

Who Should Get What?

Part 1

A THINKLAW MATH LAB

OBJECTIVE	Thinkers will use fractions to determine how FEMA should allocate disaster relief money.

Lesson Outline

- 1. In the thinkstarter, thinkers will consider a scenario where the school catches on fire. What help would the school need to recover from the fire?
- 2. Thinkers are introduced to FEMA. Thinkers will rank ways that FEMA can assist after disasters to help communities.
- 3. Thinkers will examine 3 different natural disasters. Thinkers will determine what help the communities will need, rank the help in order of importance, and use fractions to determine how the disaster relief money should be divided.
- 4. In the thinkBigger, thinkers will justify to the public how they allocated the money. Thinkers will use fractions as part of their written explanation.



X

Indiana Academic Standards

3.NS.2: Model unit fractions as the quantity formed by 1 part when a whole is partitioned into equal parts; model non-unit fractions as the quantity formed by iterations of unit fractions. [In grade 3, limit denominators of fractions to 2, 3, 4, 6, 8.] (E)

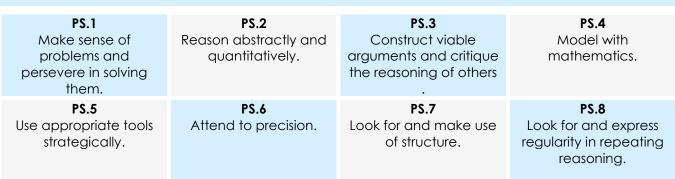
4.NS.2: Model mixed numbers and improper fractions using visual fraction models such as number lines and area models. Use a visual fraction model to show the equivalency between whole numbers and whole numbers as fractions.

4.NS.3: Use fraction models to represent two equivalent fractions with attention to how the number and size of the parts differ even though the fractions themselves are the same size. Use this principle to generate equivalent fractions. [In grade 4, limit denominators of fractions to 2, 3, 4, 5, 6, 8, 10, 25, 100.] (E)

5.NS.2: Explain different interpretations of fractions, including as parts of a whole, parts of a set, and division of whole numbers by whole numbers.

E: Essential IDOE standards

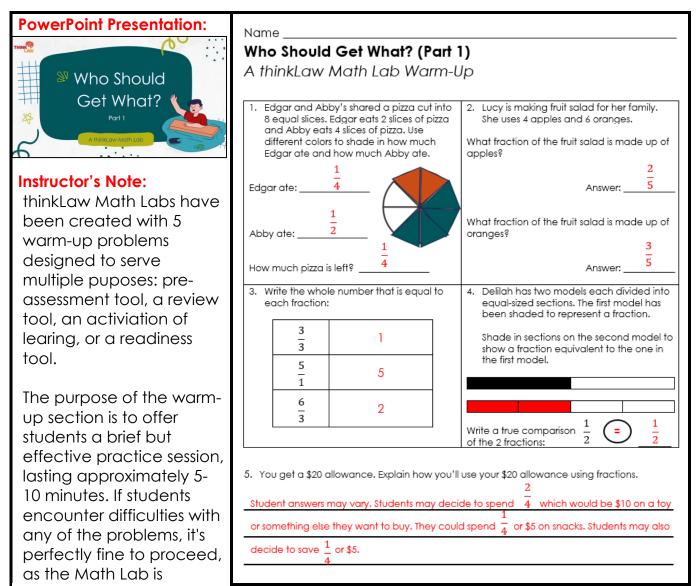
Standards for Mathematical Practice



Lesson Materials



- thinkLaw Student Work pages
- Writing Utensils
- Calculators
- Colored Pencils or Crayons



structured to provide support and scaffold their learning.

In the slides provided, you'll find a designated prompt indicating where to incorporate the warm-up section with your students. The slide can also serve as an opportunity to review the answers to the warm-up problems together with your students before continueing on with the math lab.

For convenience, we recommend printing the warm-up and cool-down sections front to back on a single sheet of paper, facilitating easy access and organization during the Math Lab session.

Name ______ Who Should Get What? (Part 1)

A thinkLaw Math Lab

thinkStarter

Imagine that the school was on fire. The fire

department can come and put out the fire, but **JOUCOU** the fire department would not be able to help you with anything else. For example, the fire department would not be able to help replace textbooks or school supplies.

What help would the school need to recover from the fire?

What does the school need?	Who could help?
The school could need new desks and chairs if they were burned or damaged.	There may be other school districts or buildings that could donate extra chairs and desks.
The building would need significant repairs. Smoke damage would need to be repaired.	Many repairs would need to be done by professionals, but there are many tasks, like painting or cleaning, that could be completed by volunteer groups.
Teachers and students may have lost personal belongings in the fire. They may need help replacing those items.	The school could create an Amazon wish list to replace lunchboxes, water bottles, backpacks, and other items.
The school may need to replace technology like iPads or laptops.	The school could reach out to the technology companies. Many large companies are open to helping during disasters.
thinkStarter Summary	

Disasters can cause a lot of damage. Sometimes it requires extra help to rebuild.

How will those issues need to be addressed?

Probing Questions:

- Schools have insurance. If a school experiences a fire, the school will receive money from the insurance company. Can all of these needs be solved with money? Why or why not?
- If you were asked to organize volunteers to help after a school fire, what would you ask the volunteers to do? Why?
- How long do you think it will take for the needs to be met? Do you think the school can reopen before all the needs are met? How would this impact the education of the students at the school?
- Every school is required to practice fire drills. Why do you think fire drills are a requirement? What could happen if all fire drills were canceled?

PowerPoint Presentation:



Instructor's Note:

It may be helpful to take a moment to brainstorm all the damage that can be caused by a fire.

- How can a fire damage a building?
- How can a fire damage the items inside a building?
- What damage can be caused by just the smoke of a fire?
- What injuries or health problems might be caused by a fire? What help will people need for those injuries?
- What mental health problems might occur as the result of a fire?



Instructor's Note:

The front page of the FEMA webpage allows visitors to "search your location." If you enter the zip code of your community, you will be able to see how FEMA has helped in your area. www.fema.gov

Instructor's Note:

Ranking is a fast, effective way to have your students develop nuanced thinking and think about their thinking.

Another strategy to add to a ranking exercise is to ask thinkers to rank based on the perspectives of other people.

 How would a doctor rank these examples?
 How would a business owner rank these examples?

Where are the Helpers?

FEMA stands for **Federal Emergency Management Agency**. FEMA is part of the U.S. government that helps people who have been impacted by natural disasters, such as hurricanes, floods, and earthquakes.

FEMA provides help. Here are a few examples of how FEMA helps. Rank the three examples from most important to least important.

Financial Assistance	Temporary Housing	Crisis Counseling
FEMA can help people pay for the cost of repairing their homes and businesses, as well as for other expenses such as food and clothing.	FEMA can provide temporary housing to people who have lost their homes in a disaster.	FEMA can provide crisis counseling to people who have been traumatized by a disaster.
Rank:	Rank:	Rank:

Why did you pick that order?

Thinkers may choose any order. Thinkers need to explain their reasoning.

What makes one type of help more important than other types? This is a

tough choice. All areas of help are important.

Who Gets What?

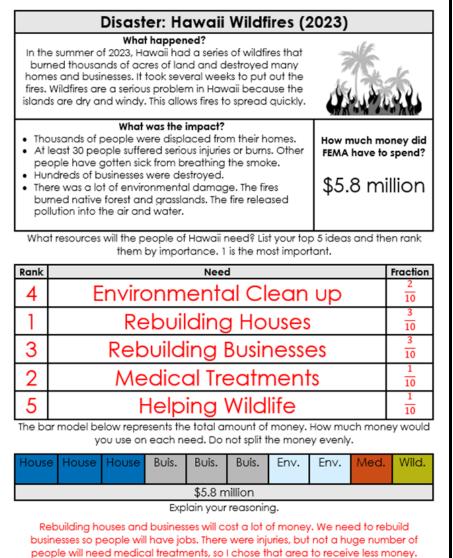
When FEMA arrives to help with a disaster, they have a set amount of money to use. FEMA must decide how to divide the money. Splitting the money evenly between every need is not practical. Some needs are more



expensive than others. In this thinkLaw math lab you will consider several real-life disasters and determine how FEMA should divide the money.

Probing Questions:

- Why does FEMA exist? What would the world look like if we did not have organizations like FEMA that are dedicated to helping with disasters?
- At the beginning of each year, do we know all the disasters that will occur? How can we plan for disasters in advance if we don't know when and how they will strike?
- What natural disasters could your community experience? How does your community prepare for disasters?
- Does your family prepare for disasters? If yes, what do they do? If no, what could your family do to prepare for an emergency?
- Movies about natural disaster are very popular. Why do people like to watch movies or shows about disasters? Do you like to watch movies or shows about disasters?



Instructor's Note:

Go through the first disaster together.

First, read the description.

- Do you remember this disaster? What do you remember?
- Do you think FEMA had enough money? (For the Hawaii Wildfires, this was the amount allocated at the time of the publishing. This amount likely will increase.)

Second, take a moment to brainstorm a list of needs on the board. Thinkers may select their top five needs from the larger list. There may be times throughout this lesson where you can offer suggestions of needs that might exist. For example, when discussing water disasters, thinkers may not realize that mold Will be a problem. Feel

free to contribute to the list of needs.

- What environmental problems are created by wildfires?
- How are animals impacted?
 What needs do people experience if they lose their house?
- What ongoing medical treatments do people need when they are burned?
- What buinesses or public buildings should be rebuilt first? Why?

Third, ask thinkers to rank their list from most important to least important. This can be a difficult task because each of the needs are serious.

- If you could only address one need, what would you pick? Why?
- If you could speak to the people of the community, which needs do you think they would identify as the most important? Why?

Fourth, thinkers should label and color	
the bar graph.	

\$5.8 million									
\$3.8 million									

How many sections would you allocate to each need? Encourage thinkers to NOT split the money evenly between the categories.

Which need will cost the most money to address? Why?

- Which need will cost the least amount of money to address? Why?
- Are there other resources that will help with any of the needs? For example, there may be nonprofit wildlife rescue groups that will help with the needs of the wildlife. If there are other groups that will help, FEMA might not need to spend as much money on that need.

Fifth, ask thinkers to record the fraction in the "fraction" column of the

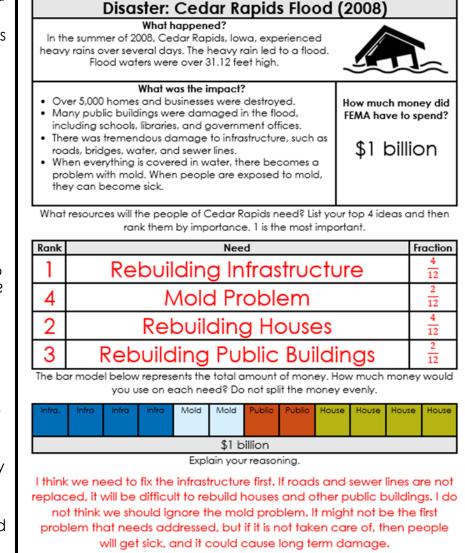


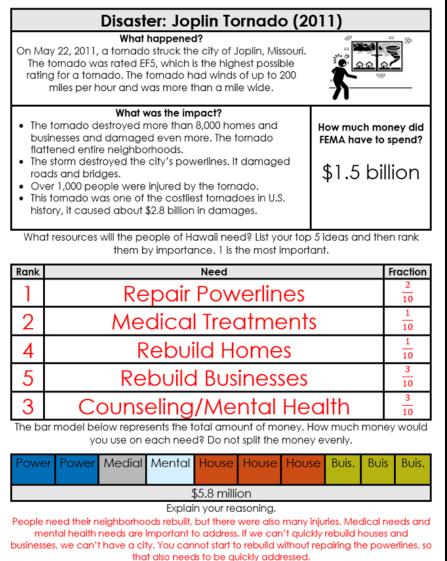
table. If you are working with 3rd grade thinkers, simply ask them to record fractions using the number of boxes on the bar graph as the denominator. So, for the Hawaii example, all fractions will have a denominator of 10. If you are working with thinkers in 4th or 5th grade, you may ask thinkers to reduce the fractions to their simplest form or even ask thinkers to write their final decision as both a fraction and percent.

Sixth, ask thinkers to explain their reasoning. When we ask thinkers to complete this final step, we are asking thinkers to synthesize the first five steps.

- If you were explaining this problem to a friend, what would you say?
- What questions might someone ask you about your plan? How does thinking about what questions people will have help you write a better explanation?

Instructor's Note:

There are two remaining disaster scenarios. Thinkers may complete the scenarios on their own, with a partner, or in a small group. Ask thinkers to report back to the group.



Probing Questions:

- In this math lab, we looked at three different types of examples, are there certain needs that occur in every disaster? How can that help FEMA plan?
- Are there certain needs that are unique to specific natural disasters? What is an example of a need that is specific to just one type of natural disaster?
- What other types of natural disasters did we not look at today?
 What unique needs might those disasters have?
- How did a bar model help you visualize the problem? Did you know that you can draw diagrams to help you solve math problems?

How can drawing diagrams help you?

• When there is a major natural disaster, the president will often visit the site. Why do you think the president visits? Do you think it is a good idea for the president to visit? Why or why not?

SEL Instructor's Note:

Throughout this lesson, you were asked to make tough decisions.

- Did anyone have trouble deciding what need was the most important or what need should get the most money? How did that feel?
- Do problems like the ones we look at today have one correct answer? Why can it feel tricky to solve a problem that doesn't have one right answer? How does that make you feel?
- In life, we sometimes have to make really tough decisions. One thing that can help is to ask someone for advice. Who in your life can give you good advice? How could that person help you make a touch decision? There are two remaining disaster scenarios. Thinkers may complete the scenarios on their own, with a partner, or in a small group. Ask thinkers to report back to the group.

Probing Questions:

- Why should the government be able to explain to taxpayers how tax money is spent?
- If you were going to ask FEMA questions about how they spent relief money, what questions would you ask? Why are the answers to these questions important?

Instructor's Note:

If you have time, thinkers can read their statements to the class, and their classmates can ask them questions about their plan.

thinkBigger

When the government gives money to FEMA, FEMA needs to be responsible with the money. FEMA employees need to explain to the public how they spent the money. Pick 1 of the disasters. How would you explain how you spent the money? Be sure to use your fractions as part of your explanation.

How did you spend the money?

Thinker responses will vary.

When the Joplin tornado hit, over 1,000 people were injured.

These people will need medical treatment and physical

therapy. I decided to spend $\frac{1}{10}$ of the money to help with

those needs. A tornado is very scary, and entire

Were knocked down. People will need mental health support

to recover, so I decided to spend $\overline{10}$ of the money to help

with mental health needs. We need to rebuild homes and

businesses, but we cannot rebuild until the powerlines are repaired. I decided $\frac{2}{10}$ of the money should go to rebuild

powerlines. So many buildings were destroyed that will cost a

lot to rebuild. That's why I decided to spend $\frac{3}{10}$ to rebuild

houses and $\frac{3}{10}$ to rebuild businesses.

Instructor's Note:

A **stakeholder** is anyone who has an interest or concern with an issue. Who are the stakeholders in this issue? Why is that person interested in this issue? Why is that person concerned about this issue? It may be helpful to brainstorm a list of stakeholders before releasing thinkers to work on their problems.

Potential stakeholders could include victims of natural disasters, taxpayers, nonprofit groups, wildlife groups, construction workers, politicians, doctors, and many more. Each stakeholder will have a different perspective. An easy way to make any discussion involve more critical thinking is to ask what concerns different stakeholders might have with the issue or decision.

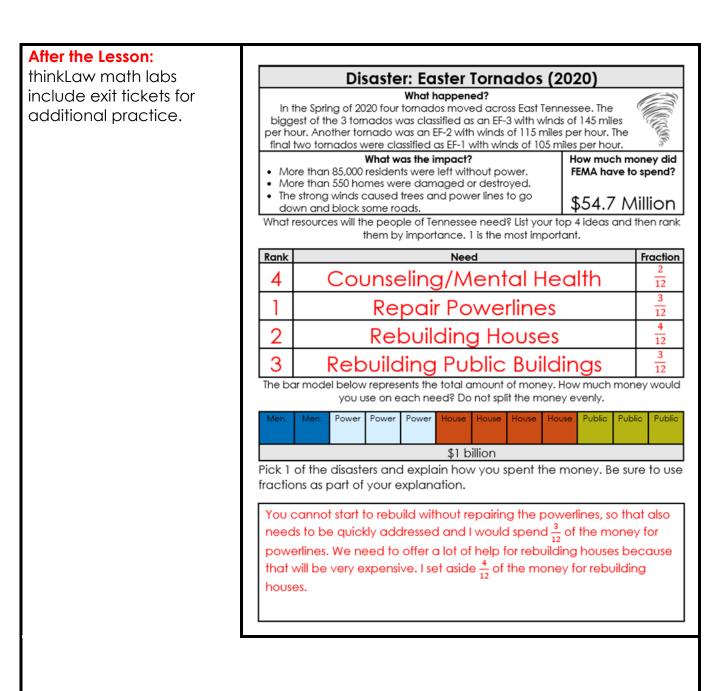
	Should Get What? (Part 1) nkLaw Math Lab	,			
	Disaster: Hurrican	e Harvey (2017)		
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/hat re	esources will the people of Texas need by importance. 1 is th			rank them	
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2 Rebuild Homes					
3 Rebuild Business					
5 Reopen Schools					
4 Help with Medical Treatments				$\frac{1}{10}$	
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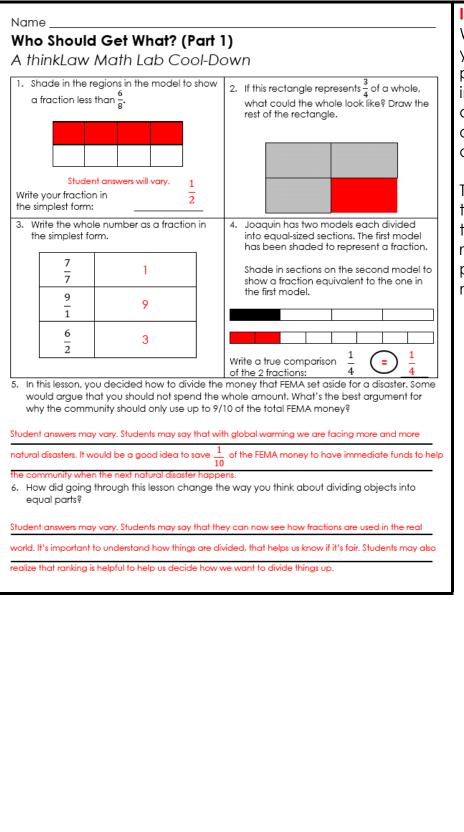
After the Lesson:

thinkLaw math labs include exit tickets for additional practice.

Instructor's Note:

thinkLaw math labs also include take-home student sheets that are available in English and Spanish. Encourage thinkers to try a mini version of the lesson at home with their families! Asking thinkers to reteach the lesson to their parents helps thinkers to practice synthesis and gives them additional practice with the material.





Instructor's Note:

Within thinkLaw Math Labs, you'll find 5 Cool-down problems strategically integrated to serve as a demonstration of learning or a post-activity assessment.

The goal of a math lab is to help students redefine their math identity – reshaping how they perceive and interact with math.