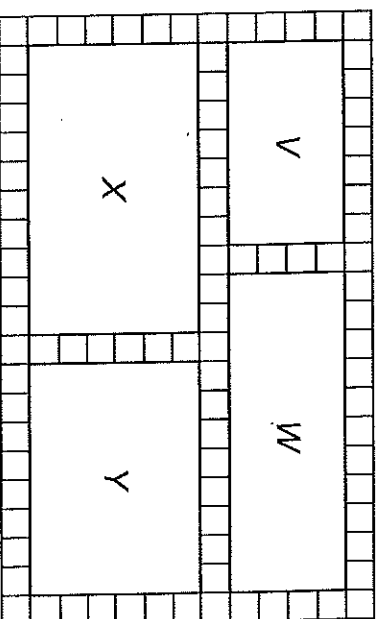
4K

6 Hunter placed a pumpkin on a scale. The needle on the scale pointed to the number 24. The pumpkin was likely –

- F 24 inches in length
- G 24 liters in volume
- H 24 cups in capacity
- J 24 pounds in weight

7D

3 Look at rectangles V, W, X, and Y on the grid below.

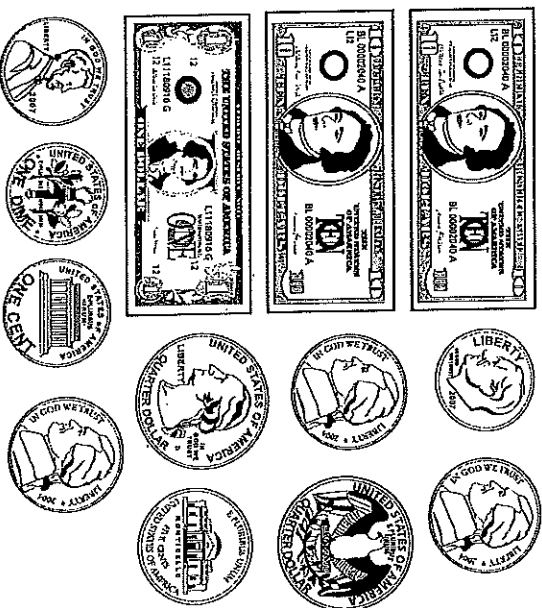


Which rectangle has an area of 48 square units?

- A V      B W      C X      D Y

6C

7 Marlina used all of the bills and coins below to buy a book.



How much did the book cost?

- A \$21.83      C \$21.92
- B \$21.88      D \$22.01

4C