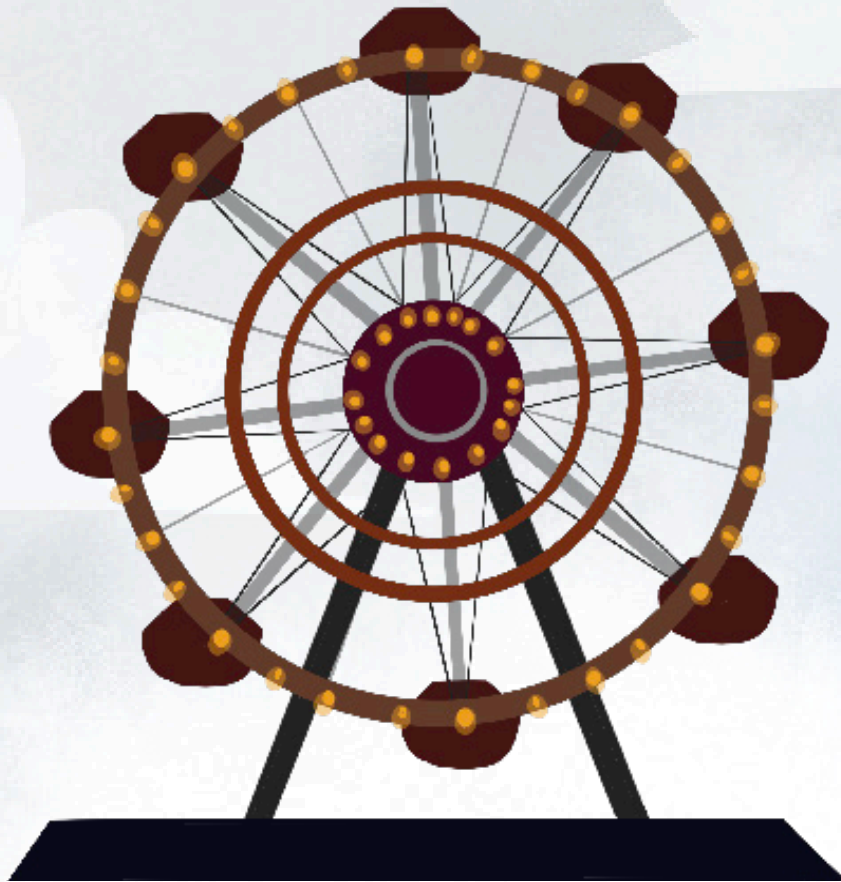


# WonderHere<sup>?</sup>

a unit of study on

## Force & Motion



## CREATE A THEME PARK

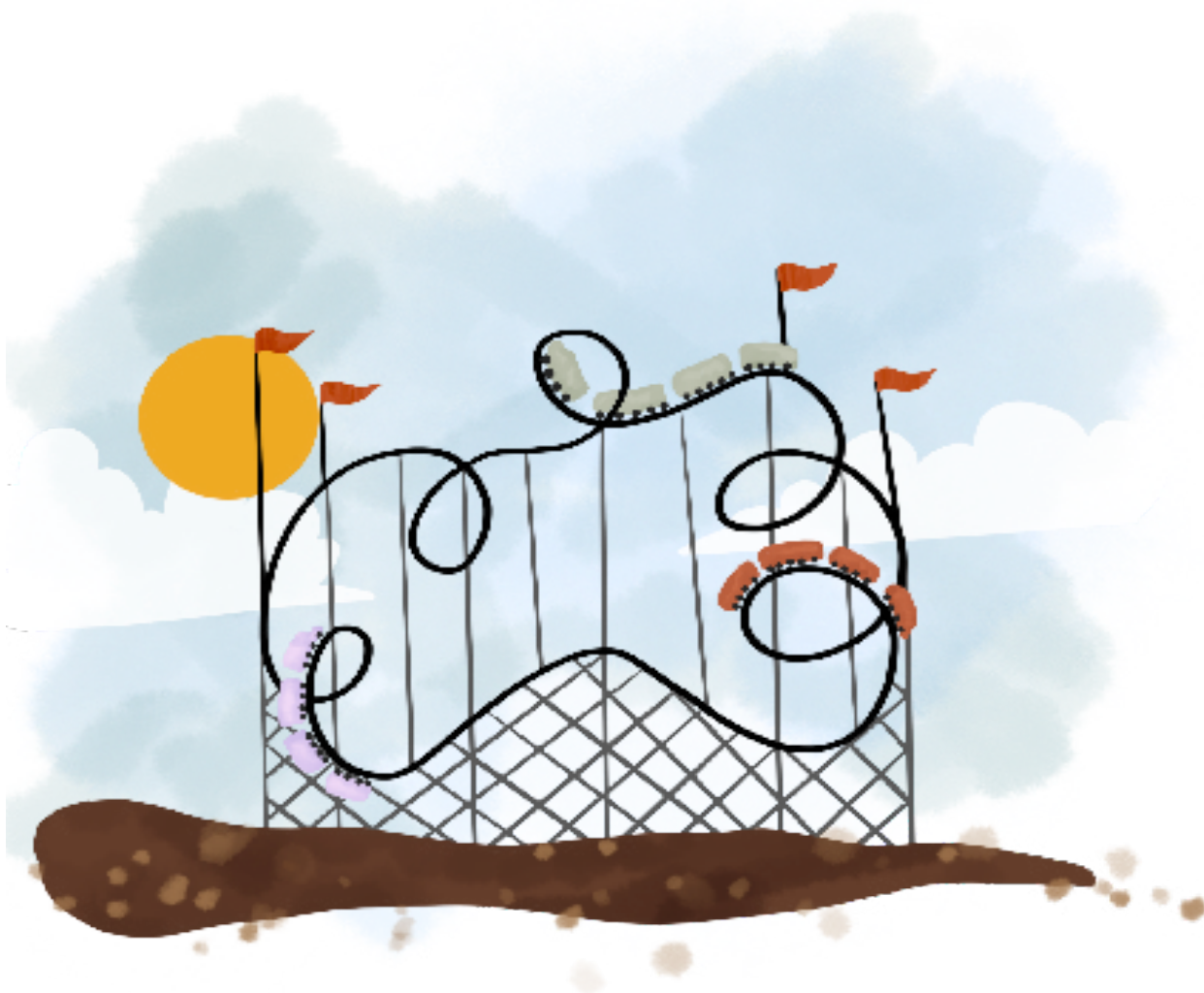
### Math Project

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# create a **THEME PARK**

where math & science collide!

There is *so much* math and science behind the scenes of a theme park. This unit, you will spend time planning and creating your very own theme park! You will brainstorm ideas, design a rollercoaster to scale, design other rides and attractions, create fast passes, plan out food menus, and more!

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Mathematics Topics Addressed	Primary (K-1st)	Post-Primary (2nd-3rd)	Comprehensive (4th-6th)
Develop a concept of numeracy through play.	✓		
Practice measuring accurately and with estimation.	✓	✓	
Telling time to the nearest hour and half hour.	✓	✓	✓
Identify values of coins and dollars.	✓		
Compare the values of numbers.		✓	
Practice operations in versatile situations.		✓	✓
Practice addition and subtraction algorithms.		✓	✓
Understand the concepts of perimeter and area.		✓	
All operations are practiced in versatile situations, utilizing the necessary tools.		✓	✓
Understanding concepts of time, such as telling time to the hour, half hour, quarter hour, 5 minute, and 1 minute.		✓	✓
Understanding the concept of elapsed time.		✓	✓
Practice measuring and paying attention to the accuracy of measurement.			✓
The concept of scale, which is applied to enlargements and reductions.			✓
Understanding the concept of a fraction and practice basic arithmetic operations with fractions in various situations.			✓
Multiplication and division are practiced with natural numbers.			✓
Examining equations and solves them by reasoning and experimentation.			✓

all levels: **TASK 1**

# your EXPERIENCES

Think about a time you went to a theme park or carnival. Think about the rides you went on, the games you played, and the food you ate. Draw or write your experiences below!

A large rectangular box with a solid black border, intended for drawing or writing. At the bottom of the box, there are four sets of horizontal lines for handwriting practice. Each set consists of a solid top line, a dashed middle line, and a solid bottom line.

all levels: **TASK 2**

# your IDEAS

Think about all the fun ideas you have for your very own theme park. Think about the rides and attractions you want to design, and the food you want to sell. Draw your ideas below!

The drawing area is a large, empty rectangular box. At the bottom of this box, there are four sets of horizontal lines for writing. Each set consists of a solid top line, a dashed middle line, and a solid bottom line, providing a guide for text alignment.

Check the types of attractions you plan to have at your park:

- |                                       |                                       |  |
|---------------------------------------|---------------------------------------|--|
| <input type="checkbox"/> Thrill rides | <input type="checkbox"/> Animals      | <input type="checkbox"/> Parade          |
| <input type="checkbox"/> Kids' rides  | <input type="checkbox"/> Shows        | <input type="checkbox"/> Coffee shop     |
| <input type="checkbox"/> Food stands  | <input type="checkbox"/> Water slides | <input type="checkbox"/> Gift shop       |
| <input type="checkbox"/> Restaurants  | <input type="checkbox"/> Splash pad   | <input type="checkbox"/> First aid stand |

Is your theme park going to have a specific *THEME*?

YES

NO

If so, describe it here: \_\_\_\_\_

\_\_\_\_\_

Choose a NAME for your theme park:

\_\_\_\_\_

\_\_\_\_\_

What gave you the idea for that name?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# the RIDES

Rides are known as the best part of theme parks! Whether slow and gentle or fast and thrilling, rides can make people feel like they're defying gravity.

Below is a list of different types of rides. Write in the lines HOW MANY of each ride you'd like in your park! (You need at least one rollercoaster).

- |                    |                   |                     |
|--------------------|-------------------|---------------------|
| ___ Rollercoaster  | ___ Spinning ride | ___ Kiddie ride     |
| ___ Ferris wheel   | ___ Water slide   | ___ Virtual reality |
| ___ Merry go round | ___ Splash pad    | ___ Safari ride     |
| ___ Drop tower     | ___ Train ride    | ___ Splash ride     |

Draw rough sketches of some of your rides to get your creativity flowing. You will get to design them in detail soon!





Primary:

## TASK 5

# the ROLLERCOASTER

Rollercoasters can be thrilling, fun, and even a little scary! The best rollercoasters make riders feel excited, but not too scared, and always safe. Let's learn about some rollercoasters with the tallest drops in the world!



Kingdaka (418 ft. drop)

Top Thrill Dragster (400 ft. drop)

Red Force (347 ft. drop)

Superman Escape from Krypton (328 ft. drop)

Tower of Terror (328 ft. drop)

Fury 325 (318 ft. drop)

Steel Dragon 2000 (307 ft. drop)

Leviathan (306 ft. drop)

Millennium Force (300 ft. drop)

Intimidator 305 (256 ft. drop)

Coaster through the Clouds (256 ft. drop)

Goliath (255 ft. drop)

Titan (255 ft. drop)

# the ROLLERCOASTER

Math Topic:

*Develop a concept of numeracy through play*

Practice writing the rollercoaster heights from page 8 below!  
Then, practice writing them through sensory activities, like in shaving cream or forming them from playdough!

418

---

---

---

---

400

---

---

---

---

328

---

---

---

---

306

---

---

---

---

255

---

---

---

---

# the ROLLERCOASTER

Math Topic:

*Practice measuring accurately and with estimation.*

It's time to plan your OWN rollercoaster! Write in the features of your coaster!

My rollercoaster's name is:

---

---

---

## MEASUREMENT

On the next two pages you will design your rollercoaster on grid paper. The squares will help you draw your rollercoaster neatly and precisely, and know how many squares it measures. Write down your rollercoaster's measurements below:

Tallest drop:

---

---

---

squares tall

Loop:

---

---

---

squares tall

Length of rollercoaster:

---

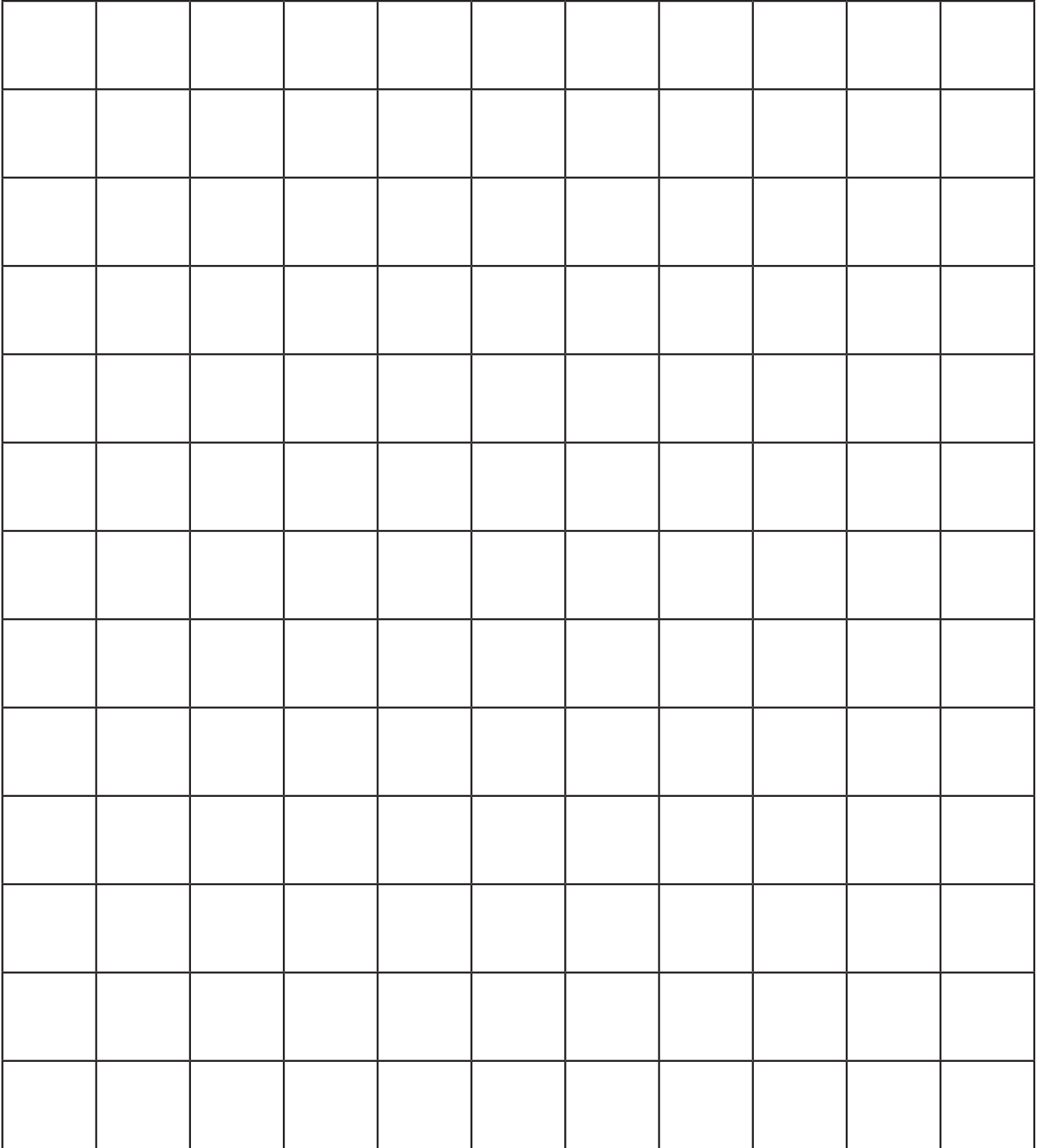
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---

squares long

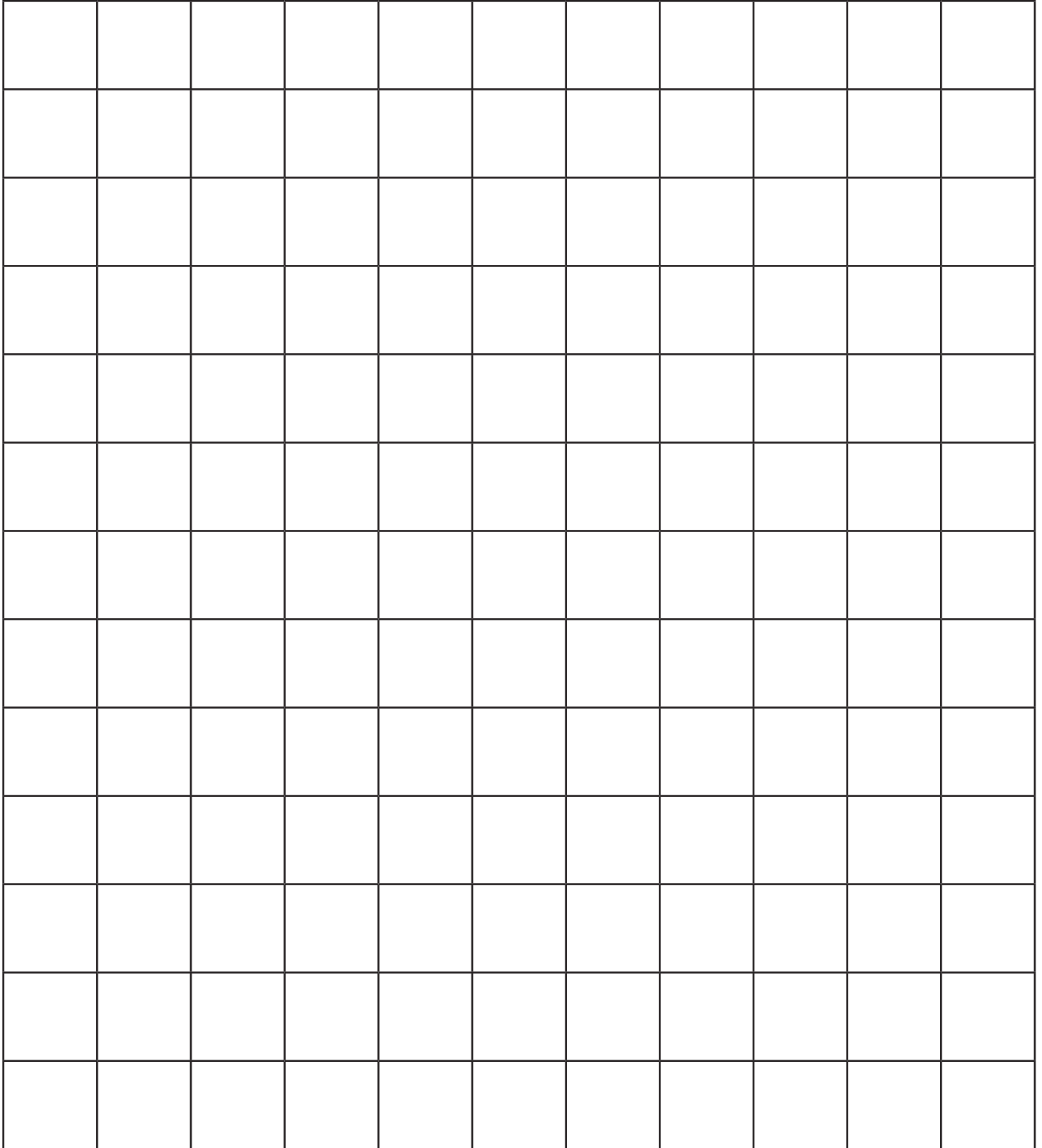
# the ROLLERCOASTER

Combine these two pages (p. 11-12) to design your rollercoaster.



# the ROLLERCOASTER

Combine these two pages (p. 11-12) to design your rollercoaster.



Design another ride below!

Name of ride:

\_\_\_\_\_

-----

\_\_\_\_\_

Measurements:

\_\_\_\_\_ squares tall      \_\_\_\_\_ squares long


# more RIDES

Design another ride below!

Name of ride:

\_\_\_\_\_

-----

\_\_\_\_\_

Measurements:

----- squares tall      ----- squares long

\_\_\_\_\_


# more RIDES

Design another ride below!

Name of ride: \_\_\_\_\_  
-----  
\_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall      \_\_\_\_\_ squares long




# more RIDES

Design another ride below!

Name of ride: \_\_\_\_\_  
 \_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall      \_\_\_\_\_ squares long


# more RIDES

Design another ride below!

Name of ride:

\_\_\_\_\_

-----

\_\_\_\_\_

Measurements:

\_\_\_\_\_ squares tall      \_\_\_\_\_ squares long


Math Topic:

*Telling time to the nearest hour and half hour.*

People can use Fast Passes to decide what time they want to ride a ride, therefore skipping the line.

Write out the missing Fast Pass time below in analog time.

**1** Your ride time is:

2 : 30 PM

FAST PASS

digital time

analog time

**2** Your ride time is:

5 : 00 PM

FAST PASS

# fast PASSES

**3** Your ride time is:

7 : 30 PM



FAST PASS

Detailed description: This is a brown, ticket-shaped card with a scalloped edge. On the left side, the word 'FAST' is written vertically in a stylized, textured font. On the right side, the word 'PASS' is written vertically in the same font. In the top left corner, a dark circle contains the number '3'. Below this, the text 'Your ride time is:' is printed. The time '7 : 30' is handwritten in black ink, with 'PM' written below it. To the right of the time is a circular analog clock face with numbers 1 through 12 and a central dot. The hands of the clock are not present, but the time 7:30 is indicated by the position of the numbers.

**4** Your ride time is:

10 : 00 AM




FAST PASS

Detailed description: This is a brown, ticket-shaped card with a scalloped edge. On the left side, the word 'FAST' is written vertically in a stylized, textured font. On the right side, the word 'PASS' is written vertically in the same font. In the top left corner, a dark circle contains the number '4'. Below this, the text 'Your ride time is:' is printed. The time '10 : 00' is handwritten in black ink, with 'AM' written below it. To the right of the time is a circular analog clock face with numbers 1 through 12 and a central dot. The hands of the clock are not present, but the time 10:00 is indicated by the position of the numbers.

**5** Your ride time is:

6 : 30 PM



FAST PASS

Detailed description: This is a brown, ticket-shaped card with a scalloped edge. On the left side, the word 'FAST' is written vertically in a stylized, textured font. On the right side, the word 'PASS' is written vertically in the same font. In the top left corner, a dark circle contains the number '5'. Below this, the text 'Your ride time is:' is printed. The time '6 : 30' is handwritten in black ink, with 'PM' written below it. To the right of the time is a circular analog clock face with numbers 1 through 12 and a central dot. The hands of the clock are not present, but the time 6:30 is indicated by the position of the numbers.

# fast PASSES



# fast PASSES

**6** Your ride time is:

FAST PASS

9 : 30 PM



An analog clock face with numbers 1 through 12. The hour hand is positioned between 9 and 10, and the minute hand is pointing exactly at 6, representing 9:30. The clock is centered on a brown background.

**7** Your ride time is:

FAST PASS

8 : 00 PM




An analog clock face with numbers 1 through 12. The hour hand is pointing exactly at 8, and the minute hand is pointing exactly at 12, representing 8:00. The clock is centered on a brown background.

**8** Your ride time is:

FAST PASS

12 : 00 PM

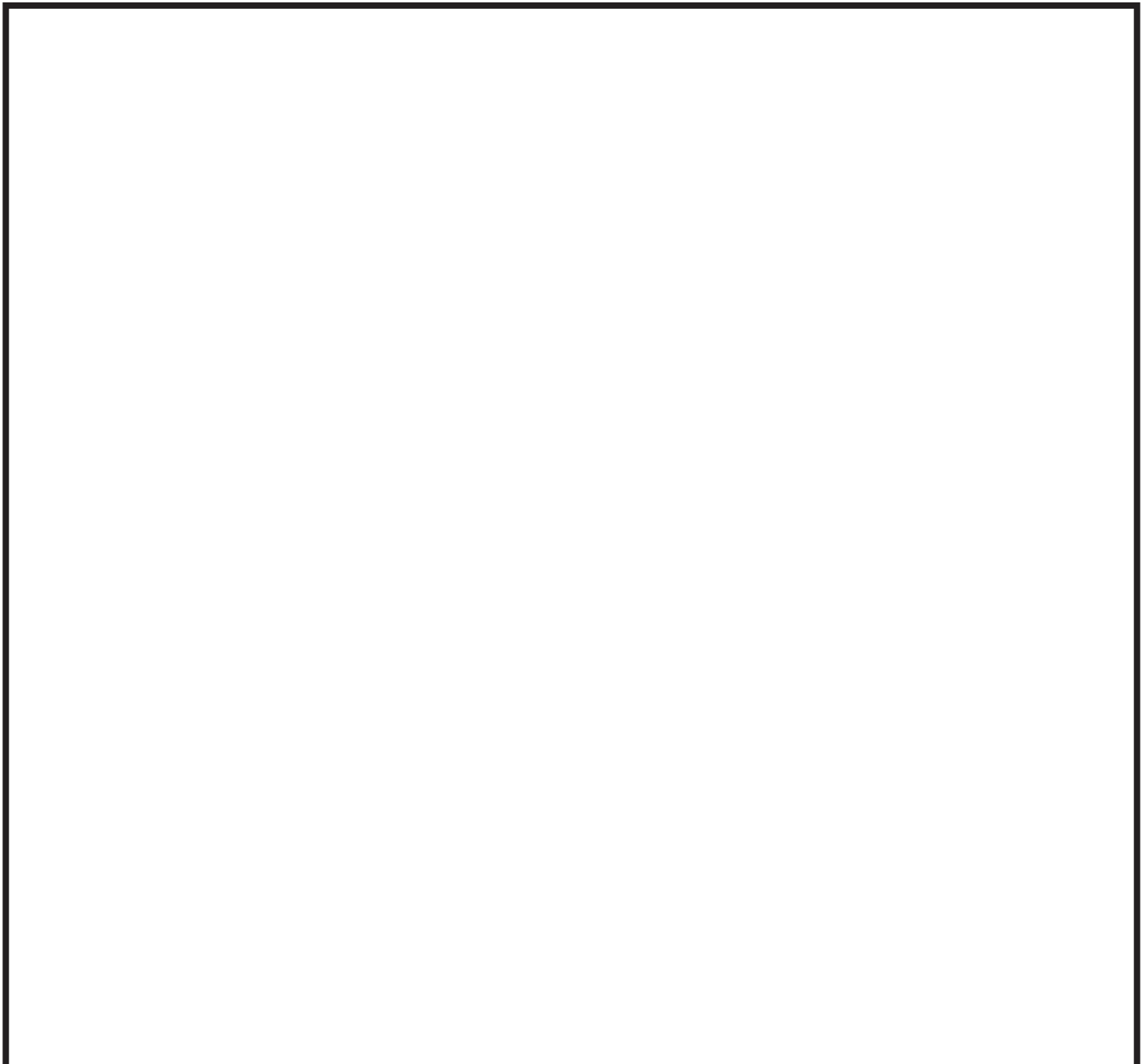


An analog clock face with numbers 1 through 12. The hour hand is pointing exactly at 12, and the minute hand is pointing exactly at 12, representing 12:00. The clock is centered on a brown background.

Primary: **TASK 8**

# the FOOD

All the walking around and ride-riding at a theme park can sure make a person hungry! Good food is an important part of any park. You need to provide a variety of options for your park goers. Food stands and restaurants can have different food themes, like quick snacks, Italian, burgers & fries, desserts only, and more! Brainstorm some ideas below...



# the FOOD

Math Topic:

*Identify values of coins and dollars*

Create a menu with food items to sell, and decide on a price for each. Then, use the coin and dollar bill graphics on the next two pages (or real money!) to practice making those prices.

Food Stand / Restaurant Name:

---

---

---

Menu Item	Price
	\$ _____.
	\$ _____.
	\$ _____.
	\$ _____.
	\$ _____.
	\$ _____.











# Primary: TASK 9

# putting it all TOGETHER

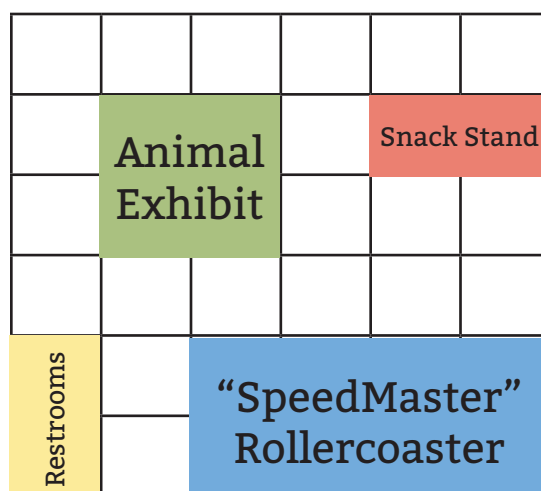
Now that all the planning is done, it is time to put your entire park together on the next four pages (p. 29-32). You will tape the four pages together to make a giant grid that represents your whole park.

When you draw your attractions on the grid, you'll be doing so from a *bird's eye view*, which means like you're looking at it from above. Here is an example:



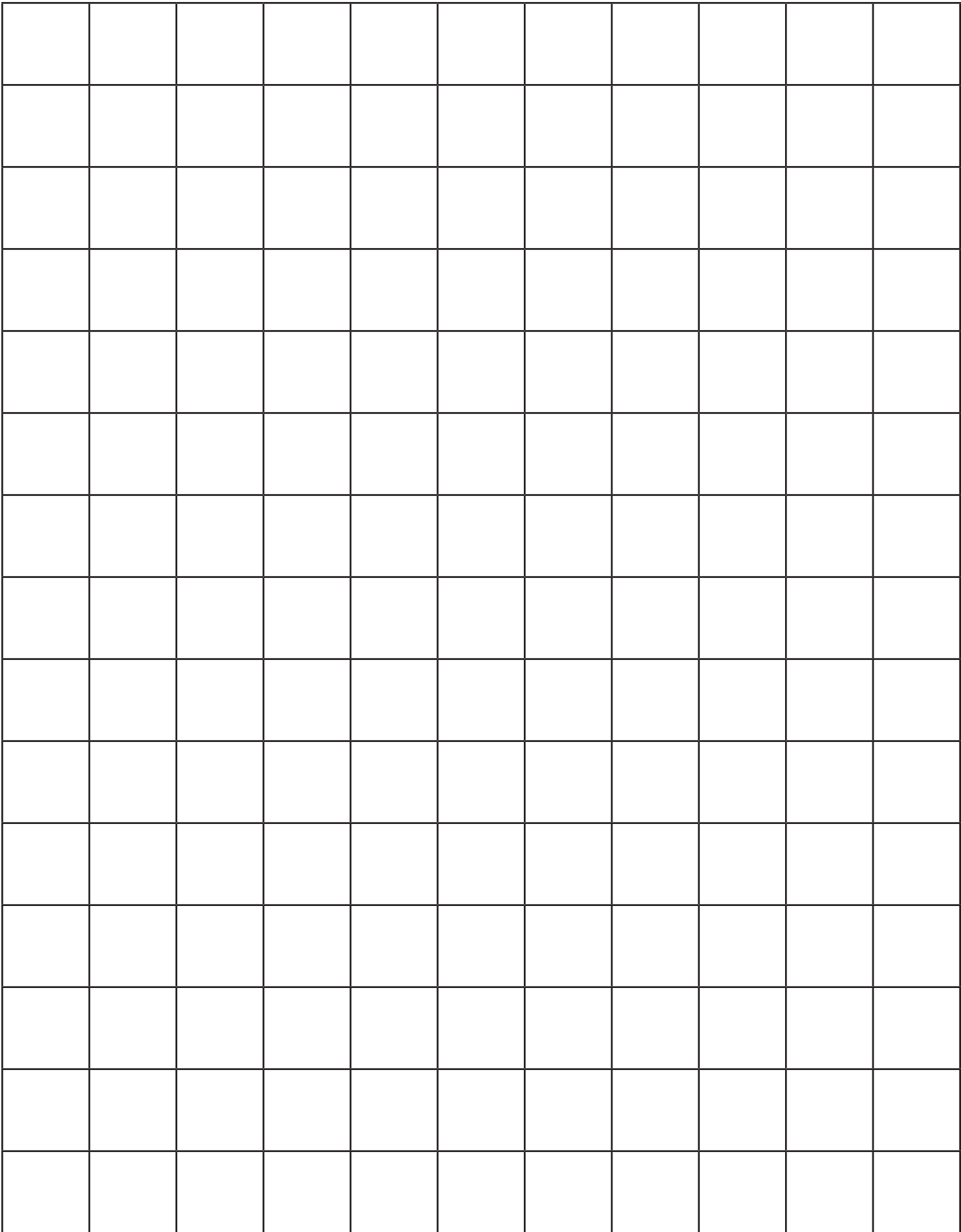
Remember to

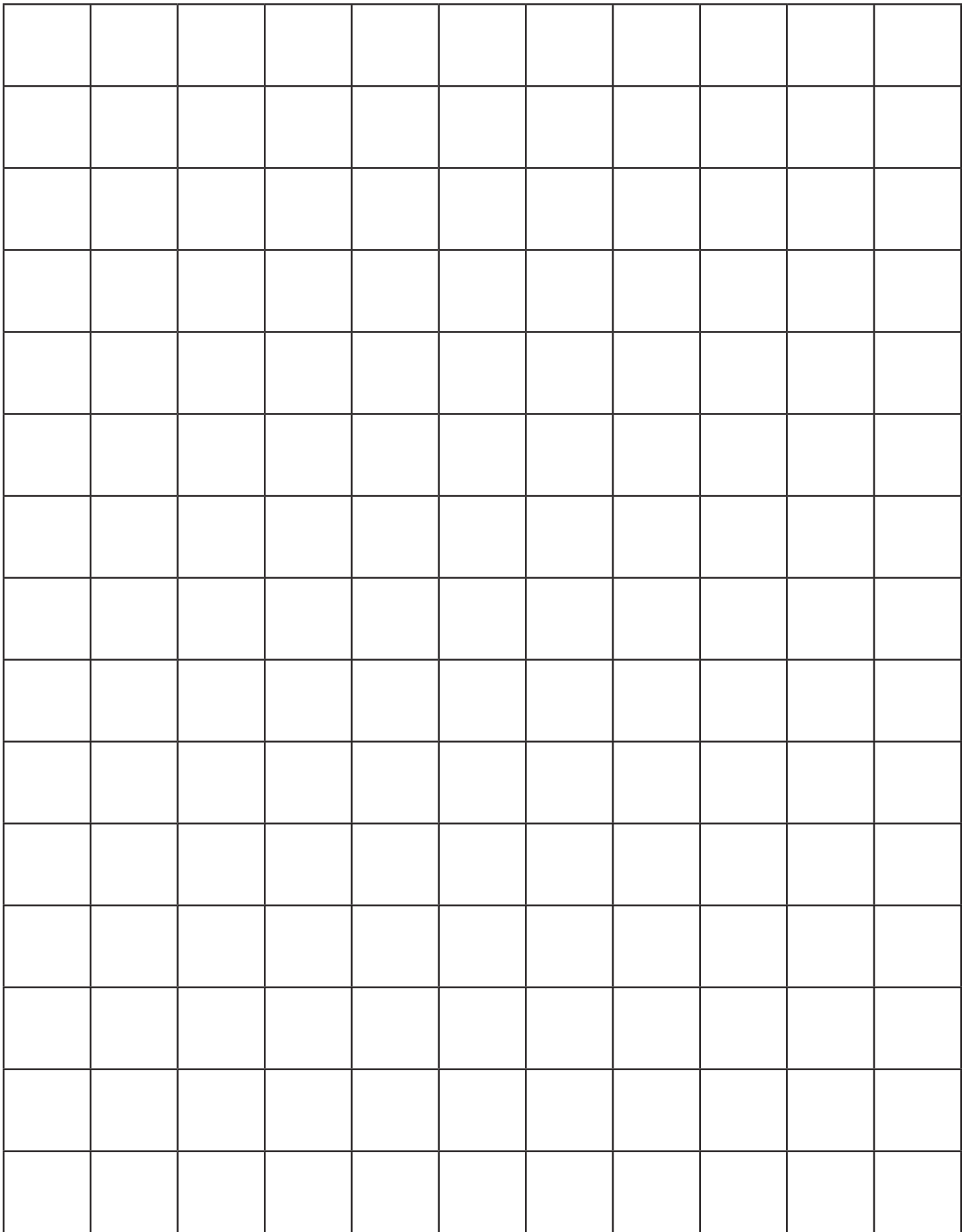
- Follow the grid lines precisely
- Give enough space in between
- Lightly color in each attraction
- Label each attraction
- Fill the entire park!

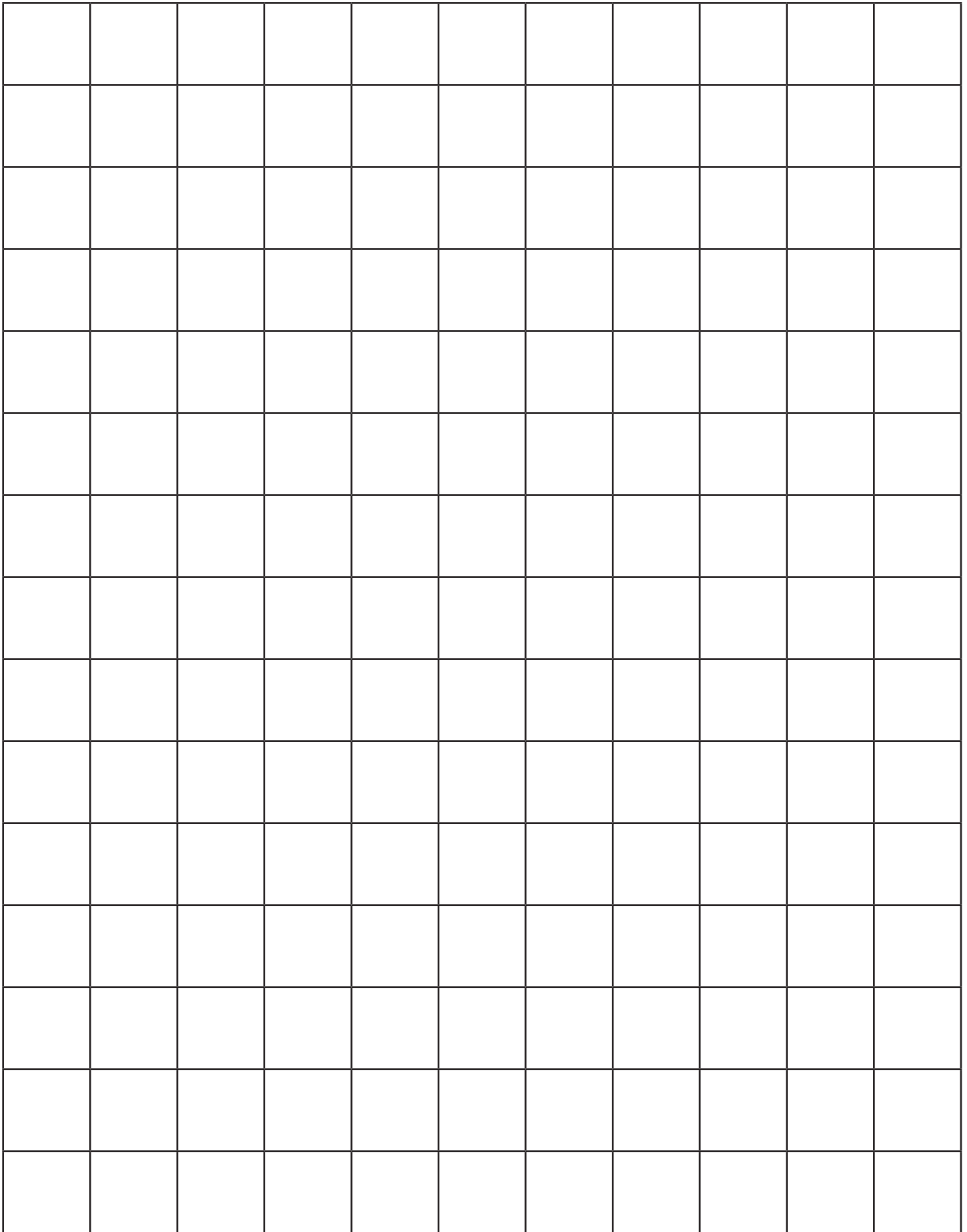


Your park should have all of the following:

- Rollercoasters
- Other Rides
- Other Attractions (exhibits, shows, etc)
- Food Stands / Restaurants
- Information Center
- First Aid Stand
- Gift Shop
- Restrooms
- Benches & Trashcans










# Primary Project Rubric

	Neatness	Creativity	Effort	Mathematical Understanding
Mastery	The project was completed very neatly with great attention to detail.	The child utilized their imagination and displayed out-of-the-box thinking when developing their business.	The child put a lot of time and effort into this project, taking great pride in their work. When met with challenges, they persevered.	The child showed <i>thorough</i> understanding of mathematical concepts throughout the project.
Progressing	The project was completed somewhat neatly. The child displayed some attention to detail.	The child showed some creativity when developing their business, and needed some extra guidance when thinking of ideas.	The child put some time and effort into this project, sometimes taking pride in their work depending on the task.	The child showed <i>some</i> understanding of mathematical concepts throughout the project, needing guidance along the way.
Developing	The project was incomplete or completed messily with little or no attention to detail.	The child showed little creativity and/or interest when developing their business, needing much prompting along the way.	The child showed disinterest and put little effort into the project. They needed much prompting along the way to finish.	The child showed <i>little to no</i> understanding of mathematical concepts throughout the project, and seemed lost in the math tasks.

# Post-Primary: TASK 5 the ROLLERCOASTER

Rollercoasters can be thrilling, fun, and even a little scary! The best rollercoasters make riders feel excited, but not too scared, and always safe. Let's learn about some rollercoasters with the tallest drops in the world!



Kingdaka (418 ft. drop)

Top Thrill Dragster (400 ft. drop)

Red Force (347 ft. drop)

Superman Escape from Krypton (328 ft. drop)

Tower of Terror (328 ft. drop)

Fury 325 (318 ft. drop)

Steel Dragon 2000 (307 ft. drop)

Leviathan (306 ft. drop)

Millennium Force (300 ft. drop)

Intimidator 305 (256 ft. drop)

Coaster through the Clouds (256 ft. drop)

Goliath (255 ft. drop)

Titan (255 ft. drop)

# the ROLLERCOASTER

Math Topic:

*Compare the values of numbers. Practice operations (addition and subtraction) in versatile situations.*

Use page 8 to help you answer these questions. Use scrap paper to work out the problems!

Which rollercoaster has a taller drop: Steel Dragon or Fury?

---

Which rollercoaster has a taller drop: Goliath or Superman?

---

How much taller is Red Force than Intimidator 305?

---

How much taller is Kingdaka than Millennium Force?

---

If you were to stack all 13 of these rollercoasters on top of each other to make one GIANT rollercoaster, how tall would it be?

---

# the ROLLERCOASTER

Math Topic:

*Practice measuring accurately and with estimation.*

It's time to plan your OWN rollercoaster! Write in the features of your coaster!

My rollercoaster's name is: \_\_\_\_\_

Duration of ride: \_\_\_\_\_

Number of drops: \_\_\_\_\_

Number of riders: \_\_\_\_\_

Number of loops: \_\_\_\_\_

## MEASUREMENT

On the next two pages you will design your rollercoaster on grid paper. The squares will help you draw your rollercoaster neatly and precisely, and know how many squares it measures.

Write down your rollercoaster's measurements below:

Tallest drop: \_\_\_\_\_ squares tall

Shortest drop: \_\_\_\_\_ squares tall

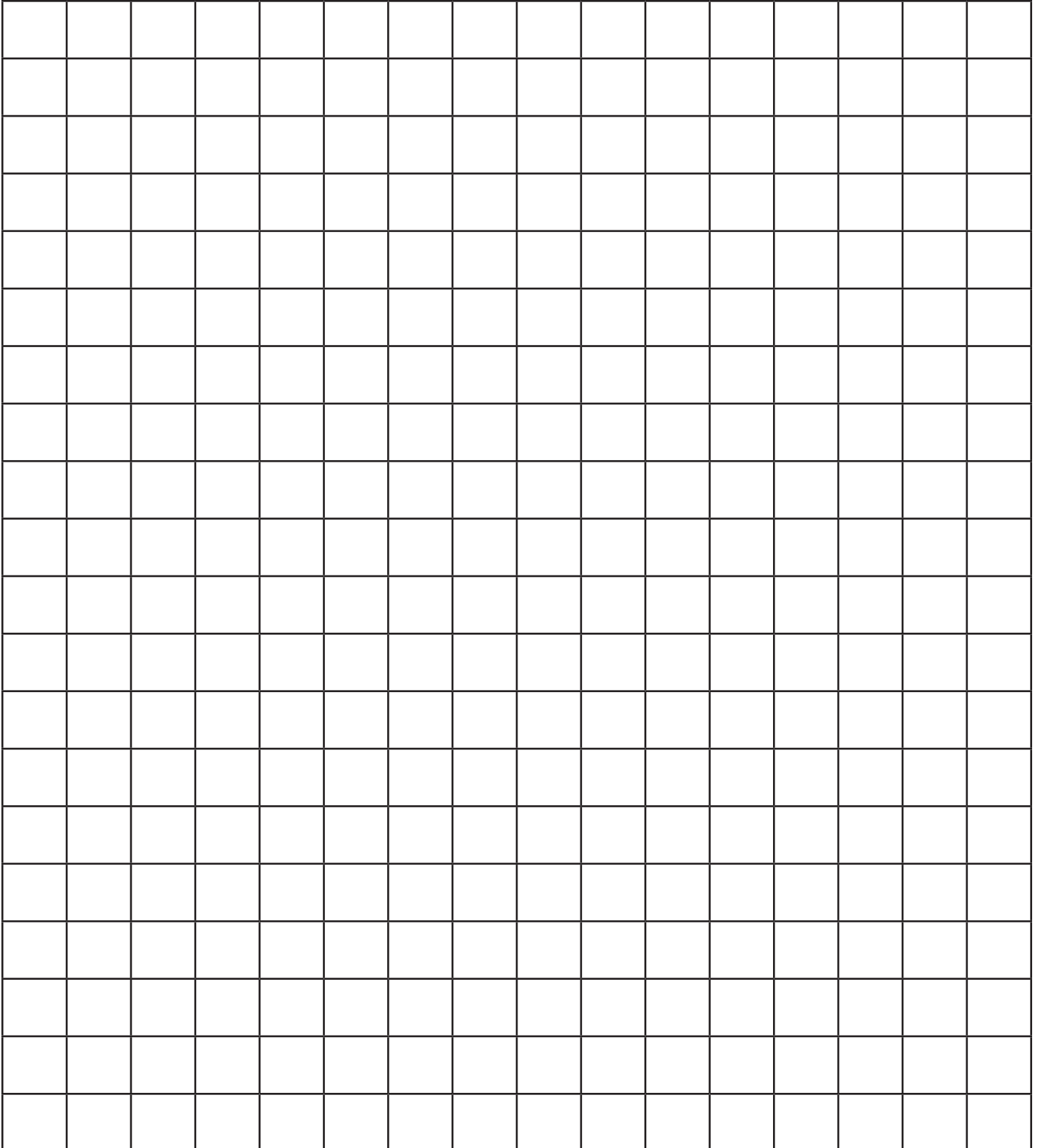
Loop: \_\_\_\_\_ squares tall

Length of rollercoaster: \_\_\_\_\_ squares long

Length of rollercoaster cars: \_\_\_\_\_ squares long

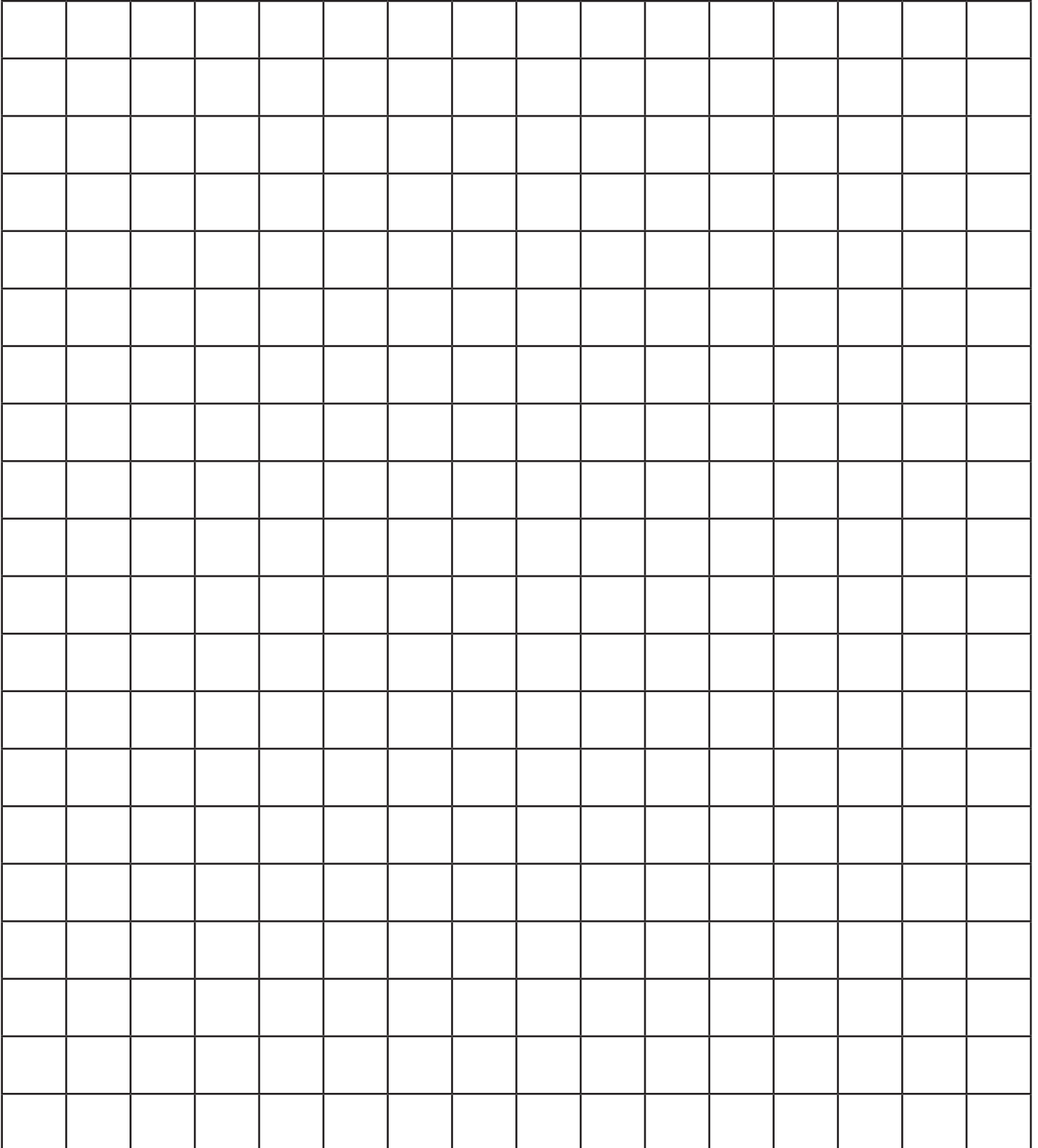
# the ROLLERCOASTER

Combine these two pages (p. 11-12) to design your rollercoaster.



# the ROLLERCOASTER

Combine these two pages (p. 11-12) to design your rollercoaster.



Post-Primary: **TASK 6**

# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall \_\_\_\_\_ squares long




# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall \_\_\_\_\_ squares long

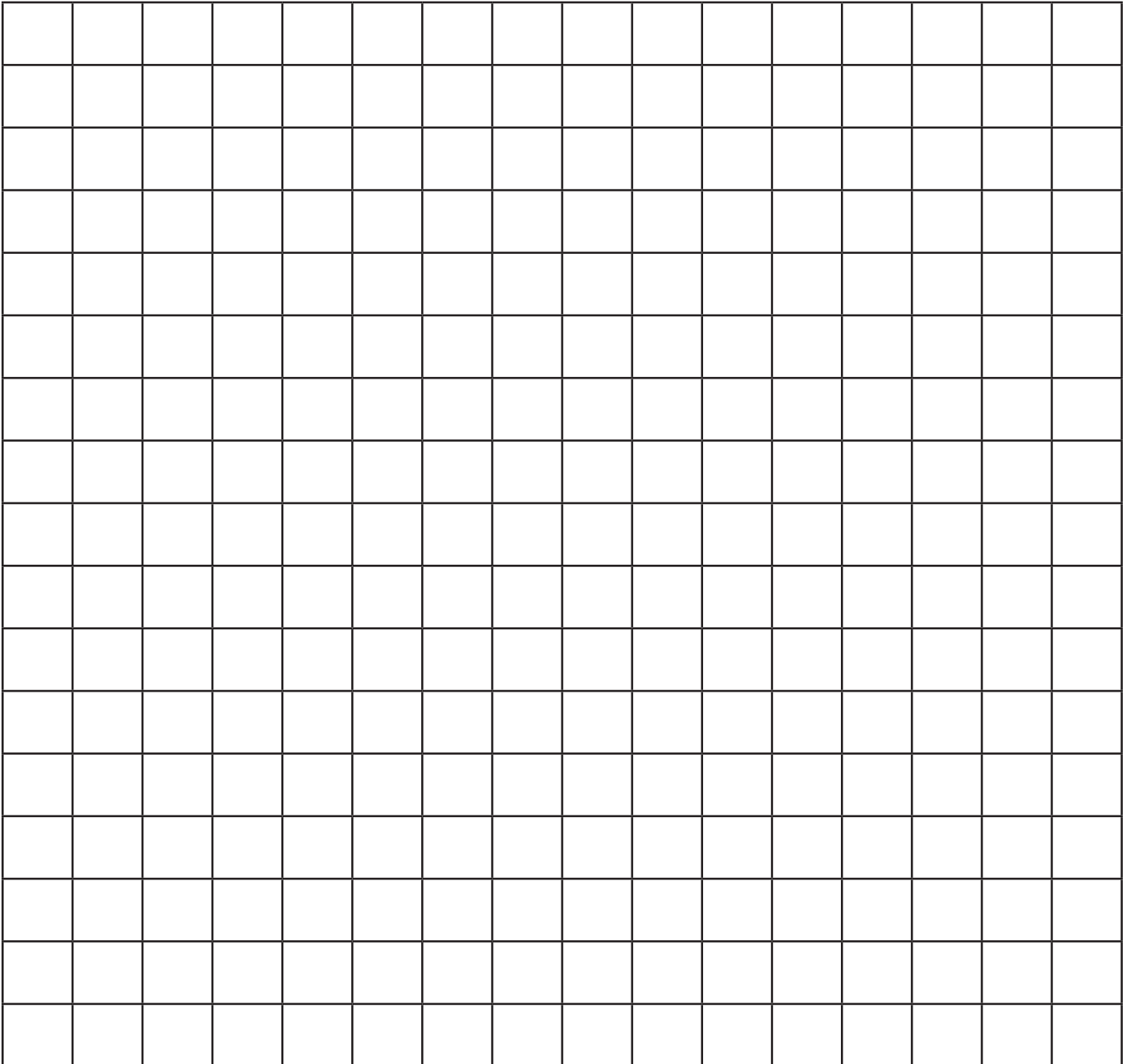

# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall \_\_\_\_\_ squares long



# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall \_\_\_\_\_ squares long

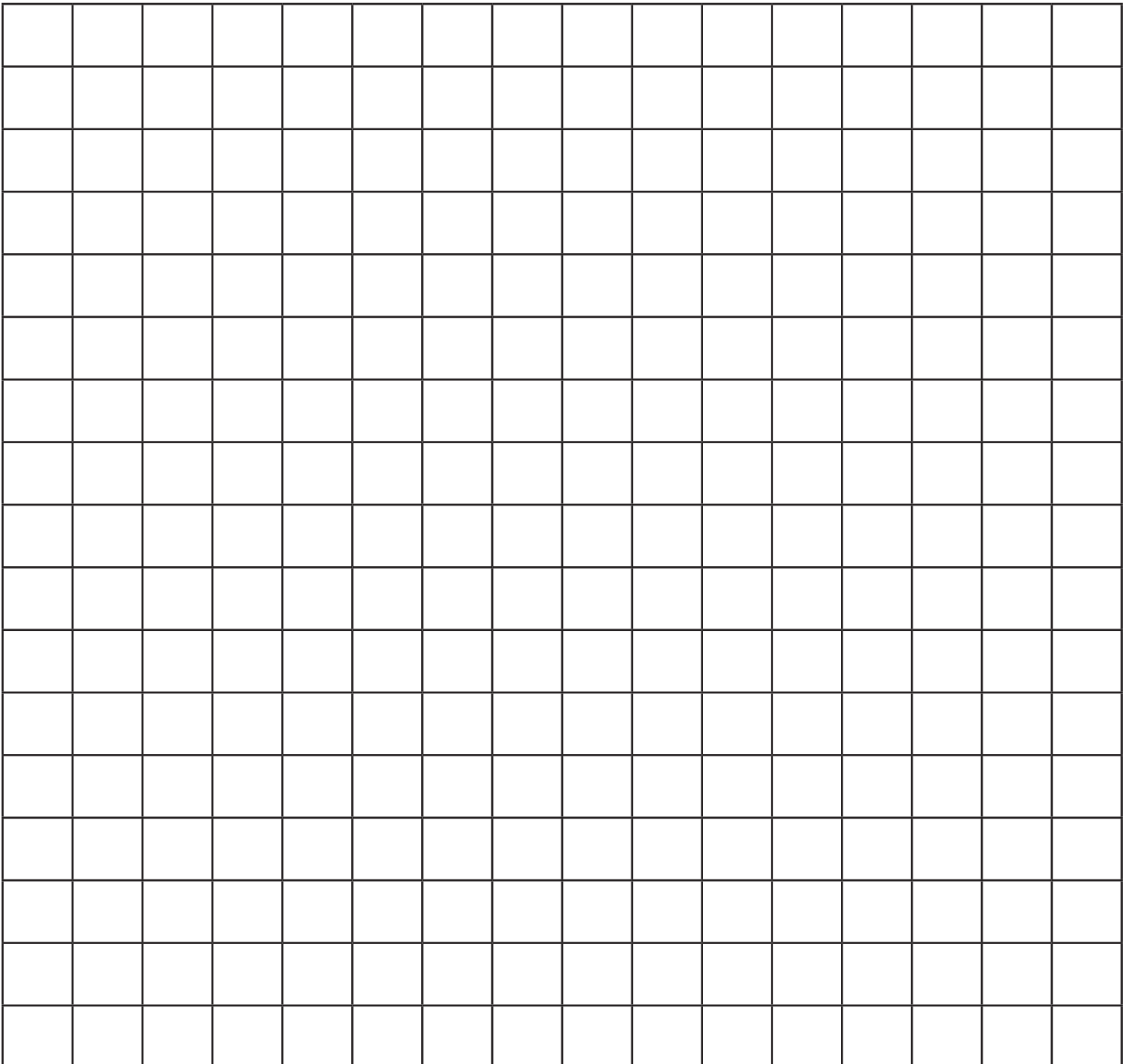

# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Measurements: \_\_\_\_\_ squares tall \_\_\_\_\_ squares long



# fast PASSES

Math Topic:

*Telling time to the nearest hour, half hour, quarter hour, 5 minute, and 1 minute.*

People can use Fast Passes to decide what time they want to ride a ride, therefore skipping the line. Write out the missing Fast Pass time below in either digital time or analog time.

**1** Your ride time is:

FAST PASS

\_\_\_\_\_ : \_\_\_\_\_ PM



digital time analog time

**2** Your ride time is:

FAST PASS


2 : 30 PM



# fast PASSES

**3** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_ PM



**FAST** **PASS**

**4** Your ride time is:

10 : 25 AM



**FAST** **PASS**

**5** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_ PM



**FAST** **PASS**

# fast PASSES

**6** Your ride time is:

6 : 48  
PM




FAST PASS

Detailed description: This is a brown, ticket-shaped card with the words 'FAST' and 'PASS' written vertically on the left and right sides. At the top left, a dark circle contains the number '6'. Below it, the text 'Your ride time is:' is followed by a time entry '6 : 48' with a horizontal line under each number and 'PM' written below. To the right is a circular analog clock face with numbers 1 through 12 and a central dot. The hands are positioned to show 6:48.

**7** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_  
PM



FAST PASS

Detailed description: This is a brown, ticket-shaped card with the words 'FAST' and 'PASS' written vertically on the left and right sides. At the top left, a dark circle contains the number '7'. Below it, the text 'Your ride time is:' is followed by two blank lines for the hour and minute, and 'PM' written below. To the right is a circular analog clock face with numbers 1 through 12 and a central dot. The hands are positioned to show 6:48.

**8** Your ride time is:

1 : 33  
PM



FAST PASS

Detailed description: This is a brown, ticket-shaped card with the words 'FAST' and 'PASS' written vertically on the left and right sides. At the top left, a dark circle contains the number '8'. Below it, the text 'Your ride time is:' is followed by a time entry '1 : 33' with a horizontal line under each number and 'PM' written below. To the right is a circular analog clock face with numbers 1 through 12 and a central dot. The hands are positioned to show 1:33.

# fast PASSES

Math Topic:

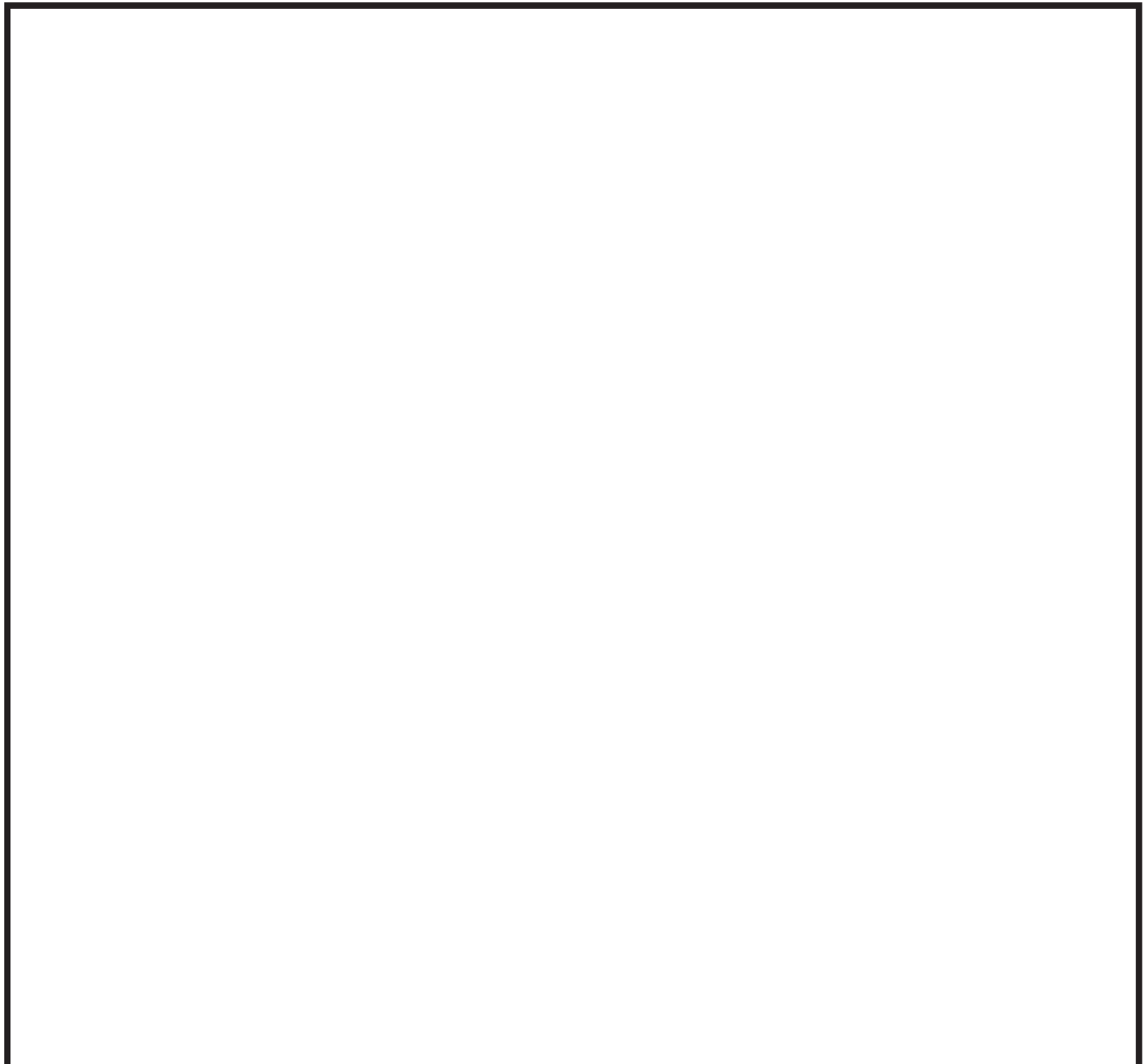
*Deciphering elapsed time.*

Now that you have the accurate digital and analog times on your Fast Passes, you need to figure out how long until your ride time (elapsed time)! Complete the table below to help you.

Fast Pass #	Current Time	Ride Time	Elapsed Time
#1	1:45 PM	3:00 PM	1 hr, 15 mins until we ride!
#2	11:15 AM		
#3	6:00 PM		
#4	9:50 AM		
#5	12:15 PM		
#6	4:00 PM		
#7	3:25 PM		
#8	10:45 AM		



All the walking around and ride-riding at a theme park can sure make a person hungry! Good food is an important part of any park. You need to provide a variety of options for your park goers. Food stands and restaurants can have different food themes, like quick snacks, Italian, burgers & fries, desserts only, and more! Brainstorm some ideas below...



# the FOOD

Math Topic:

*Practice addition and subtraction algorithms.*

Food Stand / Restaurant Name: \_\_\_\_\_

Theme: \_\_\_\_\_

Menu Item	Price
<b>TOTAL cost of food on this menu:</b>	

# the FOOD

Food Stand / Restaurant Name: \_\_\_\_\_

Theme: \_\_\_\_\_

Menu Item	Price
<b>Total cost of food on this menu:</b>	

# the FOOD

Food Stand / Restaurant Name: \_\_\_\_\_

Theme: \_\_\_\_\_

Menu Item	Price
Total cost of food on this menu:	

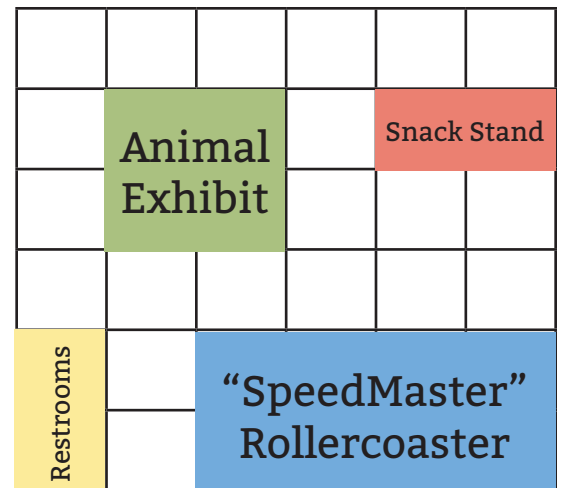
Now that all the planning is done, it is time to put your entire park together on the next four pages (p. 29-32). You will tape the four pages together to make a giant grid that represents your whole park.

When you draw your attractions on the grid, you'll be doing so from a *bird's eye view*, which means like you're looking at it from above. Here is an example:



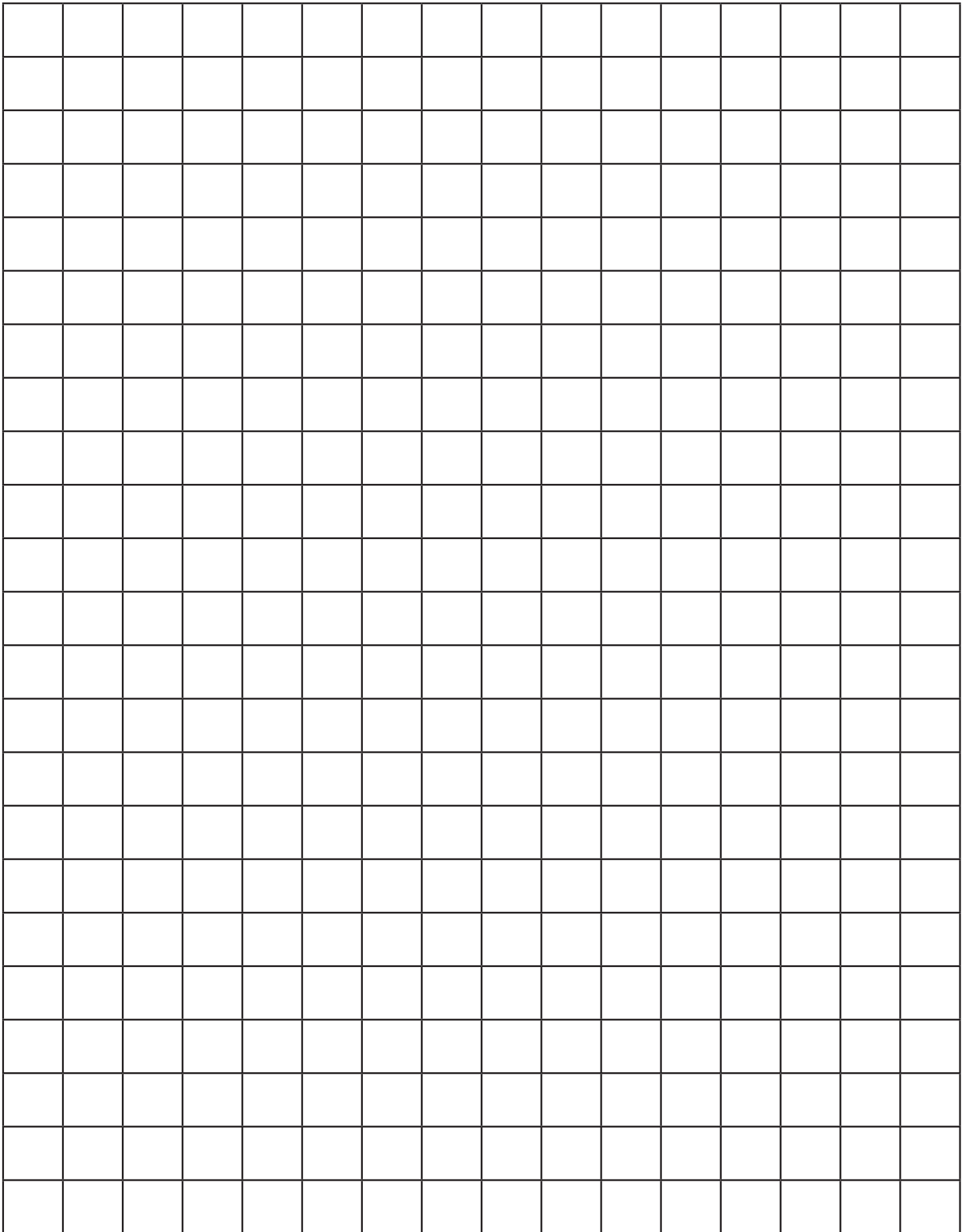
Remember to

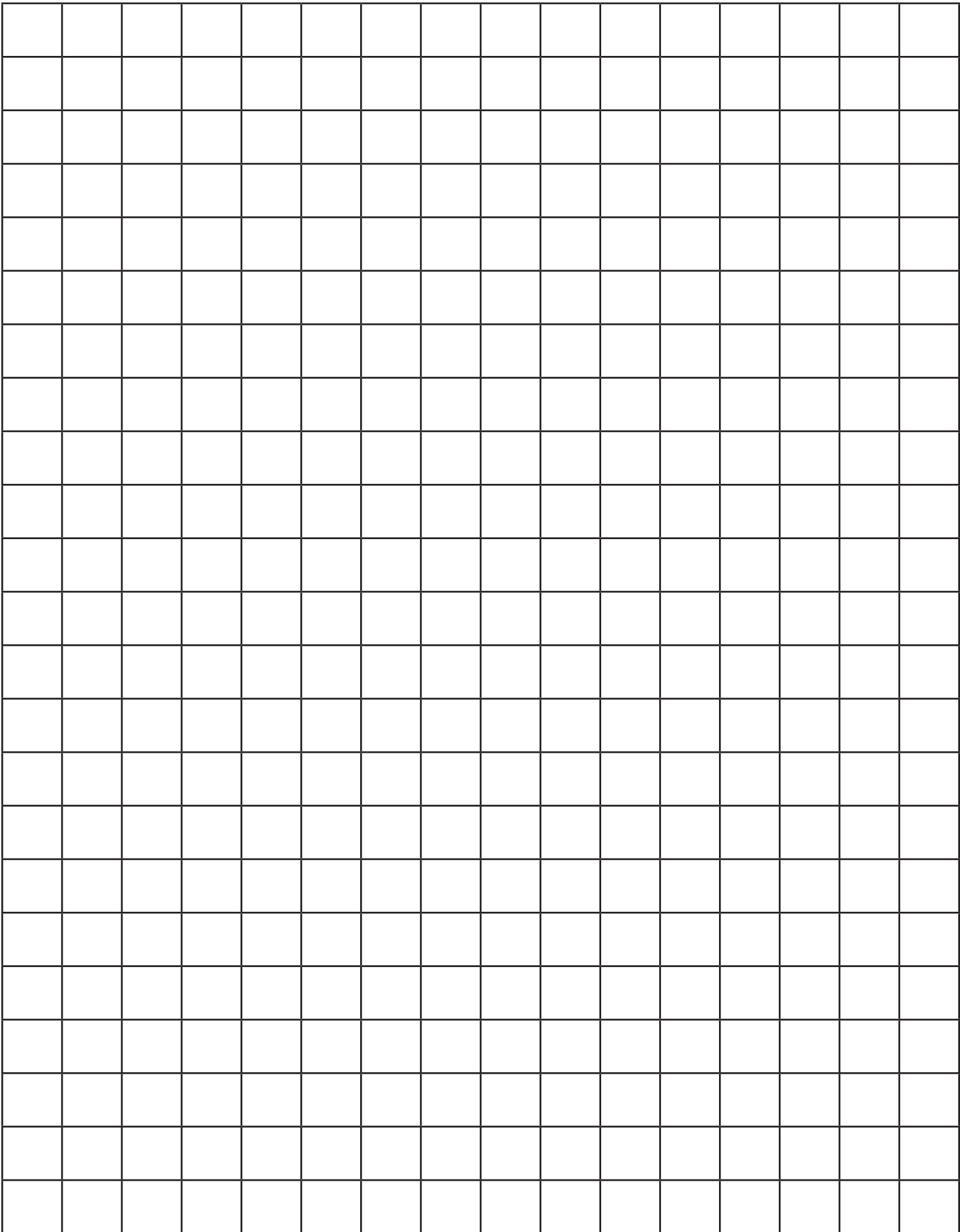
- Follow the grid lines precisely
- Give enough space in between
- Lightly color in each attraction
- Label each attraction
- Fill the entire park!

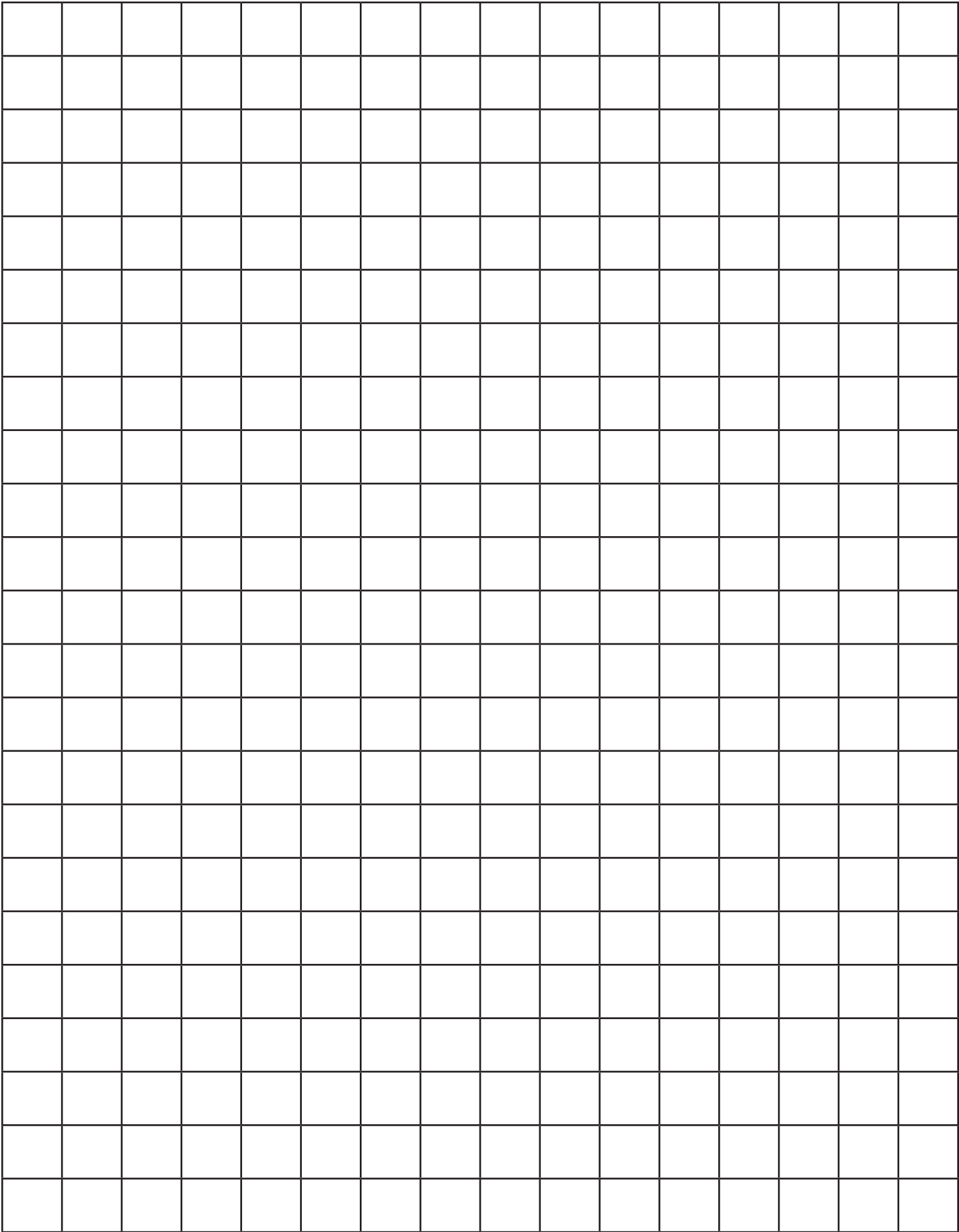


Your park should have all of the following:

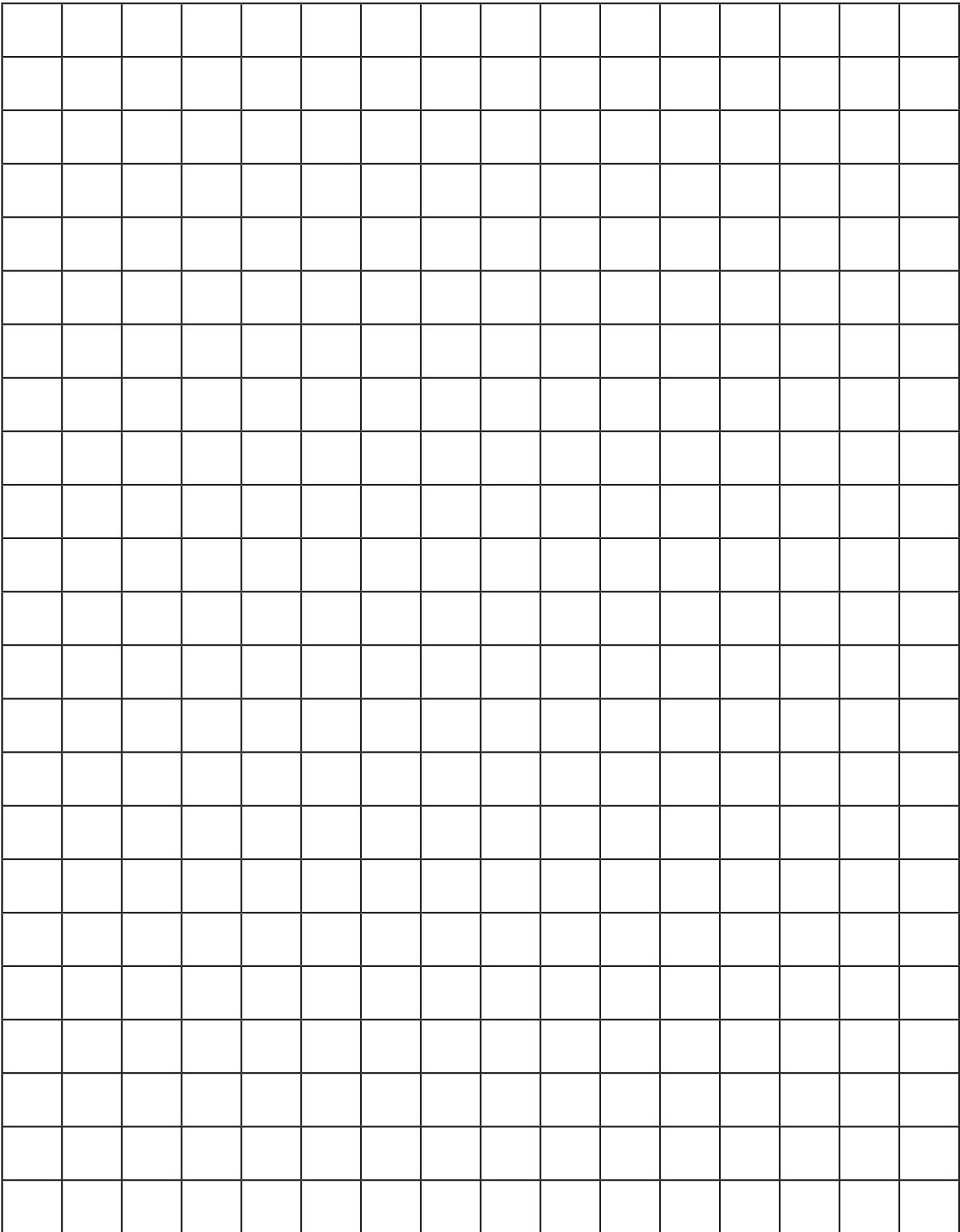
- Rollercoasters
- Other Rides
- Other Attractions (exhibits, shows, etc)
- Food Stands / Restaurants
- Information Center
- First Aid Stand
- Gift Shop
- Restrooms
- Benches & Trashcans











Math Topic:

*Understand the concepts of perimeter and area.*

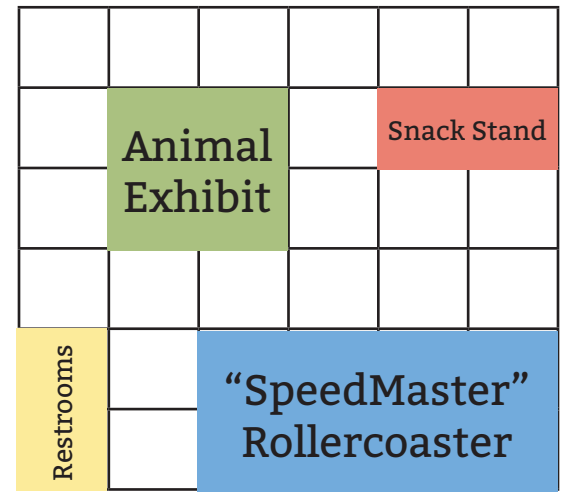
Now that your park is all finished (hooray!), it's time to measure the perimeter and area of your attractions!

Let's use this as an example again:



### PERIMETER

*Perimeter* is the distance around an object. For example, the perimeter of the Snack Stand is 6 squares long. You can find the perimeter by adding length + length + width + width.



### AREA

*Area* is the size of an entire surface. For example, the area of the Animal Exhibit is 4 squares. You can find the area by multiplying length x width.

Let's put this in our table:

Attraction	Perimeter	Area
Animal Exhibit	8 squares	4 squares
Snack Stand	6 squares	2 squares
Rollercoaster	12 squares	8 squares
Restrooms	6 squares	2 squares

# the final TASK

Now it's your turn! Choose 12 attractions from your final project to find the perimeter and area of.

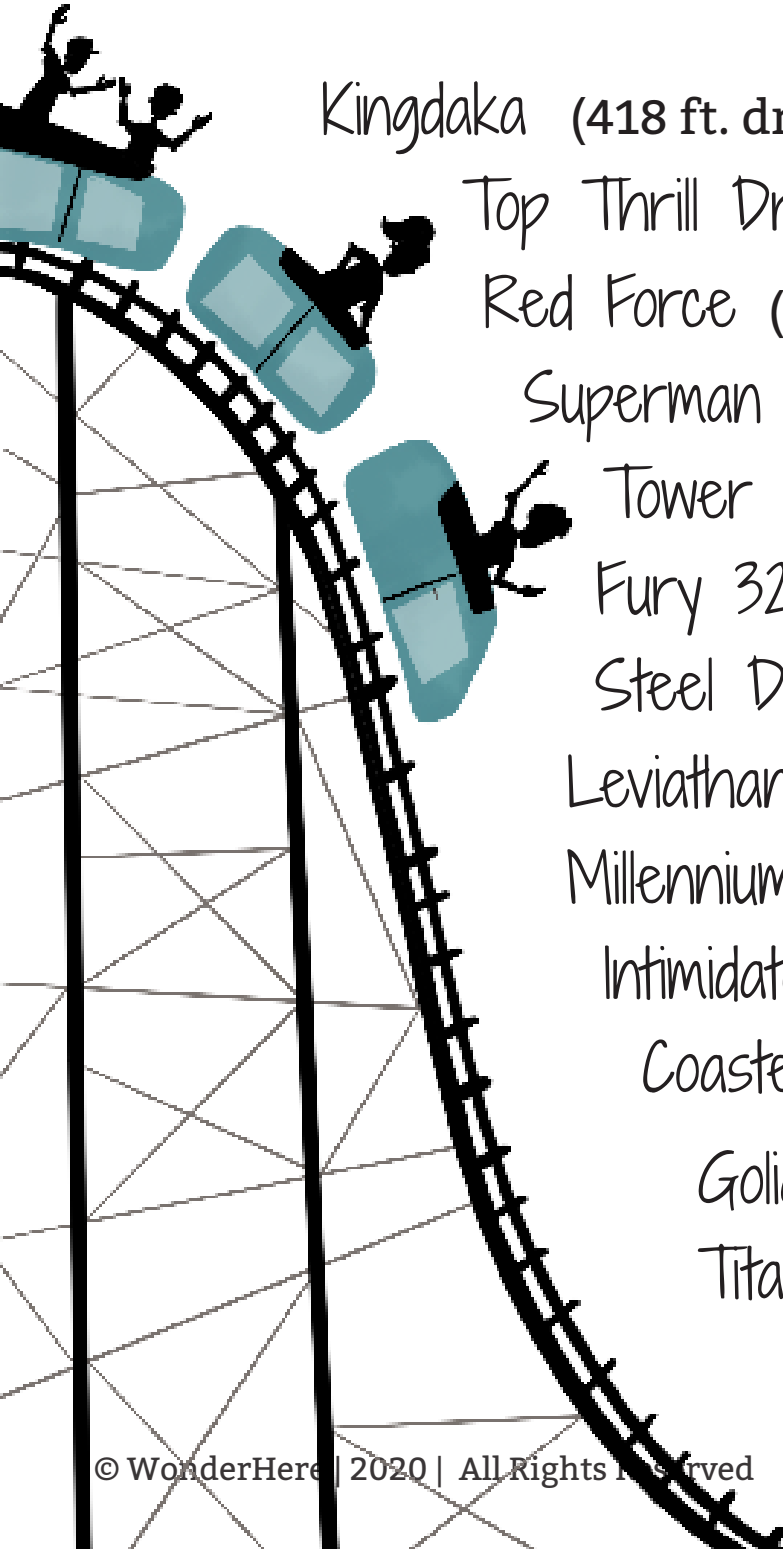
Attraction	Perimeter	Area

# Post-Primary Project Rubric

	Neatness	Creativity	Effort	Mathematical Understanding
Mastery	The project was completed very neatly with great attention to detail.	The child utilized their imagination and displayed out-of-the-box thinking when developing their business.	The child put a lot of time and effort into this project, taking great pride in their work. When met with challenges, they persevered.	The child showed <i>thorough</i> understanding of mathematical concepts throughout the project.
Progressing	The project was completed somewhat neatly. The child displayed some attention to detail.	The child showed some creativity when developing their business, and needed some extra guidance when thinking of ideas.	The child put some time and effort into this project, sometimes taking pride in their work depending on the task.	The child showed <i>some</i> understanding of mathematical concepts throughout the project, needing guidance along the way.
Developing	The project was incomplete or completed messily with little or no attention to detail.	The child showed little creativity and/or interest when developing their business, needing much prompting along the way.	The child showed disinterest and put little effort into the project. They needed much prompting along the way to finish.	The child showed <i>little to no</i> understanding of mathematical concepts throughout the project, and seemed lost in the math tasks.

# Comprehensive: **TASK 5** the ROLLERCOASTER

Rollercoasters can be thrilling, fun, and even a little scary! The best rollercoasters make riders feel excited, but not too scared, and always safe. Let's learn about some rollercoasters with the tallest drops in the world!



Kingdaka (418 ft. drop)

Top Thrill Dragster (400 ft. drop)

Red Force (347 ft. drop)

Superman Escape from Krypton (328 ft. drop)

Tower of Terror (328 ft. drop)

Fury 325 (318 ft. drop)

Steel Dragon 2000 (307 ft. drop)

Leviathan (306 ft. drop)

Millennium Force (300 ft. drop)

Intimidator 305 (256 ft. drop)

Coaster through the Clouds (256 ft. drop)

Goliath (255 ft. drop)

Titan (255 ft. drop)

# the ROLLERCOASTER

Math Topic:

*Finding the mean, median, & mode of rollercoaster heights.*

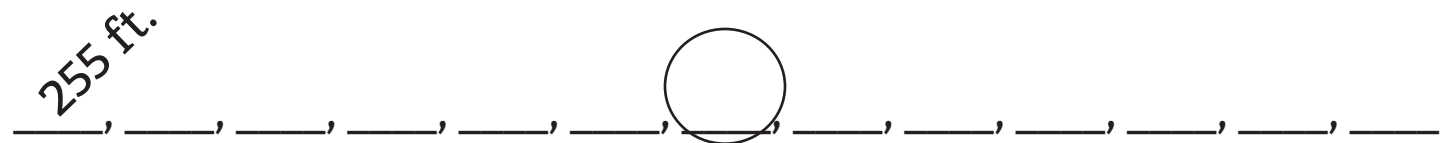
## MEAN

The *mean* of a group of numbers is the average of the numbers. To find the mean, you add all the numbers together (in this case, the heights of all the rollercoasters). Then, divide the total by the number of heights. The answer is the mean.

$$\begin{array}{cccccccccccc} \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} \\ + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & + & \underline{\hspace{1cm}} & = & \underline{\hspace{1cm}} & \div & \underline{13} & = & \underline{\hspace{1cm}} \end{array}$$

## MEDIAN

The *median* of a group of numbers is the number that is right in the middle when the numbers (heights of all the rollercoasters) are arranged in order from smallest to largest.



## MODE

The *mode* is the number (height) that appears most often. There can be more than one mode.

The mode is \_\_\_\_\_.

# the ROLLERCOASTER

Math Topic:

*Utilizing scales when working with maps.*

It's time to plan your OWN rollercoaster! Write in the features of your coaster!

My rollercoaster's name is: \_\_\_\_\_

Duration of ride: \_\_\_\_\_

Tallest drop: \_\_\_\_\_ ft.

Number of riders: \_\_\_\_\_

Number of loops: \_\_\_\_\_

## SCALE

On the next two pages you will design your rollercoaster as a *scale drawing* (a proportional drawing of an object).

For example, if I want to create a drawing of a 100 ft. building, it would be silly to make my drawing 100 feet tall. Instead, I can create a scale drawing where every 1 grid square = 10 ft. So my proportional drawing of the building would be 10 inches tall.  
 $100 \text{ ft.} \div 10 \text{ ft.} = 10 \text{ grid squares tall.}$

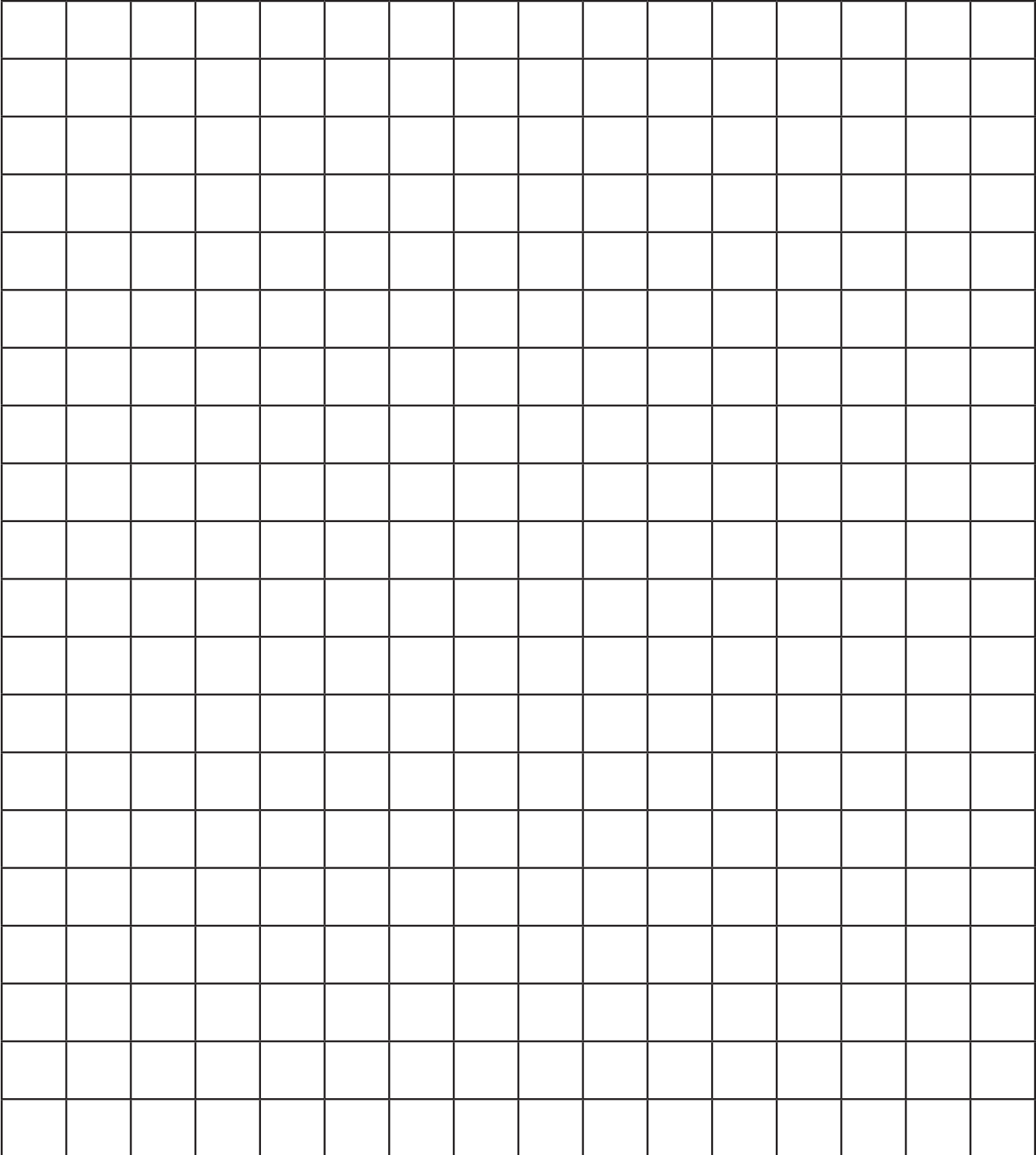
Using the grids on the next two pages, decide what your scale will be before you begin drawing your big drop. For example, if your big drop is 300 ft. tall, your scale could be 1 grid square = 20 ft.  
 $300 \text{ ft.} \div 20 \text{ ft.} = 15 \text{ grid squares tall.}$

My scale:

1 grid square = \_\_\_\_\_ feet

# the ROLLERCOASTER

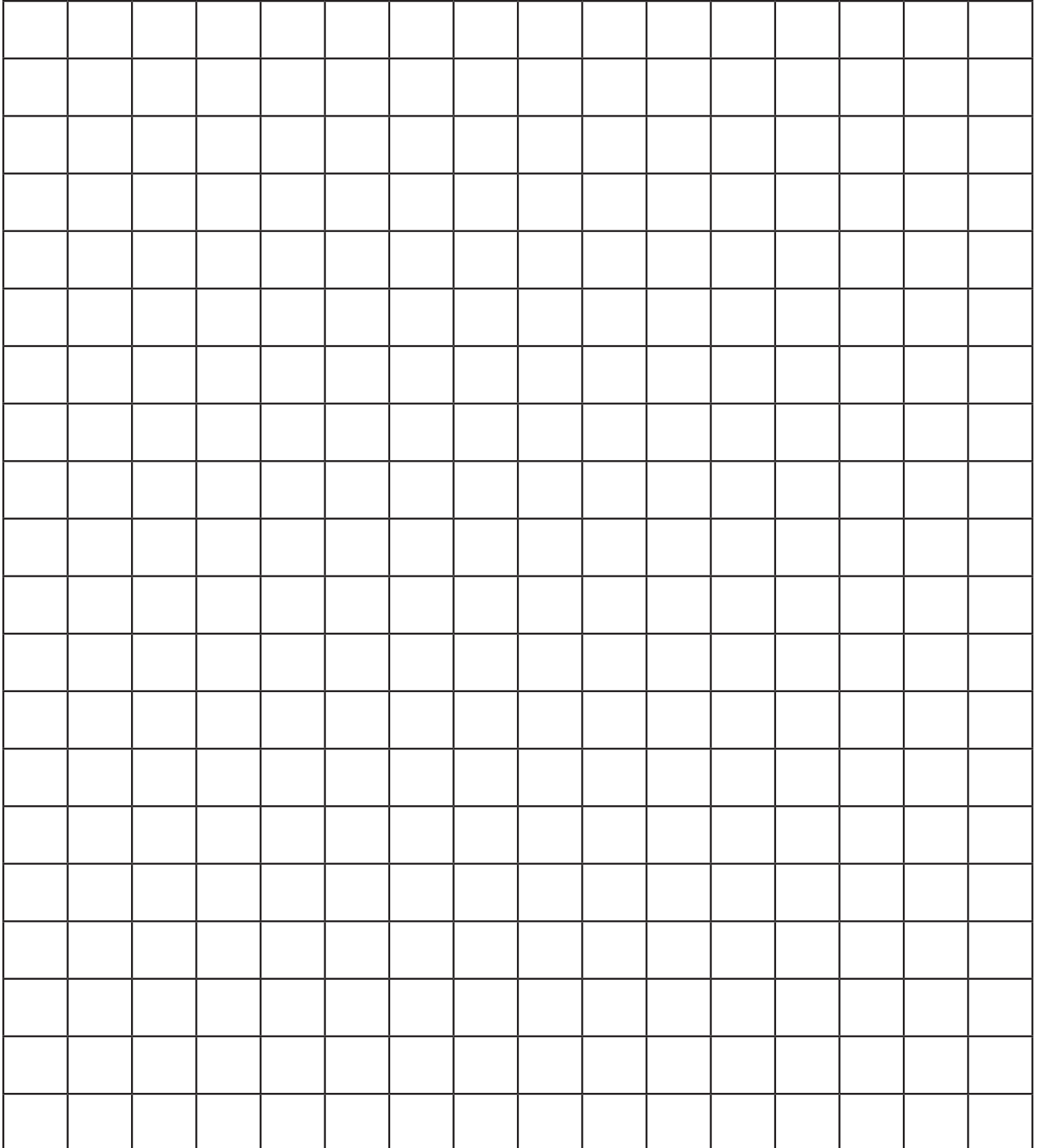
Combine these two pages (p. 11-12) to design your rollercoaster.





# the ROLLERCOASTER

Combine these two pages (p. 11-12) to design your rollercoaster.



Comprehensive: **TASK 6**

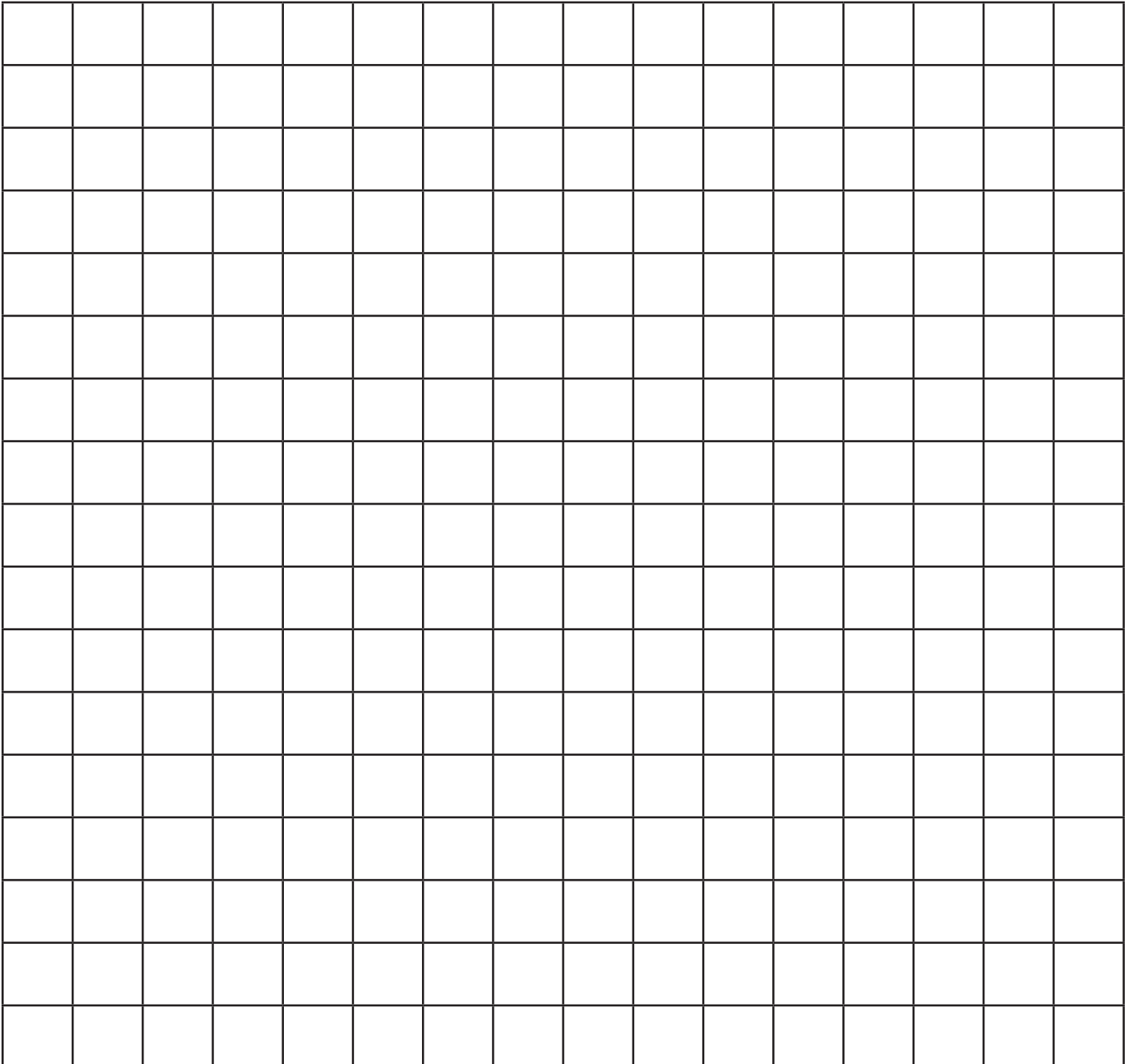
more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Scale: 1 grid square = \_\_\_\_\_ feet



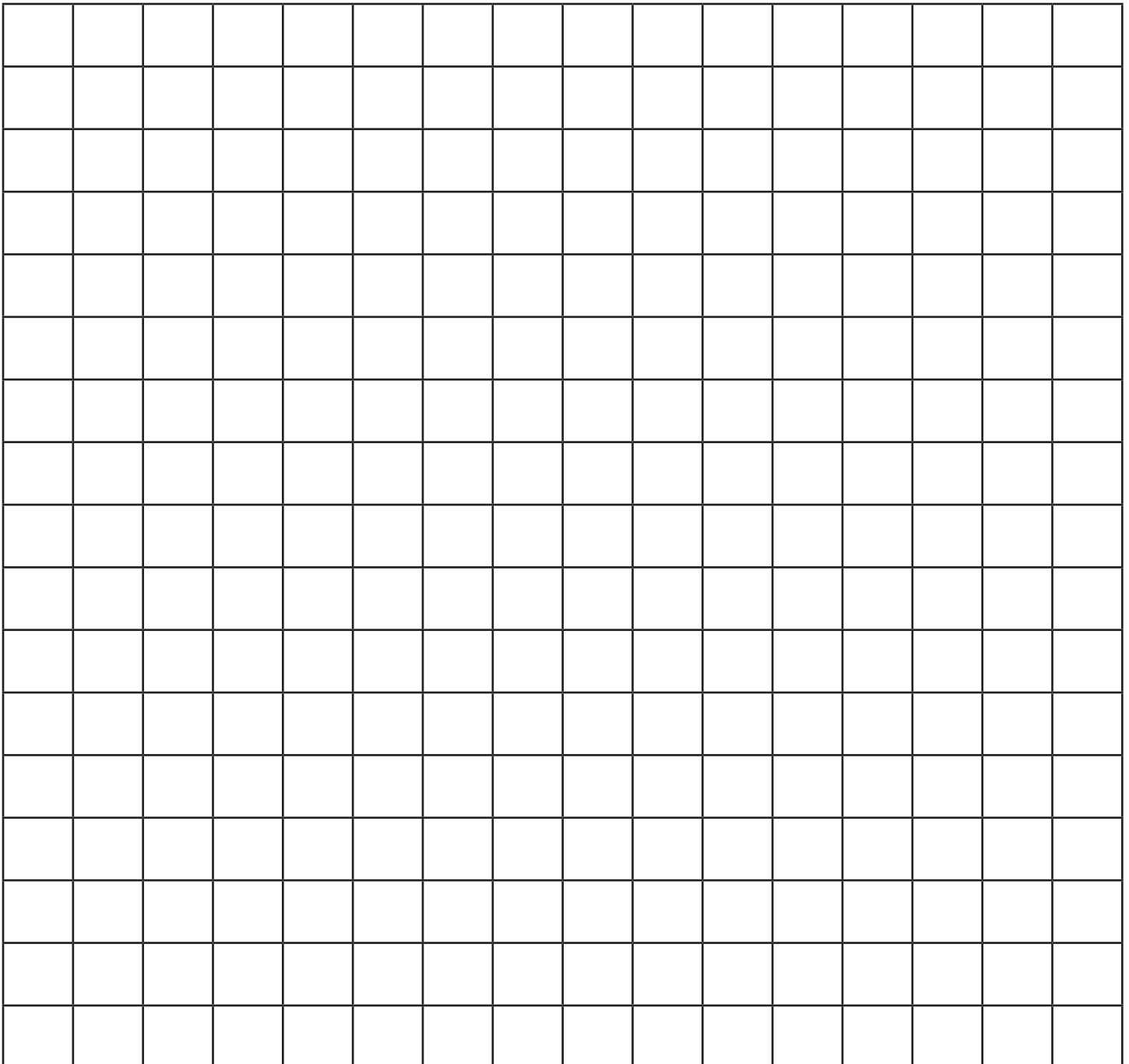
# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Scale: 1 grid square = \_\_\_\_\_ feet



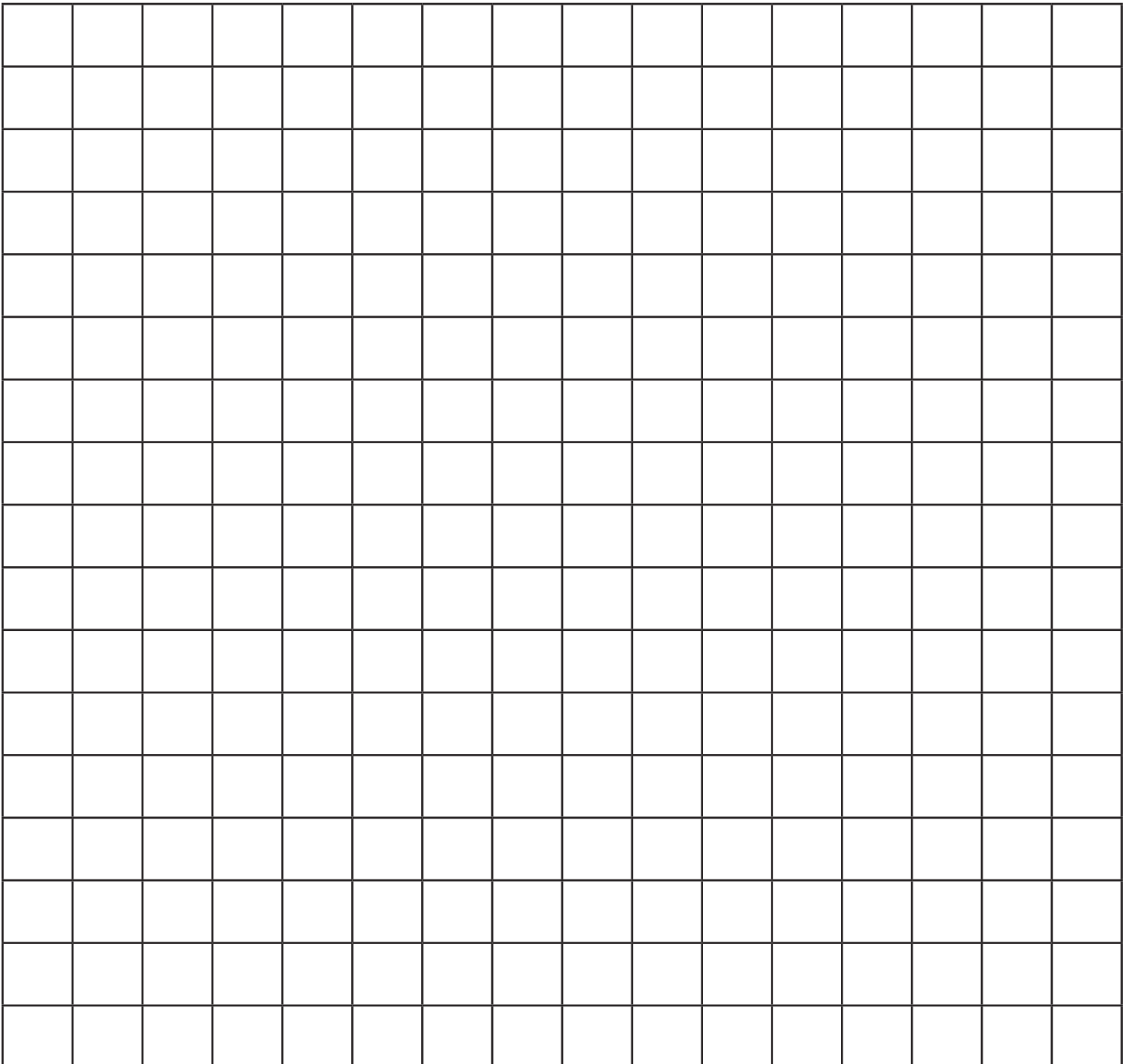
# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Scale: 1 grid square = \_\_\_\_\_ feet



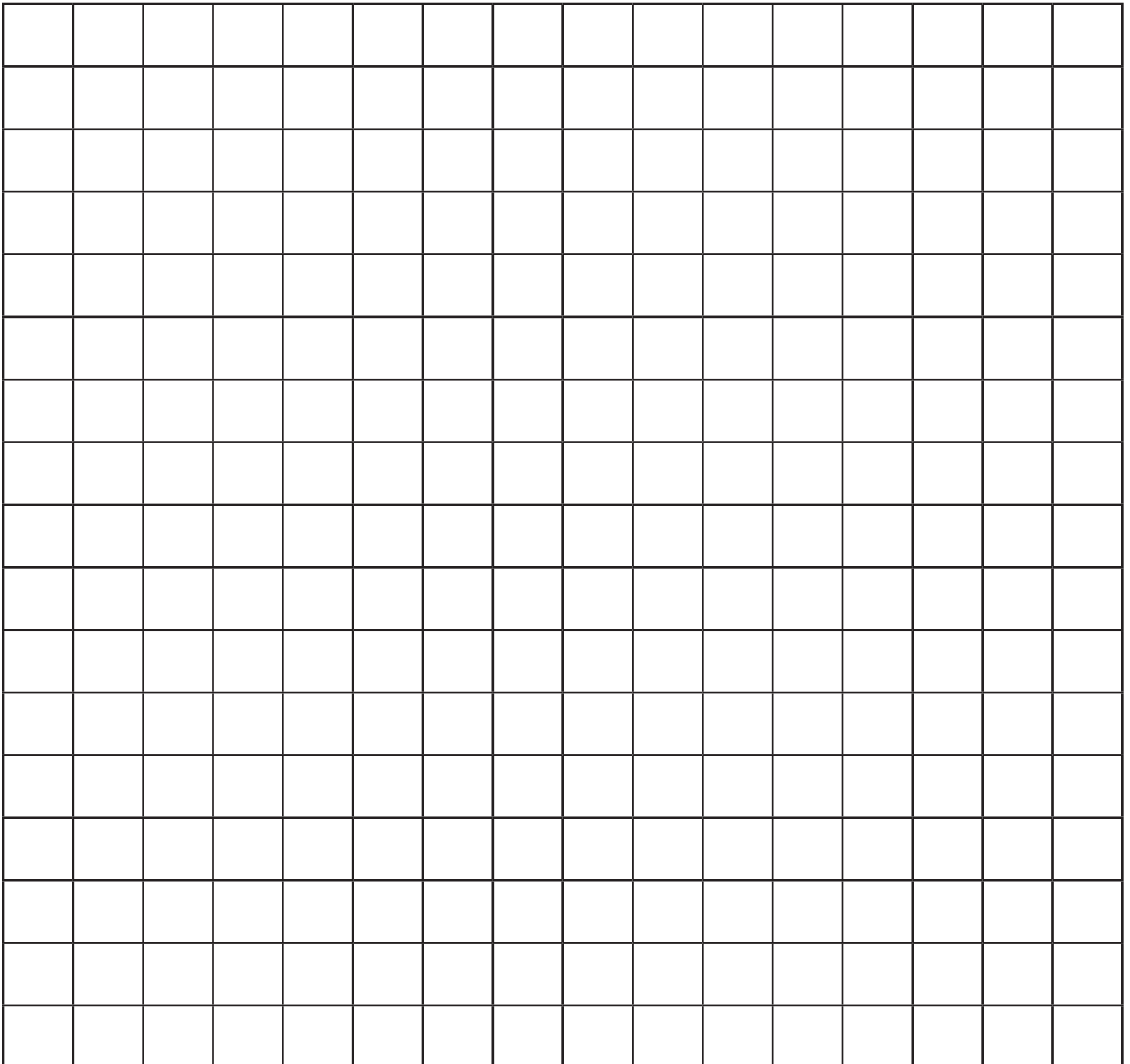
# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Scale: 1 grid square = \_\_\_\_\_ feet



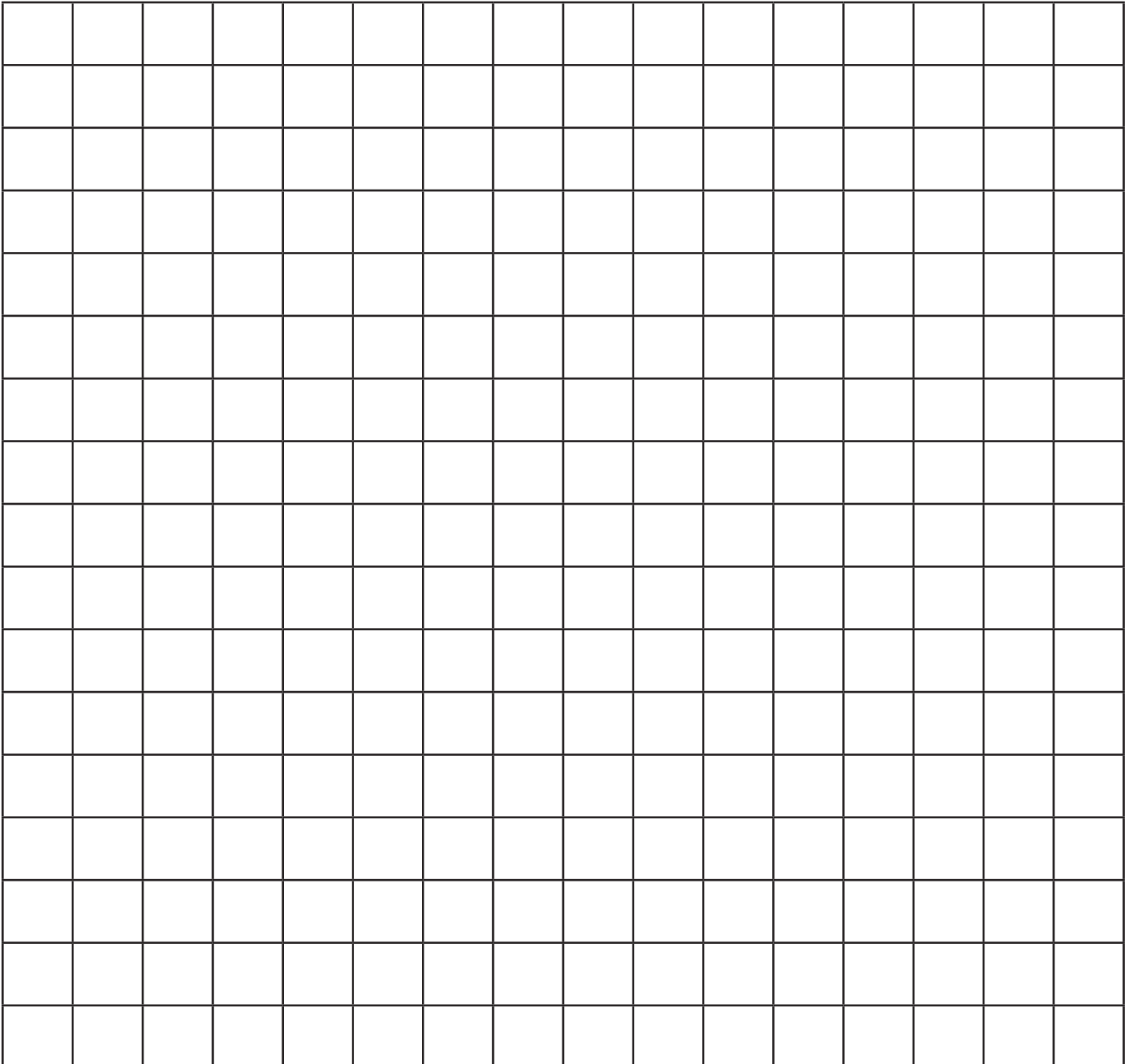
# more RIDES

Design another ride below!

Type of ride: \_\_\_\_\_

Name of ride: \_\_\_\_\_

Scale: 1 grid square = \_\_\_\_\_ feet



Comprehensive: **TASK 7**

# fast PASSES

Math Topic:

*Telling time to the nearest hour, half hour, quarter hour, 5 minute, and 1 minute.*

People can use Fast Passes to decide what time they want to ride a ride, therefore skipping the line. Write out the missing Fast Pass time below in either digital time or analog time.

**1** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_ PM

digital time

analog time

**2** Your ride time is:

2 : 30 PM

# fast PASSES

**3** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_ PM



FAST PASS

**4** Your ride time is:

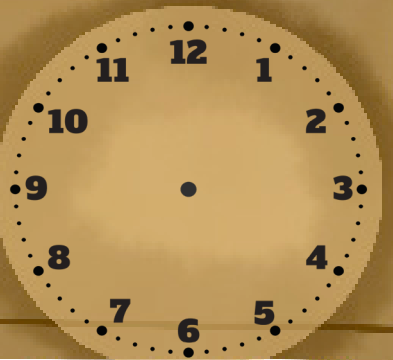
10 : 25 AM



FAST PASS

**5** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_ PM



FAST PASS



# fast PASSES

**6** Your ride time is:

6 : 48  
PM




FAST PASS

Detailed description: This is a brown, ticket-shaped card with scalloped edges. On the left side, the word 'FAST' is written vertically in a stylized, textured font. On the right side, the word 'PASS' is written vertically in the same font. At the top left, a dark circle contains the number '6'. Below this, the text 'Your ride time is:' is centered. Underneath, the time '6 : 48' is written in a simple font, with 'PM' written below the minutes. To the right of the time is a circular analog clock face with numbers 1 through 12 and dots for minutes. The hour hand is between 6 and 7, and the minute hand is pointing at 9.

**7** Your ride time is:

\_\_\_\_\_ : \_\_\_\_\_  
PM



FAST PASS

Detailed description: This is a brown, ticket-shaped card with scalloped edges. On the left side, the word 'FAST' is written vertically in a stylized, textured font. On the right side, the word 'PASS' is written vertically in the same font. At the top left, a dark circle contains the number '7'. Below this, the text 'Your ride time is:' is centered. Underneath, there are two blank lines for writing the time, followed by 'PM'. To the right is a circular analog clock face with numbers 1 through 12 and dots for minutes, but no hands are present.

**8** Your ride time is:

1 : 33  
PM



FAST PASS

Detailed description: This is a brown, ticket-shaped card with scalloped edges. On the left side, the word 'FAST' is written vertically in a stylized, textured font. On the right side, the word 'PASS' is written vertically in the same font. At the top left, a dark circle contains the number '8'. Below this, the text 'Your ride time is:' is centered. Underneath, the time '1 : 33' is written in a simple font, with 'PM' written below the minutes. To the right of the time is a circular analog clock face with numbers 1 through 12 and dots for minutes. The hour hand is between 1 and 2, and the minute hand is pointing at 6.

# fast PASSES

Math Topic:

*Deciphering elapsed time.*

Now that you have the accurate digital and analog times on your Fast Passes, you need to figure out how long until your ride time (elapsed time)! Complete the table below to help you.

Fast Pass #	Current Time	Ride Time	Elapsed Time
#1	1:45 PM	3:00 PM	1 hr, 15 mins until we ride!
#2	11:15 AM		
#3	6:00 PM		
#4	9:54 AM		
#5	12:17 PM		
#6	4:01 PM		
#7	3:25 PM		
#8	10:44 AM		

All the walking around and ride-riding at a theme park can sure make a person hungry! Good food is an important part of any park. You need to provide a variety of options for your park goers. Food stands and restaurants can have different food themes, like quick snacks, Italian, burgers & fries, desserts only, and more! Brainstorm some ideas below...



# the FOOD

Food Stand / Restaurant Name: \_\_\_\_\_

Theme: \_\_\_\_\_

Menu Item	Price

# the FOOD

Food Stand / Restaurant Name: \_\_\_\_\_

Theme: \_\_\_\_\_

Menu Item	Price

# the FOOD

Food Stand / Restaurant Name: \_\_\_\_\_

Theme: \_\_\_\_\_

Menu Item	Price

Math Topic:

*Solving expressions with varying (and mixed) operations.*

You want to make sure that every part of your park is making a profit, even your food.

In this activity, you will set a financial goal: *How much money do you want to bring in from the food at your park in one day?*

Food income goal: \$ \_\_\_\_\_.

The table on the next page (p. 27) will help you determine how much food you need to sell every day to meet your goal. Here are the steps:

1. Choose 11 menu items from the previous pages (p. 23-25) to list in the table.
2. Include the price for each menu item to the right of that item.
3. Decide how many of each item you want to sell in a day.
4. Multiply the price of the item by the number of items you want to sell to see how much you'll make from just that item.
5. Add up the daily income of each individual item (the last column) to see if it makes the daily goal you set.
6. Adjust your *# Need to Sell* column (3rd column) if needed in order to meet your goal.

Did you meet your daily food income goal?    YES                      NO

# food income GOALS

Menu Item	Price	#Need to Sell	Income from this Item
	\$	<b>x</b>	<b>= \$</b>
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	\$		\$
	<b>Total:</b>		\$



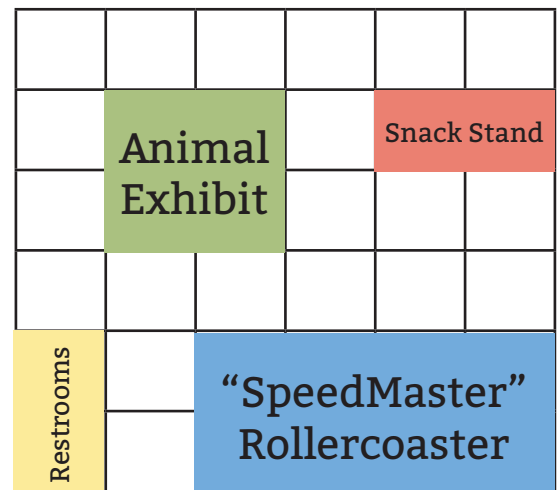
# Comprehensive: **TASK 10** putting it all TOGETHER

Now that all the planning is done, it is time to put your entire park together on the next four pages (p. 29-32). You will tape the four pages together to make a giant grid that represents your whole park.

When you draw your attractions on the grid, you'll be doing so from a *bird's eye view*, which means like you're looking at it from above. Here is an example:

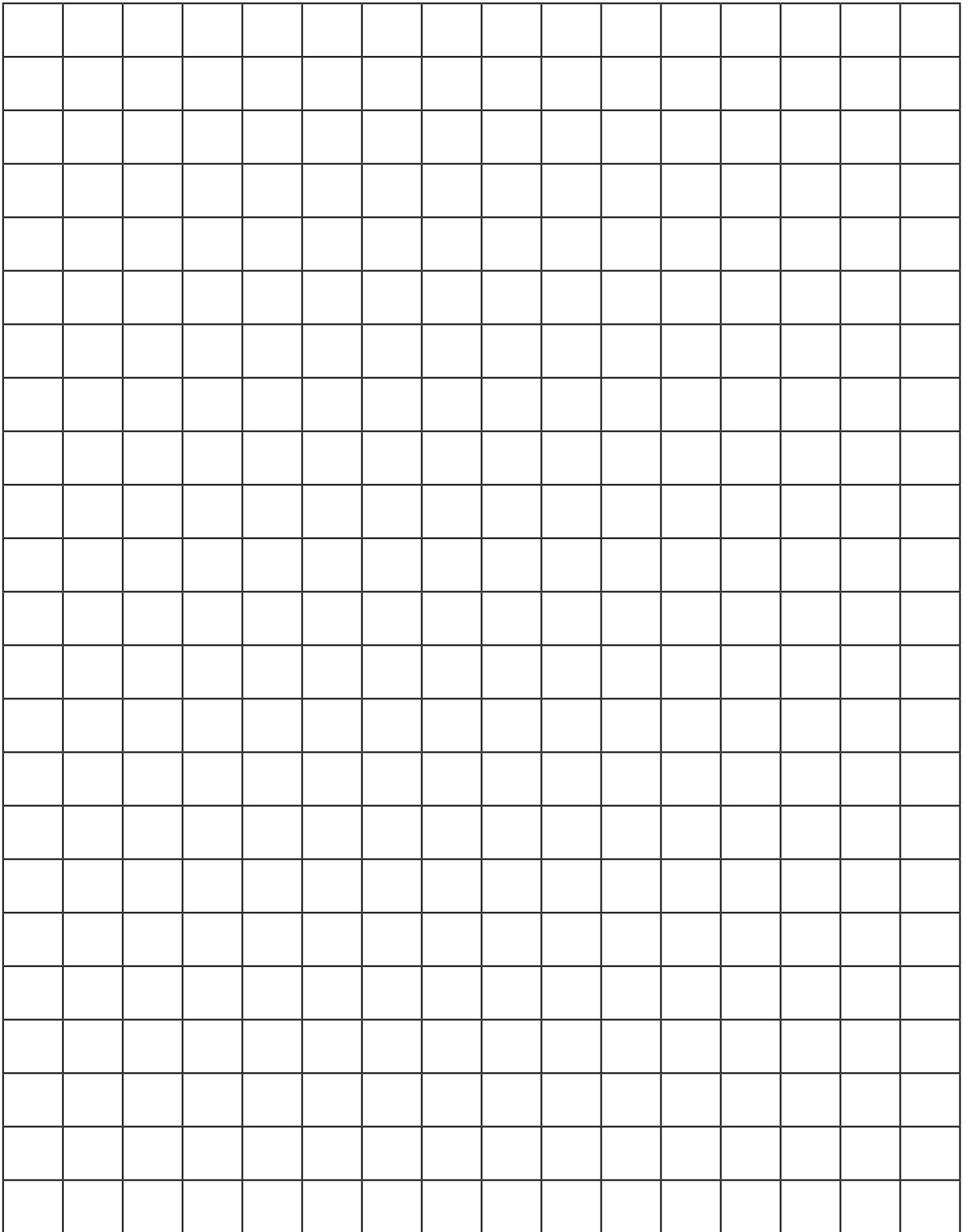
Remember to

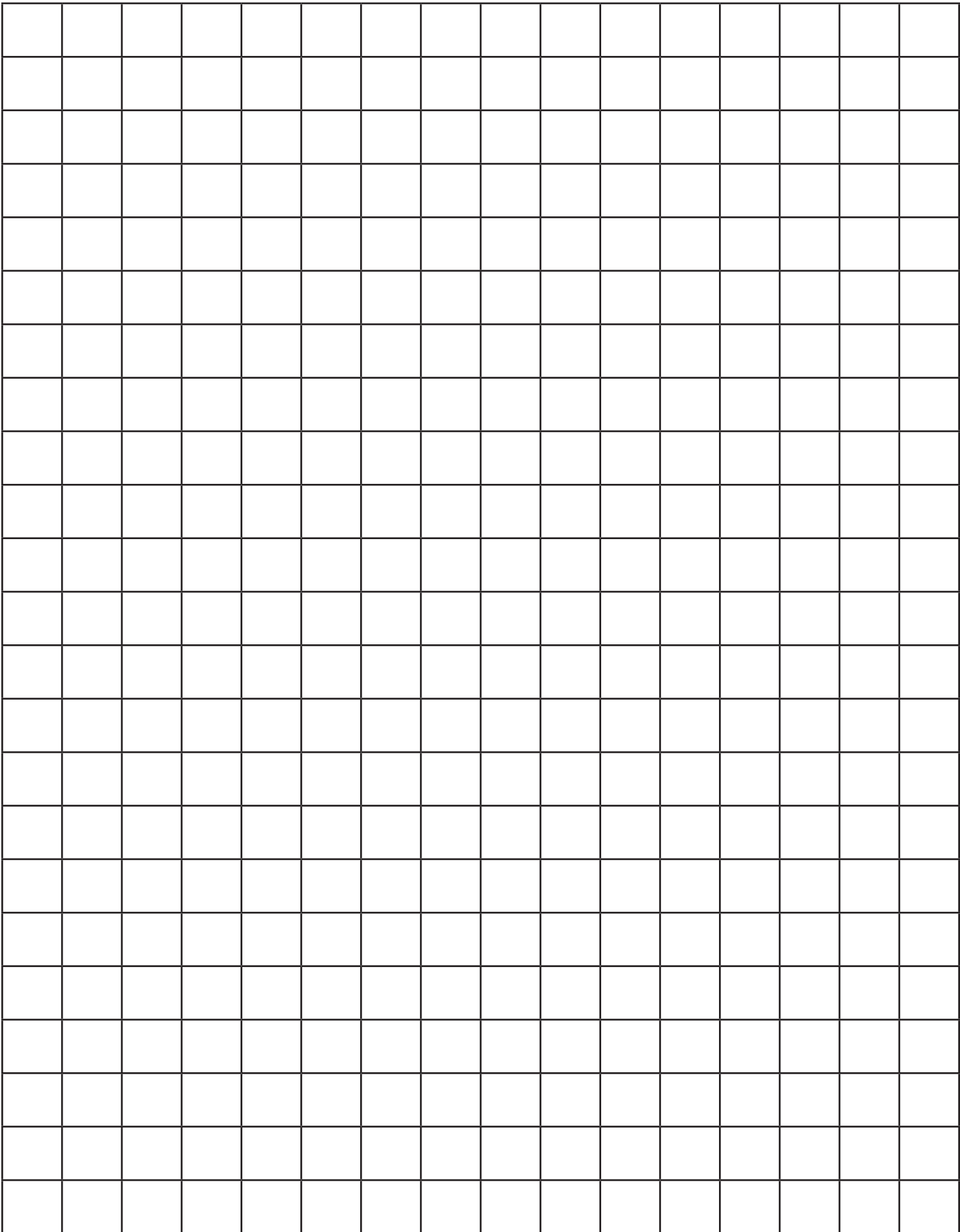
- Follow the grid lines precisely
- Give enough space in between
- Lightly color in each attraction
- Label each attraction
- Fill the entire park!

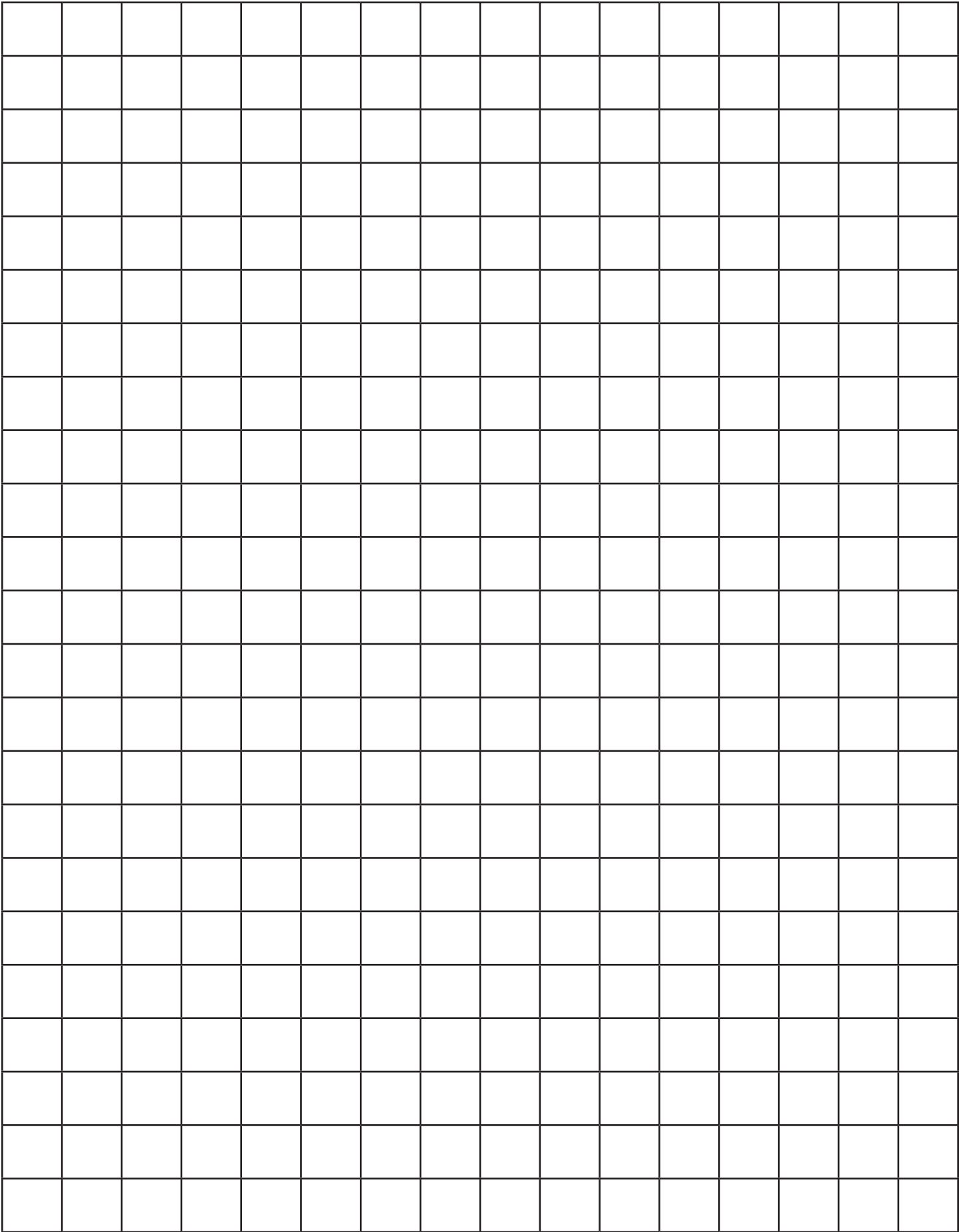


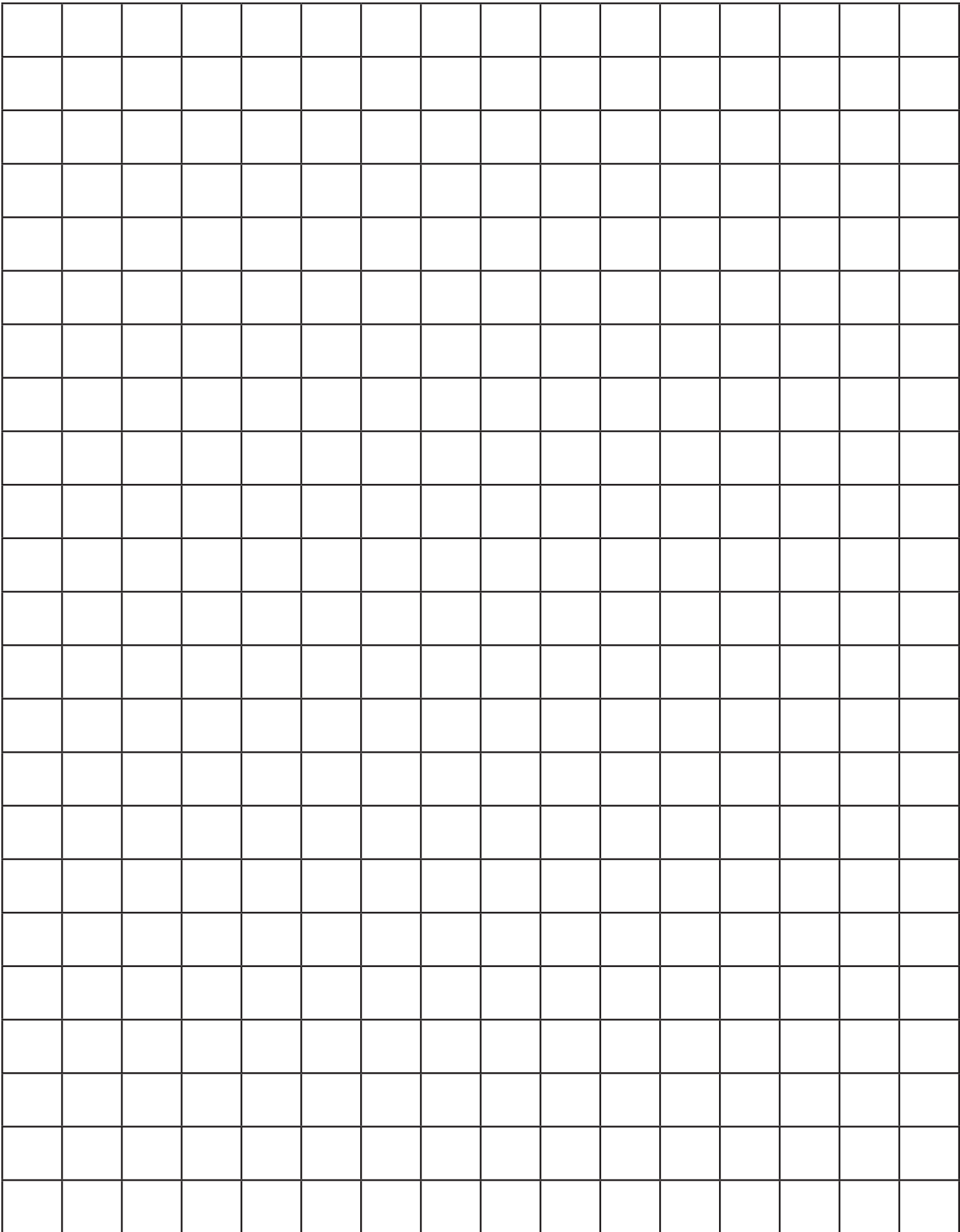
Your park should have all of the following:

- Rollercoasters
- Other Rides
- Other Attractions (exhibits, shows, etc)
- Food Stands / Restaurants
- Information Center
- First Aid Stand
- Gift Shop
- Restrooms
- Benches & Trashcans









Math Topic:

*Understanding the concept of and solving operations with fractions.*

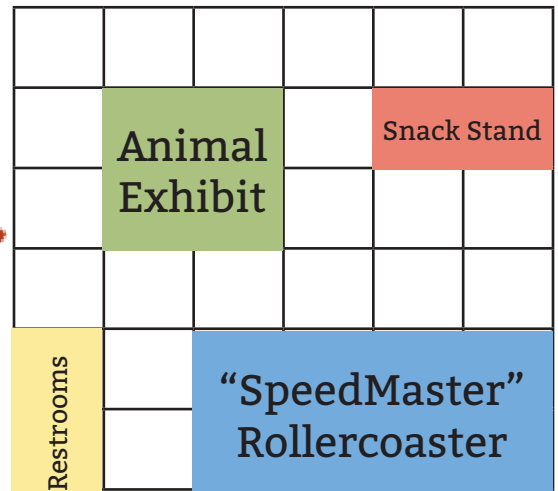
Now that your park is all finished (hooray!), it's time to take a survey. Fractions will help you do that!

A fraction is a part of a whole. You need to figure out what part each attraction is of a section of the park.

Let's use this as an example again:

There are 36 grid squares total.

- The Animal Exhibit takes up 4 out of the 36 total squares.
- The Snack Stand takes up 2 out of the 36 total squares.
- The Rollercoaster takes up 8 out of the 36 total squares.
- The Restrooms take up 2 out of the 36 total squares.



Let's put this in our table:

Attraction	Squares taken up	Total squares	Fraction	Simplified Fraction
Animal Exhibit	4	36	4/36	1/9
Snack Stand	2	36	2/36	1/18
Rollercoaster	8	36	8/36	2/9
Restrooms	2	36	2/36	1/18

# the final TASK

Now it's your turn! Pick a 10x10 section of your park to focus in on (that's 100 total squares). Simplify your fractions when necessary.

Attraction	Squares Taken Up	Total Squares	Fraction	Simplified Fraction
		100		
		100		
		100		
		100		
		100		
		100		
		100		

What fraction of that section of the park was rides?

What fraction of that section of the park were food places?

What fraction of that section of the park were just walking space?

# Comprehensive Project Rubric

	Neatness	Creativity	Effort	Mathematical Understanding
Mastery	The project was completed very neatly with great attention to detail.	The child utilized their imagination and displayed out-of-the-box thinking when developing their business.	The child put a lot of time and effort into this project, taking great pride in their work. When met with challenges, they persevered.	The child showed <i>thorough</i> understanding of mathematical concepts throughout the project.
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