SCHOLASTIC News

Edition 5/6

Would You Visit the Titanic?

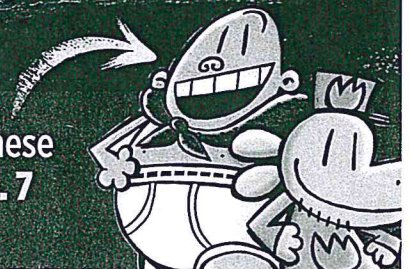Explorers are planning a new trip to the world's most famous shipwreck. Page 2

INSIDE THIS ISSUE

Does he belong in a zoo? **p. 4**

Meet the creator of these popular characters. **p. 7**

JOURNEY

Tourists are planning to visit the world's most famous shipwreck before it disappears.

As You Read, Think About: Why are people fascinated by the *Titanic* and its artifacts?

Ever since she was a little girl, Renata Rojas has had one dream: to visit the shipwreck of the RMS *Titanic*. Like countless other people, Rojas is fascinated by one of the worst disasters in history.

On April 10, 1912, the *Titanic* set sail from England on its first voyage. It made headlines as the biggest, fastest ship of its day. Many people believed it was unsinkable.

But four days into its journey, the ship slammed into an iceberg. In just a few hours, it sank to the bottom of the Atlantic Ocean. More than 1,500 passengers and crew members died in the icy ocean waters.

A company called OceanGate is planning **expeditions** to the famous wreckage next summer. Rojas has signed up to be one of a group of tourists who will assist scientists as they study what's left of the ship—before it disappears.

"I'm going to be part of history," says Rojas.

A Titanic Discovery

The final resting place of the *Titanic* was a mystery for decades. Finally, explorer Robert Ballard discovered the wreck in 1985. About 200 people have journeyed to see it since then.

Visitors to the *Titanic* have included archaeologists, filmmakers, and crews sent to recover items from the ship. They have collected thousands of artifacts, from dishes and menus to passengers' wallets, tickets, and even pajamas.

These items help us learn more about the doomed vessel—and the people who went down with it. Are more objects yet to be discovered?

Rotting Away

There may not be much time left to find out. Some experts say what remains of the ship might be gone within 20 years.

For more than a century, ocean currents have slowly

The *Titanic* had only enough lifeboats for about half its passengers and crew.

After hitting the iceberg, the ship took on more than 400 tons of water per minute.

WORDS TO KNOW

expeditions *noun, plural.* journeys with specific purposes, such as exploration

deteriorating *verb.* falling apart or becoming worse over time

This is an illustration of the sunken *Titanic*.

TO THE

TITANIC

From Ship to Shipwreck

Here's what experts believe happened during the final hours of the *Titanic*'s tragic voyage.

eroded, or worn away, the *Titanic*. Experts suspect that further damage was caused by explorers who bumped their small deep-sea vehicles, called submersibles, into the ship.

The most alarming threat, however, is metal-munching bacteria. These microscopic organisms are eating away at the ship, creating rusty, icicle-like formations called rusticles.

In August, explorers visited the wreckage for the first time in several years. They were shocked by what they saw. One of the most famous sections of the ship, the captain's quarters, had completely collapsed.

Into the Deep

OceanGate's goal is to analyze just how fast the *Titanic* is **deteriorating**. Crew members and tourists like Rojas will squeeze into a tiny submersible. They'll descend more than 12,000 feet into the pitch-black ocean. The trip will take about two hours in each direction.
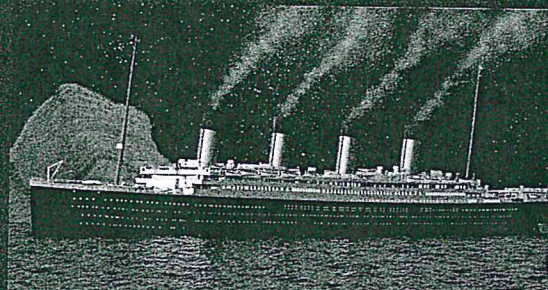
April 14, 1912
11:40 p.m.

The *Titanic* slams into an iceberg, tearing holes in the side of the ship. Within minutes, the ship begins to flood and sink.
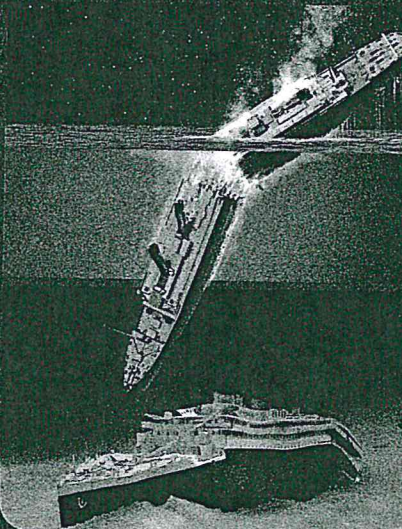
April 15, 1912
2:19 a.m.

Crack! The weight of the water causes the ship to break in half. The bow, or front, plunges underwater first. The stern, or back, soon follows.

April 15, 1912
2:21 a.m.

The pieces float down more than 2 miles to the bottom of the Atlantic Ocean.

The team will use high-tech scanning equipment to create an updated 3-D map of the wreck. Scientists will compare the new images with older ones to try to determine how much longer the famous shipwreck will last.

Rojas says there's another key reason for the expedition. "We shouldn't forget about the disaster or the people who died," she says. "Visiting the *Titanic* helps us remember."
—by Tricia Culligan

This shoe was found in the *Titanic* wreck.

WHAT DO YOU THINK?

More than 5,500 artifacts have been removed from the *Titanic*. Some people say it's disrespectful to take these items, because they're part of a gravesite. But others argue that preserving these objects is a good way for us to honor those who died.

scholastic.com/sn56   3
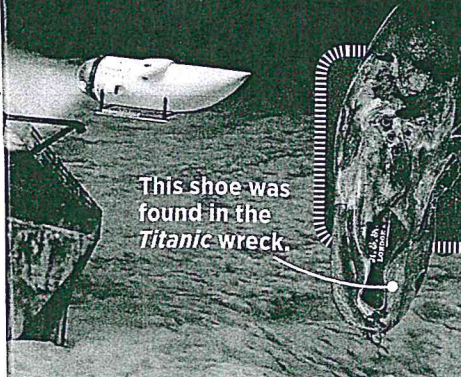
Should This LION

Three fuzzy lion cubs roll around in the high grass. They playfully paw at each other while their mother rests in the shade nearby. The area might be mistaken for the plains of Africa. Well, except for the giggling children waving at the animals through a glass wall while their parents snap photos. You guessed it—these lions are in a zoo.

For decades, zoo animals were often kept in tiny cages with concrete floors. But in recent years, many zoos have spent millions of dollars to build bigger, more open enclosures that resemble the animals' natural habitats.

Despite these improvements, critics of zoos say there's nothing natural about keeping animals locked up for our entertainment. They argue that the animals belong in the wild.

Here are two views about zoos.

WORDS TO KNOW

conservation *noun.* the protection of animals, plants, and natural resources

captivity *noun.* the state of being held or kept under control, as in a cage or a tank

GO ONLINE!
Discover the long history of zoos.

This lion cub is one of three brothers born at the Naples Zoo in Florida last spring.
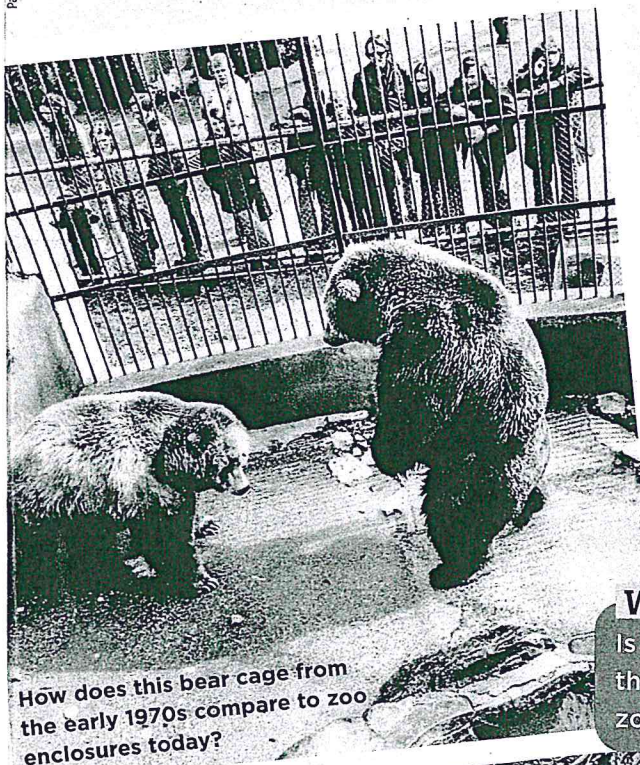
CUB Be in a ZOO?

YES! **Zoos teach us about animals.**
Today, zoos are more popular than ever. More than 185 million people visited U.S. zoos last year. For most people, going to a zoo is their only chance to see wild animals up close.

"Most people won't have the opportunity to travel to Asia or Africa to see orangutans or elephants," says Rob Vernon. He works for the Association of Zoos and Aquariums (AZA), which makes sure zoos meet high standards of animal care.

But zoos aren't just places to see animals. The best zoos also educate visitors about dangers animals face in the wild, such as habitat loss and illegal hunting. Also, some of the money zoo visitors spend on tickets and memberships goes toward protecting animals in the wild. Zoos spend roughly $230 million a year on animal **conservation**, according to the AZA.
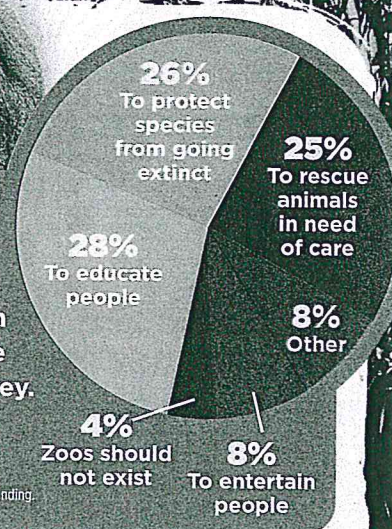
BY THE NUMBERS
What's the main reason zoos exist? That's what more than 1,000 Americans were asked in a recent survey. Which answer do you most agree with?

Note: Figures do not add up to 100 percent due to rounding.
Sources: Statista; YouGov

- 26% To protect species from going extinct
- 25% To rescue animals in need of care
- 28% To educate people
- 8% Other
- 4% Zoos should not exist
- 8% To entertain people

NO! **Zoos can't compare to the wild.**
Critics argue that even the biggest zoo enclosures don't provide the same amount of space an animal has in its natural habitat. For example, wild polar bears might walk or swim hundreds of miles a day. In zoos, they often live in an area about the size of a school gym.

Many animals also need more company. In the wild, elephants live in large close-knit family groups. But in zoos, they often live in pairs—or alone. More than 25 U.S. zoos have decided to change that. They have sent their elephants to sanctuaries, where the animals live in larger groups with more room to roam.

Life in **captivity** can be difficult for large animals. Many show signs of being lonely, bored, and unhappy.

"When you see a tiger pacing back and forth, that is a very stressed tiger," says Lori Marino, a scientist who studies animal behavior.

—by Jennifer Li Shotz and Laura Anastasia

How does this bear cage from the early 1970s compare to zoo enclosures today?

WHAT'S YOUR OPINION?
Is it OK to keep animals in zoos? Use evidence from the article to prepare for a class discussion about zoos. You can cast your vote at **scholastic.com/sn56**.

SLIME in Space

What do astronauts do for fun? Lately, they've been playing with slime!

Right now, six astronauts are living more than 200 miles above Earth on a giant laboratory called the International Space Station (ISS). Astronauts from different countries stay on the ISS for months at a time. They perform experiments that help us learn more about space.

In July, a spacecraft delivered six pouches of green slime to the ISS. Since then, the astronauts on board have been blowing slime bubbles, playing slime table tennis, and even spraying the green goo at each other.

This may sound like a blast—but there's plenty of science involved too. In space, the pull of gravity is much weaker, causing objects (and people!) to float. Low gravity also has a strange effect on liquids. Water, for example, separates into tiny floating spheres. The astronauts on the ISS want to see if slime reacts differently too.

We'll know soon enough. The astronauts are taking videos of their slime time to share with kids back on Earth. Scientist Mark Weislogel planned the gooey experiments. "It's about time an astronaut got slimed!" he says.

PICTURE THIS

The World's UGLIEST DOG

Congratulations to Scamp the champ! The little mutt beat out 18 other pooches to win this year's World's Ugliest Dog Contest in Petaluma, California. The goal of the competition is to show people that even unusual-looking dogs can make great pets.

Scamp's owner adopted him from an animal shelter in 2014. These days, Scamp works as a therapy dog. He cheers people up at a senior citizen center and visits a school, where kids practice reading aloud to him.

DAV PILKEY DOES GOOD

by Scholastic Kid Reporter
Marley Alburez

Last month, I sat down with Dav Pilkey, the author and illustrator of the best-selling Captain Underpants and Dog Man series. He was about to begin his Do Good tour. He's traveling the world to talk to readers about making a positive difference in other people's lives.

I was surprised at how humble Pilkey is about his success. He was also very open about how he struggled with ADHD and dyslexia, which made it hard for him to read and focus in school.

Marley Alburez: How did your childhood influence the characters you've created?
Dav Pilkey: I felt like a bit of a misfit as a kid. I was always getting sent out in the hallway, and I felt like I was very alone sometimes. That influenced my characters because there is a theme of loneliness in a lot of them—they sometimes feel like misfits.

MA: What can you tell us about your latest title, *Dog Man: For Whom the Ball Rolls*?
DP: Like the other Dog Man books, it focuses on humor and friendship. But there are also some more serious themes, like the importance of doing good. Not just *being* a good person but actually turning that into an action word and *doing* good as well.

Petey is trying to become a better version of himself, and Lil Petey is always trying to encourage him. Kids are really identifying with that—it's what inspired the Do Good campaign.

MA: Why is it important to read about characters who are caring and kind?
DP: There are bullies out there, and there are people who are selfish and rude and mean sometimes. Kids really love to read about kindness because deep down inside, everybody wants to be kind and good.

MA: Would you rather be Dog Man or Captain Underpants?
DP: (*laughs*) I would much rather be Dog Man because he's always trying to do the right thing. He's always making ridiculous mistakes, but usually they end up OK for him. I think that says a lot about me!

Here's Dav Pilkey in fourth grade—two years after he created Dog Man and Captain Underpants!

What character from a book would you want to be? Why?

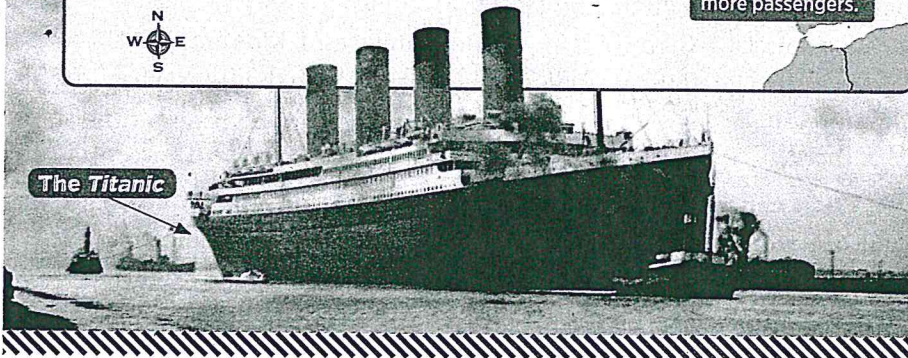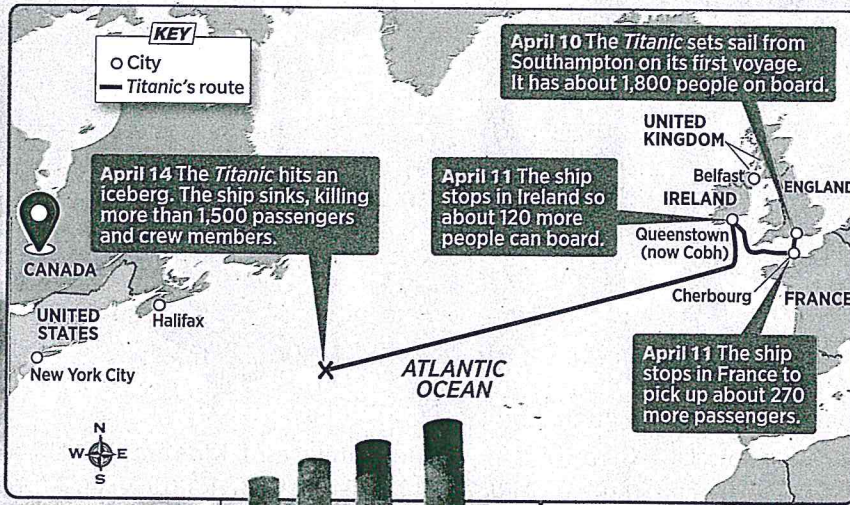Note: The interview was edited and condensed by the editors of *Scholastic News*.

NEWS MAP

A Doomed Voyage

The *Titanic* was on its way to New York City when it sank to the bottom of the Atlantic Ocean in 1912. This map shows the route the ship took.

KEY
○ City
— *Titanic's* route

April 10 The *Titanic* sets sail from Southampton on its first voyage. It has about 1,800 people on board.

April 14 The *Titanic* hits an iceberg. The ship sinks, killing more than 1,500 passengers and crew members.

April 11 The ship stops in Ireland so about 120 more people can board.

April 11 The ship stops in France to pick up about 270 more passengers.

UNITED KINGDOM
Belfast
IRELAND
ENGLAND
Queenstown (now Cobh)
Cherbourg
FRANCE

CANADA
UNITED STATES
Halifax
New York City
ATLANTIC OCEAN

N W E S

The *Titanic*

1 In which city did about 120 people board the ship?
Ⓐ Cherbourg
Ⓑ Queenstown
Ⓒ Belfast
Ⓓ New York City

2 Ships from the city of Halifax came to rescue *Titanic* survivors. Where is Halifax located?
Ⓐ United States
Ⓑ France
Ⓒ Canada
Ⓓ United Kingdom

WRITE ABOUT IT! Using facts from this map and the cover story, write an article for your local newspaper about the sinking of the *Titanic*.

Journey to the *Titanic* pages 2-3

1 What is the article mainly about?
Ⓐ how the *Titanic* sank
Ⓑ the discovery of the *Titanic* wreck
Ⓒ a planned expedition to see the *Titanic* before it disappears
Ⓓ why rust is growing on the *Titanic*

2 According to the article, what is one reason Renata Rojas wants to visit the *Titanic* wreck?
Ⓐ to remember people who died in the disaster
Ⓑ to learn more about why the ship sank
Ⓒ to ride in a submersible
Ⓓ to find more artifacts

3 The findings of a recent expedition to the *Titanic* best support which of these ideas?
Ⓐ The *Titanic* was the biggest ship of its day.
Ⓑ The *Titanic* wreck is deteriorating.
Ⓒ There are many more artifacts in the wreck.
Ⓓ People should not take artifacts from the wreck, because it is a gravesite.

Should This Lion Cub Be in a Zoo? pages 4-5

4 Which detail from the article best supports the idea that zoos help animals?
Ⓐ "Zoos spend roughly $230 million a year on animal conservation."
Ⓑ "Zoos are more popular than ever."
Ⓒ "Many animals also need more company."
Ⓓ "You guessed it—these lions are in a zoo."

5 Lori Marino would most likely agree that ____.
Ⓐ zoos are the best places to see animals
Ⓑ elephants prefer to live alone
Ⓒ even large enclosures are too small for animals
Ⓓ it's less stressful to live in a zoo than in the wild

6 Which phrase best helps you understand the meaning of *captivity*?
Ⓐ "protecting animals in the wild"
Ⓑ "keeping animals locked up"
Ⓒ "the plains of Africa"
Ⓓ "more room to roam"

FIND THIS SYMBOL It's hidden somewhere in each issue this year. Mark the country it appears next to on your **"Around the World With *Scholastic News*"** poster.

SCHOLASTIC News

Name: _____

Close-Reading Questions

Refer to "Journey to the *Titanic*" to respond to the questions below. Reread the article to find details that support your answers. Remember to write in complete sentences.

1. How does Renata Rojas feel about visiting the *Titanic*?

_____

_____

_____

_____

_____

2. Why is the *Titanic* deteriorating?

_____

_____

_____

_____

_____

_____

3. What is the purpose of the sidebar "From Ship to Shipwreck"?

_____

_____

_____

_____

_____

_____

Name: _____

Write About It!

As you read "Journey to the *Titanic*," think about the question below. Then write a paragraph to express your opinion. Include details from the article to support your response.

Should artifacts be removed from the *Titanic*?

INTRODUCTION
· Introduce the issue and state your opinion.

Over the years, _____

_____

I believe _____

_____

_____

REASON 1

One reason is _____

_____

For example, _____

_____

REASON 2

Additionally, _____

_____

_____

_____

COUNTER-ARGUMENT
List a reason from the other side and respond to it.

Some say _____

_____

However, _____

_____

CONCLUSION
Restate your opinion using different words.

In conclusion, _____

_____

_____

_____

Name: _____

Let's Discuss It!

Read the debate "Should This Lion Cub Be in a Zoo?" Then get ready to participate in a class discussion. Use this page to help you express your ideas and take notes during the discussion.

▶ **Is it OK to keep animals in zoos?**

I think _____

▶ **Support your opinion with reasons and evidence.**

"According to …"
"___ argues that …"
"The article states …"
"For example, …"

Reasons	Evidence

▶ **Listen and take notes on three classmates' ideas during the discussion.**

- _____
- _____
- _____

"I disagree with ___'s argument that …"
"It may be true that ___, but …"
"However, …"

▶ **Think about an opposing view and respond to it.**

_____

Name: _____

Close-Reading Questions

Refer to "Should This Lion Cub Be in a Zoo?" to respond to the questions below. Reread the article to find details that support your answers. Remember to write in complete sentences.

1. What improvements have zoos made in recent years?

_____
_____
_____
_____
_____
_____
_____

2. According to Lori Marino, how does living in captivity affect animals? Include an example.

_____
_____
_____
_____
_____
_____
_____
_____
_____

3. What is the purpose of the graph on page 5? Why do you think the authors included it?

_____
_____
_____
_____
_____
_____
_____

Name: _____

Be a Quiz Whiz!

For each question below, fill in the circle next to the correct answer.

Journey to the *Titanic* Pages 2-3

1 Which is a cause of the others?
- Ⓐ The *Titanic* sank to the bottom of the ocean.
- Ⓑ The *Titanic* took on more than 400 tons of water per minute.
- Ⓒ More than 1,500 people died.
- Ⓓ The *Titanic* crashed into an iceberg.

2 Experts will study how fast the *Titanic* is deteriorating by ___.
- Ⓐ analyzing the ship's artifacts
- Ⓑ scanning and mapping the wreck
- Ⓒ studying marine creatures in the wreck
- Ⓓ removing parts of the wreck to study them

3 Many people lost their lives when the *Titanic* sank because ___.
- Ⓐ the ship took a long time to sink
- Ⓑ there were only enough lifeboats for half of the passengers and crew
- Ⓒ passengers tried to save their belongings
- Ⓓ the iceberg split into two halves

Should This Lion Cub Be in a Zoo? Pages 4-5

4 **Part A** Which of the following is an argument against keeping wild animals in a zoo?
- Ⓐ Zoos are more popular than ever.
- Ⓑ Some animals need more company.
- Ⓒ Many zoos have redesigned their cages.
- Ⓓ Zoos teach visitors about animals.

5 **Part B** Which detail best supports the answer to question 4?
- Ⓐ "For decades, zoo animals were often kept in tiny cages with concrete floors."
- Ⓑ "More than 185 million people visited U.S. zoos last year."
- Ⓒ "The best zoos also educate visitors about dangers animals face in the wild, such as habitat loss and illegal hunting."
- Ⓓ "In the wild, elephants live in large close-family knit groups."

6 Which phrase helps you understand the meaning of *conservation*?
- Ⓐ "dangers animals face"
- Ⓑ "illegal hunting"
- Ⓒ "protecting animals"
- Ⓓ "in the wild"

Slime in Space Page 6

7 Why are astronauts on the International Space Station playing with slime?
- Ⓐ to get some exercise
- Ⓑ to keep from getting bored
- Ⓒ to study how slime acts in space
- Ⓓ to create funny videos for kids

The World's Ugliest Dog Page 6

8 Which happened to Scamp first?
- Ⓐ He beat out 18 other dogs to win the World's Ugliest Dog Contest.
- Ⓑ His current owner adopted him.
- Ⓒ He became a therapy dog working at a senior citizen center.
- Ⓓ An animal shelter took him in.

Dav Pilkey Does Good Page 7

9 Which of the following was a major influence on Dav Pilkey's work?
- Ⓐ his worldwide "Do Good" tour
- Ⓑ feeling left out and lonely as a kid
- Ⓒ his childhood friendships
- Ⓓ being bullied in school

10 Which detail best explains why Pilkey writes about characters who do good?
- Ⓐ "He's traveling the world to talk to readers about making a positive difference in other people's lives."
- Ⓑ "Like the other Dog Man books, it focuses on humor and friendship."
- Ⓒ "Kids really love to read about kindness because deep down inside, everybody wants to be kind and good."
- Ⓓ "I would much rather be Dog Man because he's always trying to do the right thing."

Day 1-Math: Data Analysis-Mean, Median, Mode, Range

REVIEW VOCABULARY:
1. Mean: Average. Add all the data up and divide by the number of pieces of data in the set.
2. Median: Middle number when all data is put in order. If there are two middles, you find their average.
3. Mode: The number that occurs the most.
4. Range: The smallest number subtracted from the biggest number when the data is put in order.

Mean, Median, Mode, Range Examples:

Data Set: 1, 2, 3, 3, 3, 4, 5, 6, 7, 8

Mean: $1 + 2 + 3 + 3 + 3 + 4 + 5 + 6 + 7 + 8 = 42 \div 10 = 4.2$
The mean is 4.2

Median: The middle number is 3.5 because there are two middles. You must find the average of the two middles. $3 + 4 = 7 \div 2 = 3.5$

Mode: The mode is 3 because it occurs more often in the data set than any other number.

Range: The range is 7 because $8 - 1 = 7$.

Solve each Problem.

1) At Oliver's Pizza Palace in the 6 hours they were open they sold the following number of pizzas: 55 pepperoni, 57 sausage, 50 cheese, 51 mushroom, 61 anchovies and 50 pineapple. Determine the mean (rounded to the nearest tenth), median, mode and range of the number of pizzas sold.

1. _____

2. _____

3. _____

4. _____

5. _____

2) Jerry was counting the money he received for his birthday. From his aunt he received $9. From his uncle he received $9. His best friends gave him $22, $23 and $22 and $22. And his sister gave him $7. Determine the mean (rounded to the nearest tenth), median, mode and range of the money he received.

3) Dave counted the number of times people sharpened their pencils in class for a week. He counted: 4, 13, 4, 1, 14 and 11. Determine the mean (rounded to the nearest tenth), median, mode and range of the numbers.

4) Victor was selling chocolate for a school fund raiser. On the first week he sold 75. On the second week he sold 67. On the third week he sold 75. On the fourth week he sold 70 and on the last week he sold 68. Determine the mean (rounded to the nearest tenth), median, mode and range of the chocolate bars he sold.

5) During the first 6 hours of the fair there were the following number of customers: 58, 58, 62, 55, 49 and 48. Determine the mean (rounded to the nearest tenth), median, mode and range of the number of customers.

Day 2-Math: Data Analysis-Dot Plots and Box Plots

EXAMPLES:

Dot Plot:

Dot Plot   8-22

Knee touches

data set:
57, 49, 82, 53, 90, 83, 66, 63, 72, 75,
66, 113, 89, 85, 91, 41, 90, 57

41, 49, 53, 57, 61, 63, 66, 66, 72, 75, 82,
83, 85, 89, 90, 90, 91, 113

6A Knee Touches

Box Plot:

Box Plot   8-23-17

Nose Touches

Data Set: 53, 67, 120, 90, 125, 81, 114,
135, 105, 127, 103, 98, 91, 108,
130, 136, 137, 27, 100

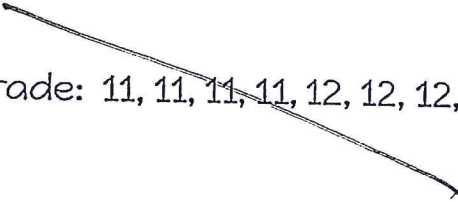| Frequency Table		27, 53, 67, 81, 90,
Min	27	91, 98, 100, 103, 105,
Q1	90.5	108, 114, 120, 125,
Med	105	127, 130, 135, 136, 137
Q3	126	
Max	137	
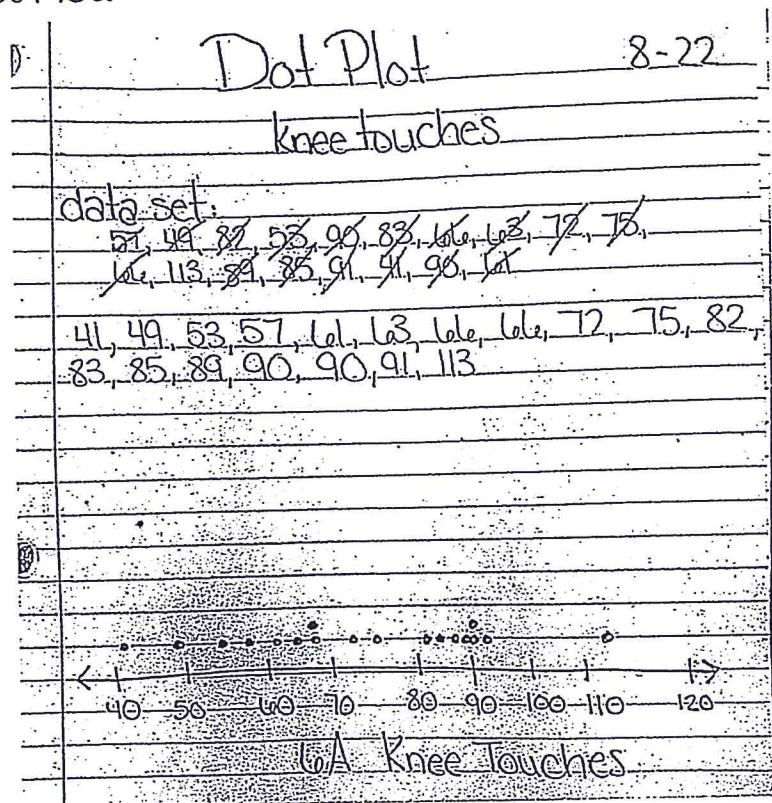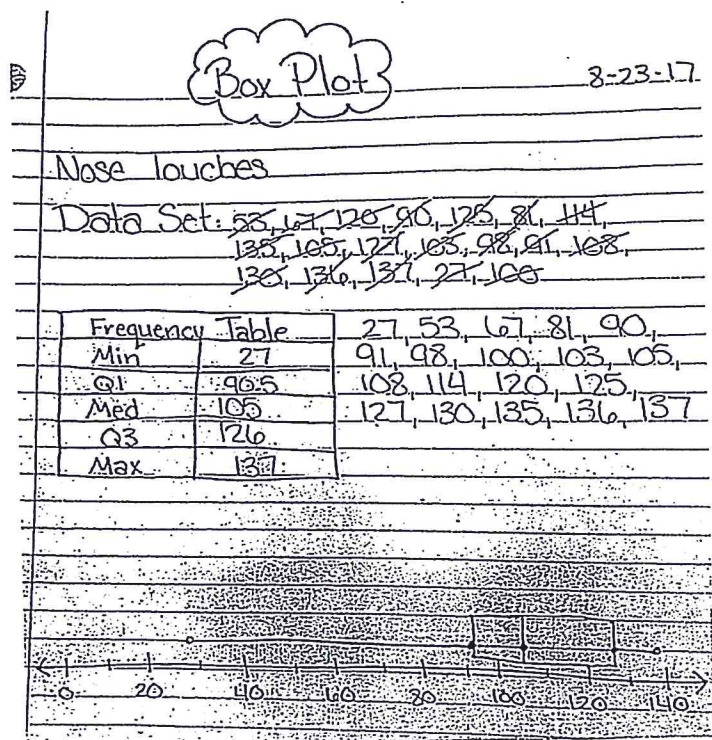
Dot Plot Worksheet

Directions: Create a dot plot for each example based on the data. Do not forget to label your axis and create a title!

Homework Grades: 82, 84, 84, 86, 87, 90, 92, 92, 95, 96, 96, 96, 99, 100

Points Made for Games during Basketball Season:
25, 27, 35, 35, 35, 38, 39, 40, 40, 42, 43, 45, 46, 46, 50

Age of students in 6th grade: 11, 11, 11, 11, 12, 12, 12, 12, 12, 12, 12, 13, 13, 13

VOCABULARY:

Ratio: A comparison of two quantities

Equivalent Ratios: two ratios that express the same value

Ratio Table: a table of equivalent ratios

- Reducing Ratios WS Example Problems Worked:

1.) 49: 21

-both numbers can be divided by 7

- $49 \div 7 = 7$
- $21 \div 7 = 3$

So the answer is 7:3 because that is the ratios lowest form.

2.) 42: 54

-both numbers can be divided by 6

- $42 \div 6 = 7$
- $54 \div 6 = 9$

So the answer is 7:9 because that is the ratios lowest form.

- Ratio Tables: Integers

Directions: Fill in the ratio tables using the rule provided.

1.)

X	Y
-10	-90
-6	-54
-2	-18
5	45
12	108
RULE: Multiply by 9	

Because -10 x 9 = -90, the "X" side of the table should be the answer (-90)

Reduce each ratio to its lowest form.

Ex) 50 : 35   10 : 7   ⓵ 49 : 21 _____   ② 42 : 54 _____

③ 12 : 32 _____   ④ 45 : 20 _____   ⑤ 15 : 24 _____

⑥ 12 : 8 _____   ⑦ 2 : 16 _____   ⑧ 35 : 28 _____

⑨ 20 : 36 _____   ⑩ 14 : 63 _____   11) 27 : 36 _____

12) 70 : 10 _____   13) 10 : 60 _____   14) 42 : 30 _____

15) 48 : 42 _____   16) 90 : 10 _____   17) 9 : 18 _____

18) 5 : 20 _____   19) 64 : 72 _____   20) 42 : 12 _____

Answers
Ex. 10 : 7
1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.
12.
13.
14.
15.
16.
17.
18.
19.
20.

1-10	95	90	85	80	75	70	65	60	55	50
11-20	45	40	35	30	25	20	15	10	5	0

Exponents

Note:
$n^0 = 1$

$4^2 = 16$ $4^3 = 64$

$5^2 = 25$ $6^3 = 216$

$2^4 = 16$ $10^2 = 100$

Write in Exponential Notation

$2 \cdot 2 \cdot 2 \cdot 2 = 2^4$

$2 \cdot 2 \cdot 3 \cdot 3 \cdot 3 = 2^2 \times 3^3$

$2 \cdot 5 \cdot 5 \cdot 6 \cdot 6 \cdot 6 = 2 \times 5^2 \times 6^3$

Square Roots

$\sqrt{25} = 5$
5·5

$\sqrt{49} = 7$
7·7

$\sqrt{81} = 9$
9·9

$\sqrt{100} = 10$
10·10

$\overset{4}{\sqrt{16}} + \overset{8}{\sqrt{64}} + \overset{3}{\sqrt{9}} = 15$

$\overset{2}{\sqrt{4}} + \overset{10}{\sqrt{100}} = 12$

Perfect Squares

$1^2 = 1$
$2^2 = 4$
$3^2 = 9$
$4^2 = 16$
$5^2 = 25$
$6^2 = 36$
$7^2 = 49$
$8^2 = 64$
$9^2 = 81$
$10^2 = 100$

Cubed Roots

$\sqrt[3]{8} = 2$
2·2·2

$\sqrt[3]{27} = 3$

Determining Proportionality with Tables

Name:

Determine if the values in the table are proportional (yes) or not (no).

1)

X	Y
-4	-5
-3	-6
-2	-7
-1	-8

2)

X	Y
6	-2
7	-1
8	0
9	1

3)

X	Y
-70	-10
-56	-8
-14	-2
-7	-1

4)

X	Y
6	3
7	4
8	5
9	6

5)

X	Y
1	10
2	20
7	70
10	100

6)

X	Y
2	2
4	4
8	8
10	10

7)

X	Y
20	-32
15	-24
10	-16
5	-8

8)

X	Y
70	-10
63	-9
35	-5
21	-3

9)

X	Y
2	7
6	21
18	63
20	70

10)

X	Y
-12	-32
-9	-24
-6	-16
-3	-8

11)

X	Y
9	3
36	6
64	8
81	9

12)

X	Y
2	4
3	6
4	12
7	21

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____
11. _____
12. _____

1-10	92	83	75	67	58	50	42	33	25	17
11-12	8	0								

Name : _____   Score : _____

Teacher : _____   Date : _____

Perfect Squares and Cubes Operations

Write the square or cube for each number.

1) $4^2 = $ _____

2) $5^3 = $ _____

3) $10^3 = $ _____

4) $19^3 = $ _____

5) $11^2 = $ _____

6) $14^3 = $ _____

Write the square root for each number.

7) $\sqrt{289} = $ _____

8) $\sqrt{400} = $ _____

9) $\sqrt{1} = $ _____

10) $\sqrt{9} = $ _____

11) $\sqrt{361} = $ _____

12) $\sqrt{256} = $ _____

Write the cube root for each number.

13) $\sqrt[3]{4913} = $ _____

14) $\sqrt[3]{4096} = $ _____

15) $\sqrt[3]{1000} = $ _____

16) $\sqrt[3]{8000} = $ _____

17) $\sqrt[3]{3375} = $ _____

18) $\sqrt[3]{343} = $ _____

G.E.M.S

① G: grouping
② E: exponents
③ M: multiply/divide
④ S: subtract/add

① $8 \cdot 2 + (54 \div 6 + 5)$
$8 \cdot 2 + (9 + 5)$
$8 \cdot 2 + (14)$
$16 + 14$
$\boxed{30}$

Combining Like Terms

$2x \; \boxed{+4} \; -3 \; + \; 6x \; \boxed{+2}$
$\boxed{8x + 3}$

$3x + 5y - y + 6x - 4$
$\boxed{9x + 4y - 4}$

$5y - y$
$5y - 1y$
$4y$

$2r + 5pg + 6 + 5r - 2pg + 6$
$\boxed{7r + 3pg}$

Finding the Variable in Equations

equation → has an equal sign
→ has an answer

Ex 1: $J - 5 = 1$
$\quad\quad +5 \;\; +5$
$\quad\quad J = 6$

$6 - 5 = 1$ ✓

* What you do to one side, you must do to the other side

Ex 2: $V + 7 = 9$
$\quad\quad -7 \;\; -7$
$\quad\quad \boxed{V = 2}$

← we want the variable by itself

$2 + 7 = 9$ ✓

Order of Operations

) $(48 - 4^2) - (9 + 7)$

6) $2 \times (11 + 3) + 9^2$

Remember GEMS!
① *Groupings*
② *Exponents*
③ *multiply or divide*
④ *Subtract or add*

) $(39 - 3) - 18 - 5^2$

7) $(2 + 5)^2 + (18 - 2)$

) $8 \times (13 - 4) - 5^2$

8) $(7 \times 5 - 4^2) + 8$

) $(9 - 5)^2 + (16 - 2)$

9) $(49 - 3^2) - (1 + 4)$

) $(4 \times 5 - 6^2) + 5$

10) $(26 - 2) - 12 + 3^2$

Name : _____   Score : _____

Teacher : _____   Date : _____

Solve the Equations

1) $40 = -4d$

6) $12 = -7 + h$

2) $-5c = 40$

7) $f + 5 = -6$

3) $-8 = s + 5$

8) $7z = -56$

4) $6 = \dfrac{n}{6}$

9) $-36 = -4b$

5) $\dfrac{x}{6} = -5$

10) $-13 = 2 + r$