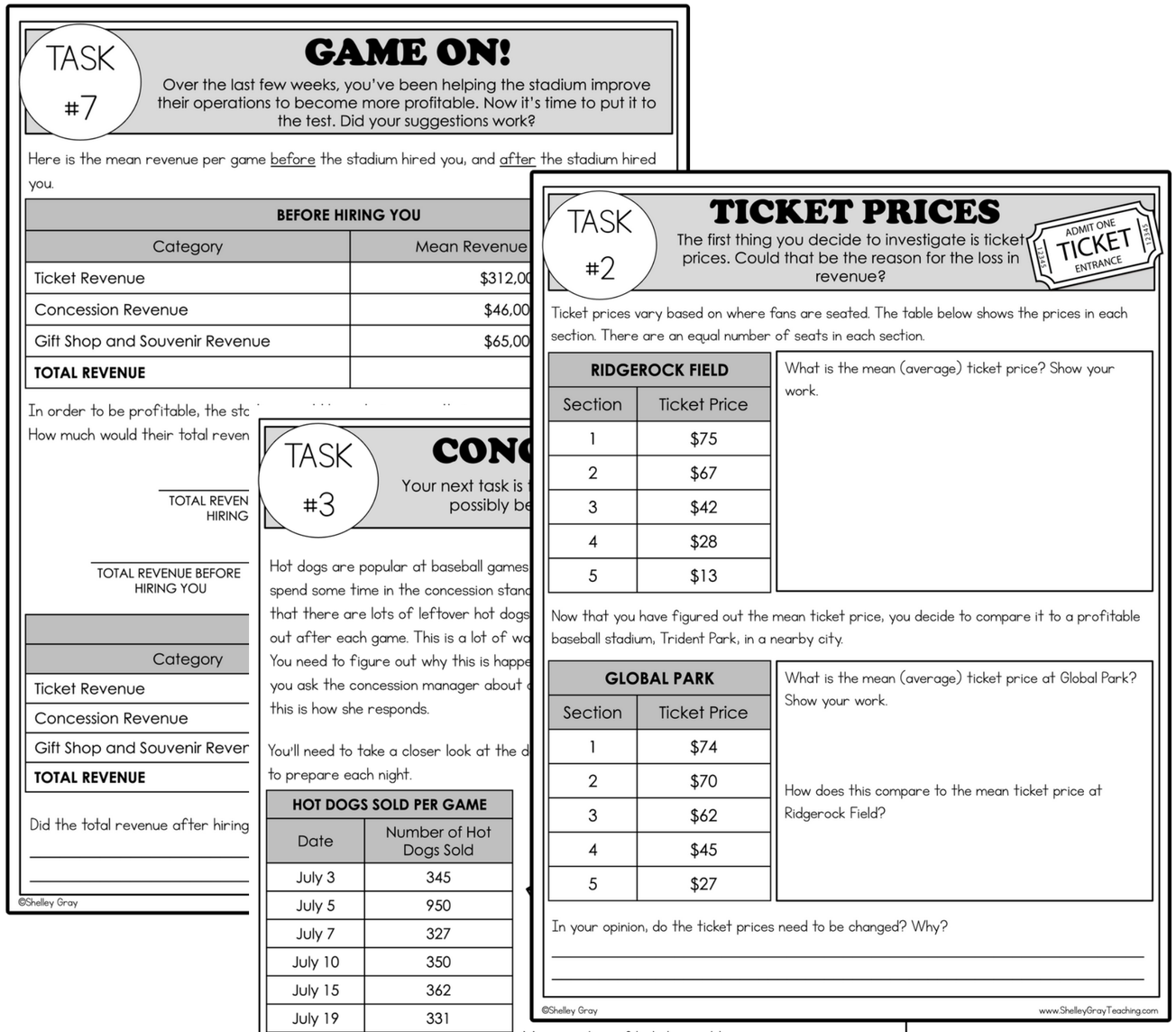
Teaching

measures of central tendency?

This engaging math project will make mean, median, and mode **real** and **relevant** to your students, teaching them where it is used in **real life**!



TASK #7

GAME ON!

Over the last few weeks, you've been helping the stadium improve their operations to become more profitable. Now it's time to put it to the test. Did your suggestions work?

Here is the mean revenue per game before the stadium hired you, and after the stadium hired you.

BEFORE HIRING YOU	
Category	Mean Revenue
Ticket Revenue	$312,00
Concession Revenue	$46,00
Gift Shop and Souvenir Revenue	$65,00
TOTAL REVENUE	

In order to be profitable, the sta
How much would their total reven

TOTAL REVEN HIRING

TOTAL REVENUE BEFORE HIRING YOU

Category
Ticket Revenue
Concession Revenue
Gift Shop and Souvenir Rever
TOTAL REVENUE

Did the total revenue after hiring

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TASK #3

CONC

Your next task is
possibly be

Hot dogs are popular at baseball games
spend some time in the concession stand
that there are lots of leftover hot dogs
out after each game. This is a lot of wa
You need to figure out why this is happe
you ask the concession manager about
this is how she responds.

You'll need to take a closer look at the d
to prepare each night.

HOT DOGS SOLD PER GAME	
Date	Number of Hot Dogs Sold
July 3	345
July 5	950
July 7	327
July 10	350
July 15	362
July 19	331
July 20	347

Mean number of hot dogs sold per game: _____

As you look at the data, you notice that there is an outlier that is skewing this data. Which number is the outlier? _____

What effect will this outlier have on the mean? _____

_____

Could this explain why there are so many leftover hotdogs? Explain. _____

TASK #2

TICKET PRICES

The first thing you decide to investigate is ticket prices. Could that be the reason for the loss in revenue?

ADMIT ONE TICKET ENTRANCE

Ticket prices vary based on where fans are seated. The table below shows the prices in each section. There are an equal number of seats in each section.

RIDGEROCK FIELD	
Section	Ticket Price
1	$75
2	$67
3	$42
4	$28
5	$13

What is the mean (average) ticket price? Show your work.

Now that you have figured out the mean ticket price, you decide to compare it to a profitable baseball stadium, Trident Park, in a nearby city.

GLOBAL PARK	
Section	Ticket Price
1	$74
2	$70
3	$62
4	$45
5	$27

What is the mean (average) ticket price at Global Park? Show your work.

How does this compare to the mean ticket price at Ridgerock Field?

In your opinion, do the ticket prices need to be changed? Why?

_____

_____

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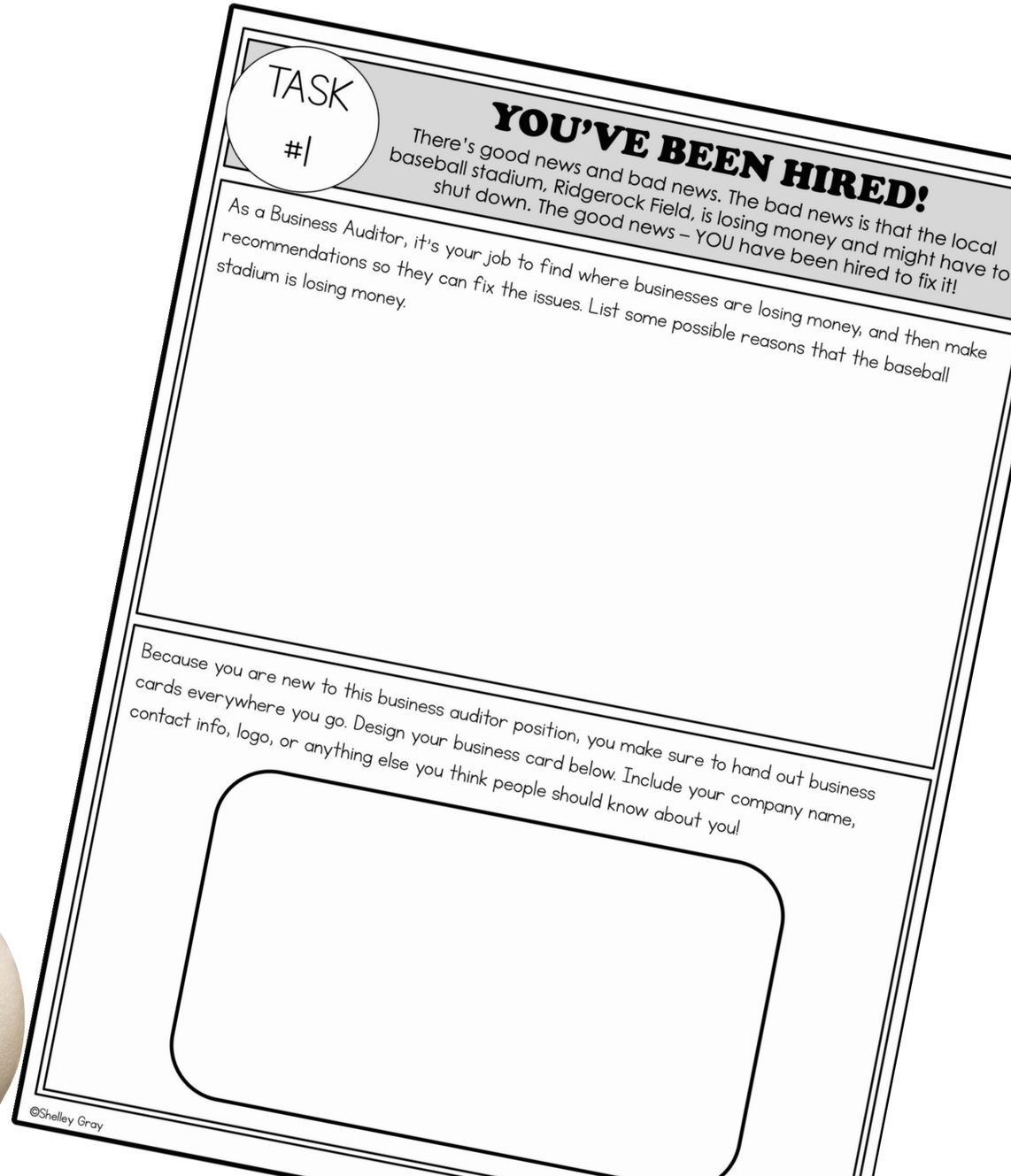
So often, the mean, median, and mode unit is taught by simply giving students lists of numbers and having them do calculations.

But imagine how it could **transform students' understanding** if they actually understood WHY they might use these measures in real life!

This math project includes **12 activity pages** to practice calculating and using mean, median, and mode.

First, your students will be introduced to the back story. They are a business auditor whose job it is to figure out why a local baseball stadium is losing money.



TASK #1

YOU'VE BEEN HIRED!

There's good news and bad news. The bad news is that the local baseball stadium, Ridgerock Field, is losing money and might have to shut down. The good news – YOU have been hired to fix it!

As a Business Auditor, it's your job to find where businesses are losing money, and then make recommendations so they can fix the issues. List some possible reasons that the baseball stadium is losing money.

Because you are new to this business auditor position, you make sure to hand out business cards everywhere you go. Design your business card below. Include your company name, contact info, logo, or anything else you think people should know about you!

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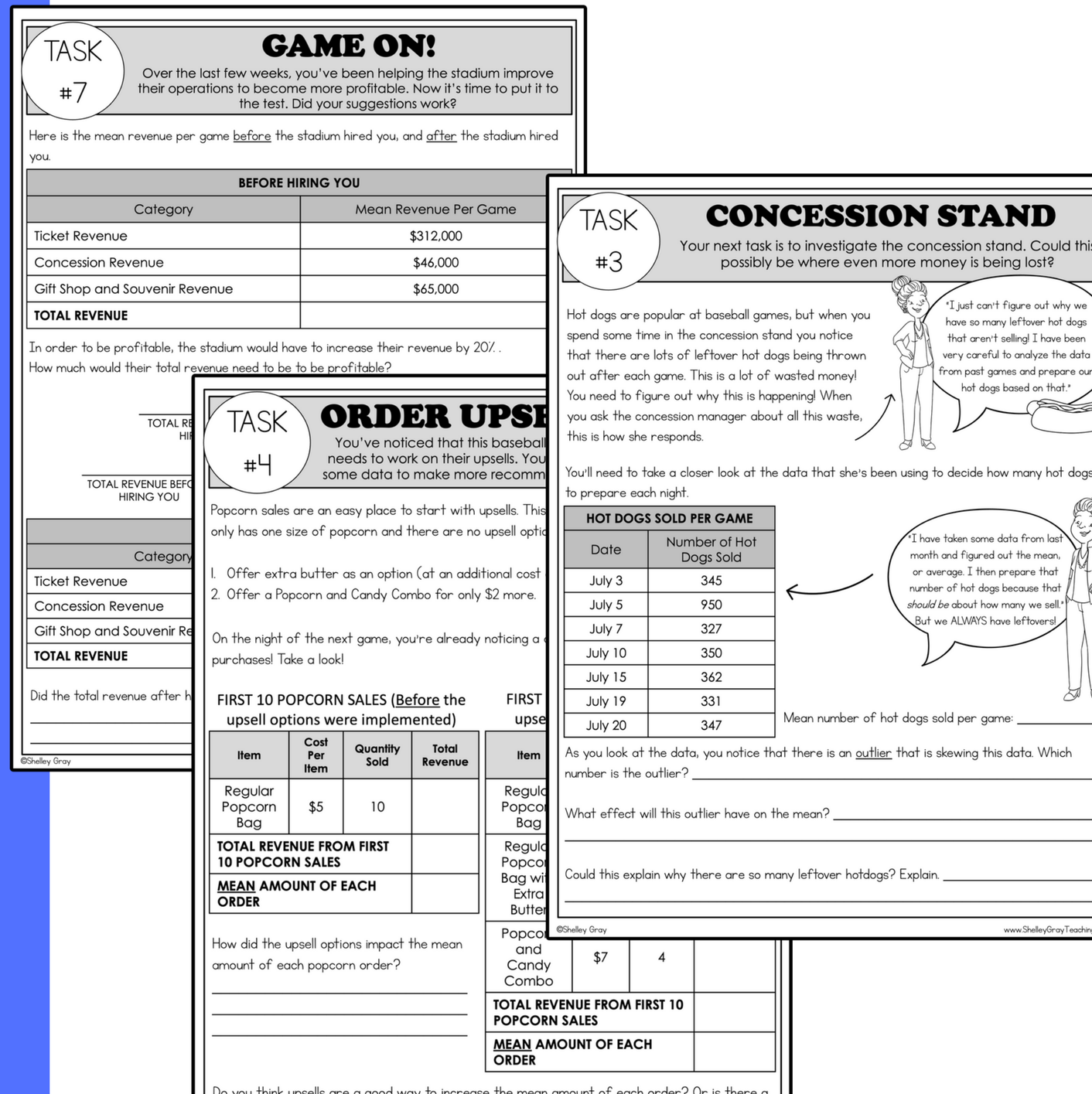
Then students will be guided through various tasks to figure out how they can help the stadium become profitable again!



TASK #7

GAME ON!

Over the last few weeks, you've been helping the stadium improve their operations to become more profitable. Now it's time to put it to the test. Did your suggestions work?

Here is the mean revenue per game before the stadium hired you, and after the stadium hired you.

BEFORE HIRING YOU	
Category	Mean Revenue Per Game
Ticket Revenue	$312,000
Concession Revenue	$46,000
Gift Shop and Souvenir Revenue	$65,000
TOTAL REVENUE	

In order to be profitable, the stadium would have to increase their revenue by 20%.
How much would their total revenue need to be to be profitable?

TOTAL RE... HI...

TOTAL REVENUE BEFO... HIRING YOU

Category
Ticket Revenue
Concession Revenue
Gift Shop and Souvenir Re...
TOTAL REVENUE

Did the total revenue after h...

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TASK #4

ORDER UPSE...

You've noticed that this baseball... needs to work on their upsells. You... some data to make more recomm...

Popcorn sales are an easy place to start with upsells. This... only has one size of popcorn and there are no upsell optio...

1. Offer extra butter as an option (at an additional cost...
2. Offer a Popcorn and Candy Combo for only $2 more.

On the night of the next game, you're already noticing a ... purchases! Take a look!

FIRST 10 POPCORN SALES (Before the upsell options were implemented)

Item	Cost Per Item	Quantity Sold	Total Revenue
Regular Popcorn Bag	$5	10	
TOTAL REVENUE FROM FIRST 10 POPCORN SALES			
MEAN AMOUNT OF EACH ORDER			

FIRST ... upse...

Item			
Regula... Popcor... Bag			
Regula... Popcor... Bag wi... Extra Butter			
Popcor... and Candy Combo	$7	4	
TOTAL REVENUE FROM FIRST 10 POPCORN SALES			
MEAN AMOUNT OF EACH ORDER			

How did the upsell options impact the mean amount of each popcorn order?

Do you think upsells are a good way to increase the mean amount of each order? Or is there a...

TASK #3

CONCESSION STAND

Your next task is to investigate the concession stand. Could this... possibly be where even more money is being lost?

Hot dogs are popular at baseball games, but when you spend some time in the concession stand you notice that there are lots of leftover hot dogs being thrown out after each game. This is a lot of wasted money! You need to figure out why this is happening! When you ask the concession manager about all this waste, this is how she responds.

"I just can't figure out why we have so many leftover hot dogs that aren't selling! I have been very careful to analyze the data from past games and prepare our hot dogs based on that."

You'll need to take a closer look at the data that she's been using to decide how many hot dogs to prepare each night.

HOT DOGS SOLD PER GAME	
Date	Number of Hot Dogs Sold
July 3	345
July 5	950
July 7	327
July 10	350
July 15	362
July 19	331
July 20	347

"I have taken some data from last month and figured out the mean, or average. I then prepare that number of hot dogs because that *should be* about how many we sell." But we ALWAYS have leftovers!

Mean number of hot dogs sold per game: _____

As you look at the data, you notice that there is an outlier that is skewing this data. Which number is the outlier? _____

What effect will this outlier have on the mean? _____

Could this explain why there are so many leftover hotdogs? Explain. _____

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Throughout the project, students will learn about:

- when it makes sense to use mean, median, or mode as a measure of central tendency
- the effect of an outlier
- calculating mean, median, and mode
- investigating real-life scenarios using measures of central tendency