

THE HALLOWEEN HOTEL:

A SPOOKY MATH PROJECT



TASK #2 THE MONSTER CONVENTION
Monsters are coming from near and far for the annual Monster Convention!

ROOM RATES

- Regular Room: \$75/night
- The Vampire Suite: \$75/night
- The Mummy Suite: \$105/night
- The Goblin Suite: \$200/night

MONSTER CONVENTION SPECIAL \$15/night/room

ROOM RESERVATIONS
Each monster will get a \$5/night discount as part of the convention pricing. List cost of each monster's room and the amount of charge that each monster will pay.

Reservation #1:
1 night in a regular room and 1 night in the Mummy Suite

Reservation #2:
2 nights in the Vampire Suite

TOTAL COST: PAID WITH \$200

CHANGE RECEIVED:

TASK #3 THE PARTY ROOM
You're preparing for the biggest night of the year of your hotel - October 31. Every year you throw a huge Halloween party. This year will be better than ever!

Your first job is to plan the layout of the party room. There will be a variety of stations set up around the room. Plan where each one will go. Remember to label each station.

- Forbidden Photo Booth: 25 square units
- Creepy Entertainment Stage: 48 square units
- BOO Broomsticks: 21 square units
- Rat Races: 20 square units
- Coffin Baking Competition: 18 square units
- Dreadful Dance Party: 80 square units
- Scary Snack Area: 28 square units

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TASK #5 VAMPIRE COMEDY ACT
Victor the Vampire is back with his hilarious comedy show and he'll be entertaining on the stage at the Halloween Party! Victor tells all of the best Halloween jokes to the crowd.

A: 50	H: 81	O: 18	V: 28
B: 16	J: 48	P: 41	W: 80
C: 8	J: 35	Q: 4	X: 3
D: 30	K: 60	R: 32	Y: 12
E: 24	L: 25	S: 100	Z: 5
F: 64	M: 36	T: 20	
G: 40	N: 27	U: 9	

Why are ghosts so bad at lying?

1/4	5/3	1/4	5/3	3/3	6/6	1/1	3/1	1/2	1/4
1/60	1/6	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
1/2	1/2	1/4	1/2	3/3	1/2	1/2	1/2	1/2	1/2

When is it bad luck to be followed by a black cat?

1/8	1/2	1/3	1/4	1/4	1/3	1/3	1/3	1/4	1/4
1/4	1/2	1/3	1/3	1/3	1/3	1/3	1/3	1/4	1/4

What is a ghost's favorite color?

1/5	1/4	1/3	1/2	1/5	1/2	1/3	1/2
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TASK #8 THE CAULDRON: HOTEL FINE DINING
Your hotel has one of the creepiest restaurants around. It's no wonder that it's busy ALL the time! The Cauldron is open all night and is a popular gathering place for all of the spookiest people in town.

Welcome to The Cauldron
signature food served with a smile

APPETIZERS AND ENTRÉS	DESSERTS AND DRINKS
Bone Breadsticks: 6 for \$3	House Pinot Fruit Cup: \$2.75
Boo Bites: \$4.50/plate	Cobweb Cupcake: \$1.00
Skeleton Soup: \$3.50	Beastly Brownie: \$2.15
Roasting Chicken and Rice: \$12.5	Witch's Brew: \$3.50
Boo Burger: \$5.00	Jack-o-Lantern Juice: \$2.00

Order #1:

2 baskets of Boo Bites	1 Revolving Chicken and Rice
1 Beastly Brownie	2 Boo Burgers
1 Witch's Brew	2 Jack-o-Lantern Juice

TOTAL COST:

Order #2:

1 Bone Breadsticks	1 Skeleton Soup
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TOTAL COST:

ABOUT THIS RESOURCE

Are you looking for a way to reinforce essential math skills in an engaging way that helps your students make connections? "The Halloween Hotel" is a **real-life math project** where students will complete nine different tasks, each one focusing on math skills in a fun Halloween context. Your students won't even realize that they are reinforcing basic math skills like area, perimeter, addition, subtraction, multiplication, time, and more!

You might choose to print specific tasks to use during math centers, or you might make a booklet out of all of the tasks and let your students choose which one to do when. The choice is yours.

Take a look at what you'll find inside this math project:

TASK #1: SOCIAL MEDIA ADVERTISING

This month you'll be offering room deals for the Monster Convention, throwing a big Halloween party, hosting the hilarious vampire comedy act, serving up the spookiest food in your hotel restaurant, and much more!

Begin by designing some social media advertisements for your hotel. How will you encourage people to visit during October?

TASK #1 SOCIAL MEDIA ADVERTISING
October is the busiest time of the year in your haunted hotel.

This month you'll be offering room deals for the Monster Convention, throwing a big Halloween party, hosting the hilarious vampire comedy act, serving up the spookiest food in your hotel restaurant, and much more!

Begin by designing some social media advertisements for your hotel. How will you encourage people to visit during October?

TASK #2: THE MONSTER CONVENTION

Monsters are coming from near and far for the annual Monster Convention! Figure out the cost of each monster's room, taking into consideration the convention discount. Then figure out how many more monsters still need to arrive.

Skills: money, addition, subtraction, picture graph, data interpretation

TASK #2 THE MONSTER CONVENTION
Monsters are coming from near and far for the annual Monster Convention!

ROOM RATES

- Regular Room: \$75/night
- The Vampire Suite: \$150/night
- The Mummy Suite: \$105/night
- The Golden Suite: \$220/night

ROOM RESERVATIONS

Each monster will get a \$5 per night discount as part of the convention or hotel cost of each monster's room and the amount of change that each monster receives.

Reservation #1
1 night in a regular room and 1 night in the Mummy Suite.

Reservation #2
1 night in a regular room and 2 nights in the Vampire Suite.

Reservation #3
1 night in the Vampire Suite and 2 nights in the Golden Suite.

Reservation #4
1 night in a regular room, 1 night in the Vampire Suite, and 1 night in the Mummy Suite.

HAVE ALL THE MONSTERS ARRIVED?
You are expecting 225 monsters in all. The picture graph shows the number of monsters who have checked in to the hotel so far:

FLOOR OF HOTEL	NUMBER OF MONSTERS CHECKED IN (EACH PICTURE REPRESENTS 5 MONSTERS)
FIRST FLOOR	100
SECOND FLOOR	100
THIRD FLOOR	100

How many monsters still need to check in to the hotel?

TASK #3: THE PARTY ROOM

You're preparing for the biggest night of the year at your hotel – October 31. Every year you throw a huge Halloween party. This year will be better than ever! Let's plan the party room.

Skills: area, perimeter, multiplication

TASK #3 THE PARTY ROOM
 You're preparing for the biggest night of the year at your hotel – October 31. Every year you throw a huge Halloween party. This year will be better than ever!

Your first job is to plan the layout of the party room. There will be a variety of stations around the room. Plan where each one will go. Remember to label each station.

Forbidden Photo Booth: 25 square units
 Eerie Entertainment Stage: 18 square units
 DIY Broomsticks: 21 square units
 Rat Races: 20 square units

Coffin Building Competition: 8 square units
 Dreadful Dance Party: 80 square units
 Scary Snack Area: 28 square units

Now that you have designed the room, figure out the perimeter of each of the following:

STATION	PERIMETER
Forbidden Photo Booth	
Eerie Entertainment Stage	
DIY Broomsticks	
Rat Races	
Coffin Building Competition	
Dreadful Dance Party	
Scary Snack Area	

NEW ADDITION
 Just as you are finishing up your design, your boss asks you to add one more station – the Ghastly Game Station. It will take up an area of 36 square units, and does not have to be a perfect rectangle. Draw two different options for how you could design the Ghastly Game Station:

OPTION #1

OPTION #2

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TASK #4: GHASTLY GAMES

At the Ghastly Game Station, party-goers will be playing some old favorites like Pin the Fangs on the Vampire, Bone Toss, and Mummy Wrapping.

Skills: tally chart, interpreting data, addition, subtraction, multiplication or repeated addition, minutes and seconds

TASK #4 GHASTLY GAMES
 At the Ghastly Game Station, party-goers will be playing some old favorites like Pin the Fangs on the Vampire, Bone Toss, and Mummy Wrapping.

BONE TOSS
 Bone Toss is a two-player game where the players throw a bone into a hole. There are three holes and each has a different point value. Take a look at how these two players did:

Player Number	2-point throws	5-point throws	10-point
Player #1			
Player #2			

Who won this round of Bone Toss?

What was the difference in points between Player #1 and Player #2?

How many throws did each player get?

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PIN THE FANGS ON THE VAMPIRE
 Pin the Fangs on the Vampire is always a party favorite! For this game, players will get points based on how close they place the fangs to the vampire's mouth. The player with the most points wins. After a few rounds, here are the points:

Player Number	Points in Round #1	Points in Round #2	Points in Round #3	Points in Round #4	Total Points
Player #1	12	7	8	5	
Player #2	10	4	9	11	
Player #3	6	13	8	3	
Player #4	4	4	9	7	

Write the players in order from first place to last place:

MUMMY WRAPPING
 The last game is Mummy Wrapping. The first team to wrap the mummy wins in the chart.

Team Number	Time in Seconds	Time in Minutes and Seconds
Team #1	10 seconds	___ minutes ___ seconds
Team #2	52 seconds	___ minutes ___ seconds
Team #3	94 seconds	___ minutes ___ seconds

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TASK #5: VAMPIRE COMEDY ACT

Victor the Vampire is back with his hilarious comedy show and he'll be entertaining on the stage at the Halloween Party! Victor tells all of his best Halloween jokes to the crowd.

Skills: multiplication

TASK #5 VAMPIRE COMEDY ACT
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A: 50	H: 11	O: 18	V: 28
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C: 81	J: 35	Q: 4	X: 31
D: 10	K: 60	R: 32	Y: 12
E: 21	L: 25	S: 100	Z: 30
F: 64	M: 36	T: 20	
G: 40	N: 27	U: 9	

Why are ghosts so bad at lying?

141 163 141 102 33 100 641 34 52 41 141 50 341

100 76 61 84 58 109 27 34

102 127 78 52 33 90 32 165 107 368 104

When is it bad luck to be followed by a black cat?

138 127 53 34 34 63 33 48 34 361

141 36 33 100 146

What is a ghost's favorite color?

50 68 90 17 40 62 63 32

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TASK #6: FLYING COMPETITION

Every year on October 30, you hold a flying competition for witches near and far. This year some of the fastest flyers from around the country are coming to your competition.

Skills: time, elapsed time, ordering and comparing

TASK #7: WITCH'S BREW

The witches will be upset if you don't have any witch's brew available for them after the flying competition! Let's make a big batch.

Skills: simple fractions, multiplication or repeated addition

TASK #8: THE CAULDRON: HOTEL FINE DINING

Your hotel has one of the creepiest restaurants around! It's no wonder that it's busy ALL the time! The Cauldron is open all night and is a popular gathering place for all of the spookiest people in town.

Skills: money, addition

TASK #6 FLYING COMPETITION
Every year on October 30, you hold a flying competition for witches near and far. This year some of the fastest flyers from around the country are coming to your competition.

The first race is for witches who are beginner flyers. This race will be 10 laps. The chart below shows the times of the five witches who participated in this race.

Contestant Name	Time to Complete 10 Laps
Gertrude	1 minute 24 seconds
Luna	55 seconds
Candala	1 minute 15 seconds
Urula	1 minute 9 seconds
Aggie	58 seconds

How much faster was Luna than Candala?

List the witches' names in order from first place to last place.

What was the difference in seconds between the fastest witch and slowest?

By looking at the chart, what can you conclude about the length of time it took around the hotel?

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The next race is the big one. This is what ALL of the fastest witches come for. For this race, ten witches will be flying 500 kilometers. To prevent crashes in the air, each witch will start at a different time. Fill in the missing spaces on the chart.

Contestant Name	Start Time	End Time	Total Time to Fly 500 Kilometers
Urula	9:35 am	11:34 am	
Ginda	9:40 am		1 hour 40 minutes
Mervia	9:45 am	11:15 am	
Evarana	9:50 am	11:00 am	
Sukie	9:55 am		1 hour 55 minutes
Luna	10:00 am		2 hours 3 minutes
Ingrid	10:05 am	12:01 pm	
Rolley	10:10 am		2 hours 10 minutes

What do you notice about the start times?

Choose three of the witches and represent their start times on the clocks.

Name: _____ 	Name: _____ 	Name: _____
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Write the witches' names in order from first place to eighth place.

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TASK #7 WITCH'S BREW
The witches will be upset if you don't have any witch's brew available for them after the flying competition! Let's make a big batch.

In one batch of witch's brew, there is:

$\frac{1}{4}$ cup spider blood	8 bat wings
5 eyeballs	$\frac{1}{2}$ tablespoon snake venom
$\frac{1}{2}$ cup toadstools	7 worms
4 frog legs	6 vampire teeth
2 slugs	4 cups zombie brew

To have enough for all of the witches, we will need to make a triple batch. How much of each ingredient will you add to the pot?

INGREDIENT	AMOUNT FOR ONE BATCH	AMOUNT FOR A TRIPLE BATCH	INGREDIENT	AMOUNT FOR ONE BATCH	AMOUNT FOR A TRIPLE BATCH

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A group of customers come in to the restaurant but they are not sure what they want to order. You give them some options.

Warty has \$10 to spend. What can he buy from the restaurant?

TASK #8 THE CAULDRON: HOTEL FINE DINING
Your hotel has one of the creepiest restaurants around! It's no wonder that it's busy ALL the time! The Cauldron is open all night and is a popular gathering place for all of the spookiest people in town.

Welcome to The Cauldron
reputable food served with a smile

<p>APPETIZERS AND ENTREES</p> <p>Bone Breadsticks: 6 for \$3 Bat Bites: \$4.50/basket Skeleton Soup: \$3.00 Revoltin' Chicken and Ribs: \$12.50 Boo Burger: \$5.00</p>	<p>DESSERTS AND DRINKS</p> <p>Hocus Pocus Fruit Cup: \$2.75 Cobweb Cupcake: \$1.00 Beastly Brownie: \$2.45 Witch's Brew: \$3.50 Jack-o-Lantern Juice: \$2.00</p>
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<p>Order #1:</p> <p>2 baskets of Bat Bites</p> <p>1 Beastly Brownie</p> <p>1 Witch's Brew</p> <p>TOTAL COST:</p>	<p>Order #2:</p> <p>1 Revoltin' Chicken and Ribs</p> <p>2 Boo Burgers</p> <p>2 Jack-o-Lantern Juice</p> <p>TOTAL COST:</p>
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<p>Order #3:</p> <p>8 Bone Breadsticks</p> <p>1 Skeleton Soup</p> <p>1 Hocus Pocus Fruit Cup</p> <p>1 Beastly Brownie</p>	<p>TOTAL COST:</p>
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pend and a big appetite. What can he buy from the restaurant?

shed and has \$2 to spend. What can be buy from the restaurant?

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TASK #9: OCCUPANCY REPORT

It was another successful October at your hotel! Let's take a look at the number of rooms that were rented throughout the busiest week of the month.

Skills: bar graph, picture graph, data interpretation

TASK #9

OCCUPANCY REPORT

It was another successful October at your hotel! Let's take a look at the number of rooms that were rented throughout the busiest week of the month.

There is a total of 100 rooms in your hotel. This bar graph shows the number of rooms that were booked each day for the busiest week of October.

OCCUPANCY REPORT

Each shaded square represents 10 booked rooms.

Day	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Rooms Booked	0	20	30	40	50	40	30

List three things that this graph tells you about the number of rooms that were NOT rented:

-
-
-

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ANSWER KEYS ARE INCLUDED.

WAYS TO USE MATH PROJECTS IN YOUR CLASSROOM:

Math projects are an ideal way to consolidate learning. I recommend using them as an engaging activity AFTER skills have been learned rather than during learning. You will likely find that engagement is very high and that your students ask to do more of these!

There are many ways to use math projects in your classroom. Some of the most popular are:

- a small-group or pairs activity
- a guided math activity to allow you to see where your students are struggling
- a fun, rewarding way to engage your early finishers
- a low-prep, easy-to-implement activity for a substitute teacher

Enjoy!

Shelley Gray

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