

THEME PARK PREDICAMENTS

Rides and Roller Coasters

TYPE OF RIDE	HEIGHT
Ferris Wheel	
Roller Coaster #1	
Roller Coaster #2	
Merry Go Round	
Swings	
Bumper Cars	
Swinging Ship	

The Great Hall

The board of directors needs to make sure you know how to use the hall for the most people. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

All the Right Angles

Your board of directors needs to make sure you know how to use the hall for the most people. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

Gearing Up

It's time to get the directions for the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

Concession Stand Command

ITEM	PRICE	QUANTITY	TOTAL
FRIES	75 cents	1	75 cents
ICE CREAM	70 cents	1	70 cents
SODA	85 cents	1	85 cents
POPCORN	85 cents	1	85 cents
COTTON CANDY	20 cents	1	20 cents

Picky Ticket Design

Each of your rides must have a ticket. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

The Longest Line

It's never good to keep people waiting, but it happens at the theme park. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

Rockin' Rides

ITEM	HEIGHT	WIDTH
FERRIS WHEEL	8 feet	
HANGING CART	25 inches	
ROLLER COASTER	56 feet	
TRAIN OF CARTS	56 inches	
BUMPER CAR	65 yards	
CAROUSEL	65 inches	
ON TRAIN	7 feet	
CHAIN FOR EACH SWING	10 yards	
SHIP	2 yards	
DROP TOWER	30 feet	
ONE HORSE ON THE MERRY GO ROUND	30 inches	

Picky Ticket Design

Your first task is to design a ticket. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

Mapping It All Out

Your first task is to design a map. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall. You need to know the height of the hall and the width of the hall.

AN AMUSEMENT PARK MEASUREMENT AND
GEOMETRY PROJECT FOR BIGGER KIDS

Theme Park Problems

Congratulations! You have just been tasked with writing up a proposal for the newest theme park in town. Hold your horses, though... You're not the only lucky lad to have this opportunity. You'll need to design your theme park and get as many details as possible ready. Then, you'll present your theme park to the board of directors who will decide whether or not your theme park will be the one that is built. Get ready, get set, GO!

'S THEME PARK BASICS

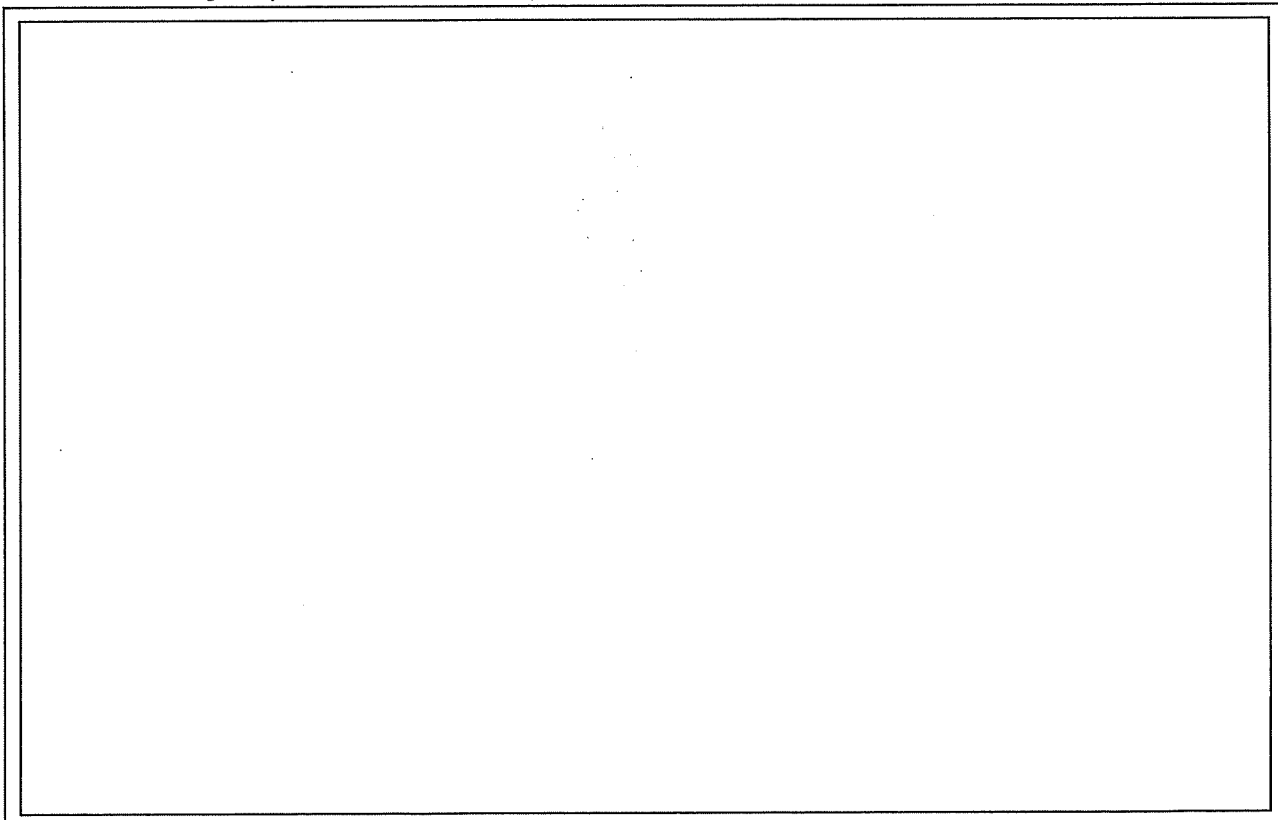
Name of Theme Park: _____

Theme of Theme Park: _____

Slogan of Theme Park: _____

THEME PARK DATES AND HOURS OF OPERATION:

Design a poster advertising your new theme park. Make it eye-catching!



STAAR GRADE 5 MATHEMATICS REFERENCE MATERIALS

LENGTH

Customary

1 mile (mi) = 1,760 yards (yd)

1 yard (yd) = 3 feet (ft)

1 foot (ft) = 12 inches (in.)

Metric

1 kilometer (km) = 1,000 meters (m)

1 meter (m) = 100 centimeters (cm)

1 centimeter (cm) = 10 millimeters (mm)

VOLUME AND CAPACITY

Customary

1 gallon (gal) = 4 quarts (qt)

1 quart (qt) = 2 pints (pt)

1 pint (pt) = 2 cups (c)

1 cup (c) = 8 fluid ounces (fl oz)

Metric

1 liter (L) = 1,000 milliliters (mL)

WEIGHT AND MASS

Customary

1 ton (T) = 2,000 pounds (lb)

1 pound (lb) = 16 ounces (oz)

Metric

1 kilogram (kg) = 1,000 grams (g)

1 gram (g) = 1,000 milligrams (mg)

Centimeters

STAAR GRADE 5 MATHEMATICS REFERENCE MATERIALS



PERIMETER

Square

$$P = 4s$$

Rectangle

$$P = 2l + 2w$$

AREA

Square

$$A = s \times s$$

Rectangle

$$A = l \times w$$

or

$$A = bh$$

VOLUME

Cube

$$V = s \times s \times s$$




Rectangular prism

$$V = l \times w \times h$$

or

$$V = Bh$$

Metric Conversion

K _{ing}	H _{enry}	D _{ied}	U _{nusually}	D _{rinking}	C _{hocolate}	M _{ilk}
Kilo  $10 \times 10 \times 10 \times$ LARGER than a unit	Hecto $10 \times 10 \times$ LARGER than a unit	Deca $10 \times$ LARGER than a unit	* Unit *  Meter (length) Liter (liquid volume) Gram (mass/weight) 1 unit	Deci $10 \times$ SMALLER than a unit $10 \text{ deci} = 1 \text{ unit}$	Centi $10 \times 10 \times$ SMALLER than a unit $100 \text{ centi} = 1 \text{ unit}$	Milli $10 \times 10 \times 10 \times$ SMALLER than a unit  $1,000 \text{ milli} = 1 \text{ unit}$
km = kilometer kL = kiloliter kg = kilogram	hm = hectometer hL = hectoliter hg = hectogram	dam = decameter dal = decaliter dag = decagram	m = meter L = liter g = gram	dm = decimeter dL = deciliter dg = decigram	cm = centimeter cl = centiliter cg = centigram	mm = millimeter mL = milliliter mg = milligram
Example: 5 kilo	50 hecto	500 deca	5,000 units	50,000 deci	500,000 centi	5,000,000 milli

DIVIDE numbers by 10 if you are getting bigger (same as moving decimal point one space to the left)

MULTIPLY numbers by 10 if you are getting smaller (same as moving decimal point one space to the right)

Rides and Roller Coasters

Your theme park has a wide variety of rides and roller coasters. Create a name for each ride and roller coaster listed below. The maximum height dimension of each ride is listed below. Convert the dimensions so that all of the rows are filled in below.

TYPE OF RIDE	NAME OF RIDE	HEIGHT IN FEET	HEIGHT IN INCHES
Ferris Wheel		250 Feet	
Roller Coaster #1		420 Feet	
Roller Coaster #2		154 Feet	
Merry Go Round			432
Swings		150 Feet	
Bumper Cars			288
Swinging Ship		125 Feet	
Drop Tower		405 Feet	
Water Log Ride		265 Feet	
Train			180

How much taller is the
TALLEST ride than the
SHORTEST ride?

If you wanted to double
the height of the
Swinging Ship ride, how
tall would it be, in both
feet and inches?

What is the difference
in the heights of the two
roller coasters?

The Great Height Debate

The five people on your board of directors all have children of different ages. They want your theme park to be fun for the whole family, so you need a ride that **EVERYONE** can ride on. Begin by converting all of the children's heights to inches. Then, solve the problems to fill in the charts with the minimum heights of each ride in FEET and INCHES. Finally, write which children can ride each ride in the column on the right.



JACKSON

5' 7"



HILLARY

4' 4"



JENNY

5' 2"



LEON

3' 2"



KENT

4' 5"



TERESA

3' 11"

MINIMUM HEIGHT REQUIREMENTS

RIDE	PROBLEM	MINIMUM HEIGHT	WHO CAN RIDE
FERRIS WHEEL	Must be one yard tall to ride		
ROLLER COASTER #1	Must be one foot taller than the minimum height of the Ferris Wheel		
ROLLER COASTER #2	Six inches taller than the minimum height of Roller Coaster #1		
MERRY GO ROUND	Must be two feet tall to ride		
SWINGS	Any child three and a half feet or taller can ride		
BUMPER CARS	Must be at least four and a half feet tall		
SWINGING SHIP	Must be 48 inches or taller		
DROP TOWER	Any child greater than 52 inches may ride.		
WATER LOG RIDE	Must be at least two feet, 6 inches taller than the minimum requirement of the Merry Go Round.		
TRAIN	Any child greater than 24 inches may ride.		

The Longest Lines

It's never good to keep people waiting, but it happens at a theme park no matter how fast your rides might move! Fill in the tables below to give an estimate of how long lines will be and how long it will take people to get through the lines.

LENGTH OF LINE YARDS	NUMBER OF PEOPLE IN LINE	LENGTH OF LINE FEET	TIME IN LINE MINUTES	TIME IN LINE SECONDS
1	5		2	
5			10	
10			20	
15			30	
20	100		40	
25			50	
30	150		60	

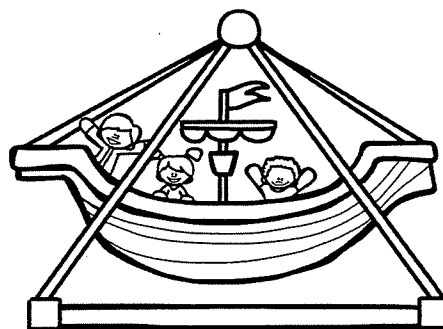
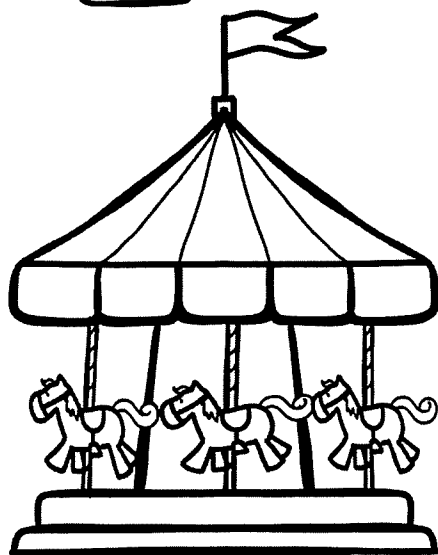
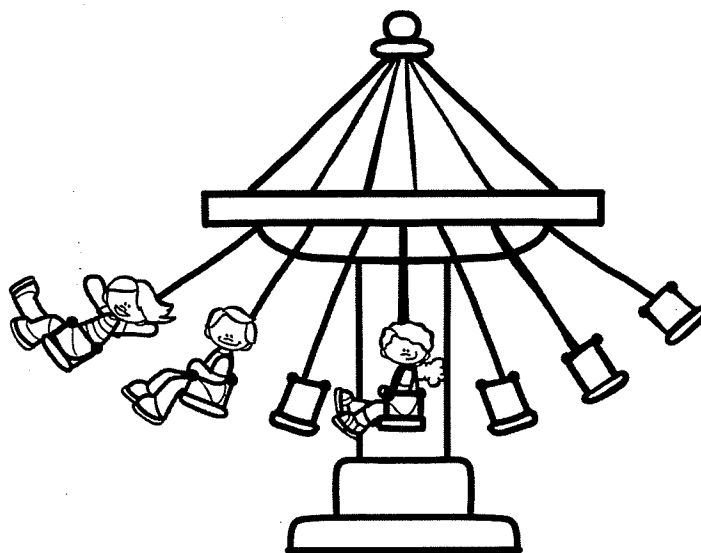
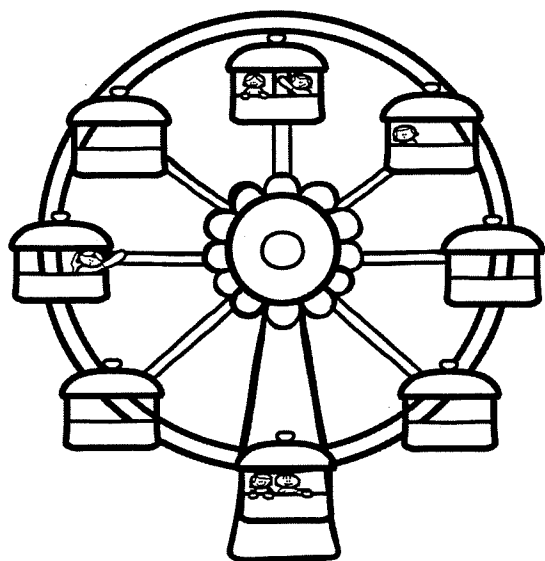
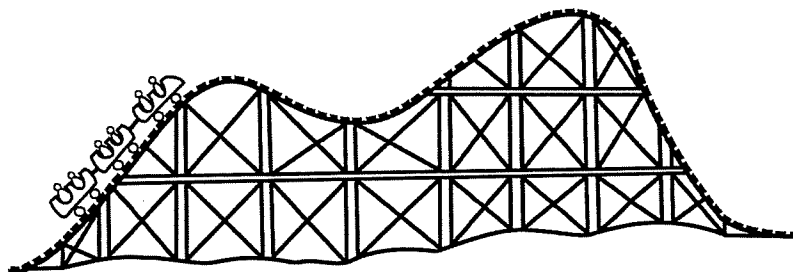
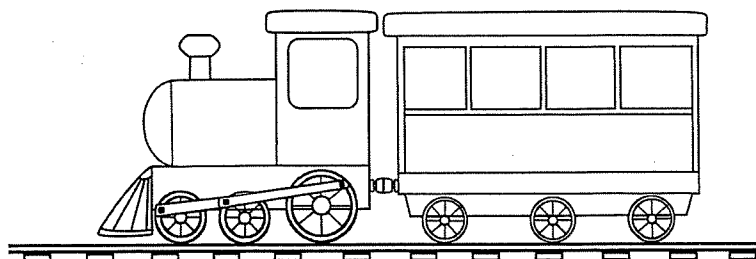
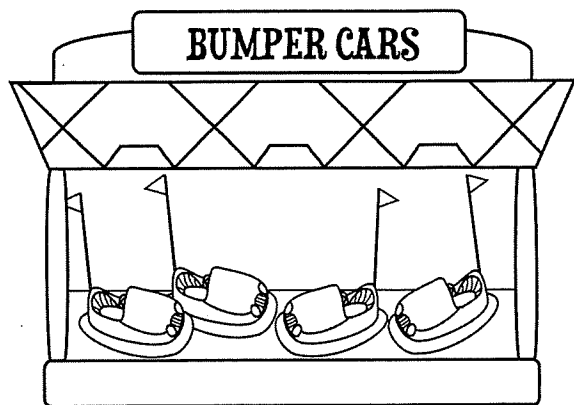
Imagine a customer only has an hour to ride rides. The current lengths of each line are listed below. Use the information to write the current wait time.

RIDE	CURRENT LENGTH	WAIT TIME
Ferris Wheel	75 people	
Roller Coaster #1	25 yards	
Roller Coaster #2	25 people	
Merry Go Round	75 feet	
Swings	5 people	
Bumper Cars	60 feet	
Swinging Ship	50 people	
Drop Tower	45 feet	
Water Log Ride	150 people	
Train	25 yards	

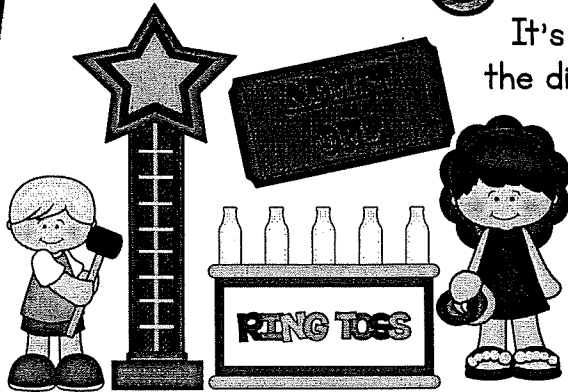
Write THREE combinations of rides they could ride in an hour.

All the Right Angles

Your board of directors needs to make sure you know your rides inside and out. Study the rides, and identify at least three angles in each ride below. Color right angles RED, obtuse angles ORANGE, and acute angles BLUE.



Gearing Up for Games



It's time to plan out some carnival games! Follow the directions below to design a plan for your games.

Most of your games are pretty self-explanatory. Catch the fish and win it. Pop the balloon and pick a prize! BUT, you have two carnival games that have different rules. The HAMMER TIME game and the RING TOSS game will all have different ways to win. On the next page, follow these requirements to design your games. Then, determine the prizes for each game.

HAMMER TIME REQUIREMENTS

Test your strength with this strongman competition! Draw your own strongman game similar to the one shown above. Your strongman game drawing should be five inches tall, NOT including the star or buzzer on top OR the base. Draw increments at every half inch. Your players can win FIRST, SECOND, or THIRD prize. FIRST prize is achieved by making it all the way up to the top of the game. SECOND prize is achieved by hitting anywhere in the zone between 3 and 5 inches. THIRD prize is achieved by hitting anywhere in the zone between 1 and 3 inches. The RED zone between 0 and 1 inch wins nothing. On your drawing, label the zones that each person must land on to win each prize.

RING TOSS REQUIREMENTS

Test your ring throwing accuracy with this ring toss game! Draw your own ring toss game similar to the one shown above. You will have a FIRST prize, SECOND prize, and THIRD prize based on where your players stand when competing in the ring toss. THIRD prize can be won by getting a ring over a bottle while standing three feet from the ring toss stand. Show this on your design by drawing a mark three INCHES from the ring toss stand. SECOND prize can be won by getting a ring over a bottle four and a half feet from the ring toss stand. Show this on your design by drawing a mark four and half INCHES from the ring toss stand. First prize can only be won when standing SIX feet from the ring toss stand. Show this on your design by drawing a mark six INCHES from the ring toss stand. Label each mark to show which prize can be won.

REMEMBER, THESE ARE SCALE DRAWINGS. YOUR ACTUAL GAMES WILL BE MUCH LARGER!

Gearing Up for Games

Use this page to design your games. Next to each game, be sure to write the prizes for each winner in the game!

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Rockin' Ride Size






Your board of directors wants to make sure you know just how big your amusement park will need to be. It's time to evaluate how big some aspects of your amusement park will be.

Circle the most REASONABLE size for each of the elements of your amusement park.

ELEMENT	WIDTH	LENGTH
FERRIS WHEEL HANGING CART	5 feet 35 inches	6 feet 7 yards
ROLLER COASTER TRAIN OF CARTS	56 feet 56 inches	35 yards 3 feet
BUMPER CAR	65 yards 65 inches	6 feet 6 inches
CABOOSE ON TRAIN	7 feet 10 yards	15 feet 100 feet
CHAIN FOR EACH SWING	2 inches 2 yards	20 feet 20 inches
SHIP	38 feet 38 inches	30 yards 30 inches
DROP TOWER	50 feet 5 miles	45 feet 45 miles
ONE HORSE ON THE MERRY GO ROUND	1 foot 1 yard	3 feet 3 inches

Concession Stand Conundrum

Your concession stand will be a very important part of your amusement park- who doesn't love a good snack!? You are determining the different offerings you will have at your concession stand. Study the chart and then answer the questions.

	FRIES 	ICE CREAM 	SODA 	POPCORN 	COTTON CANDY 
SMALL	75 grams	70 grams	18 ounces	85 ounces	2 ounces
MEDIUM	112 grams	85 grams	23 ounces	130 ounces	4 ounces
LARGE	168 grams	105 grams	31 ounces	190 ounces	8 ounces

What is the size difference between the largest soda option and the smallest?

What pattern do you notice in the amount of cotton candy you get when you increase the size?

What is the difference between the size of a small ice cream and a small fries?

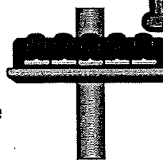
Is there a larger difference between a small and a medium ice cream or a medium and large?

If you ate an entire medium popcorn and an entire small soda, how many ounces would you have consumed?

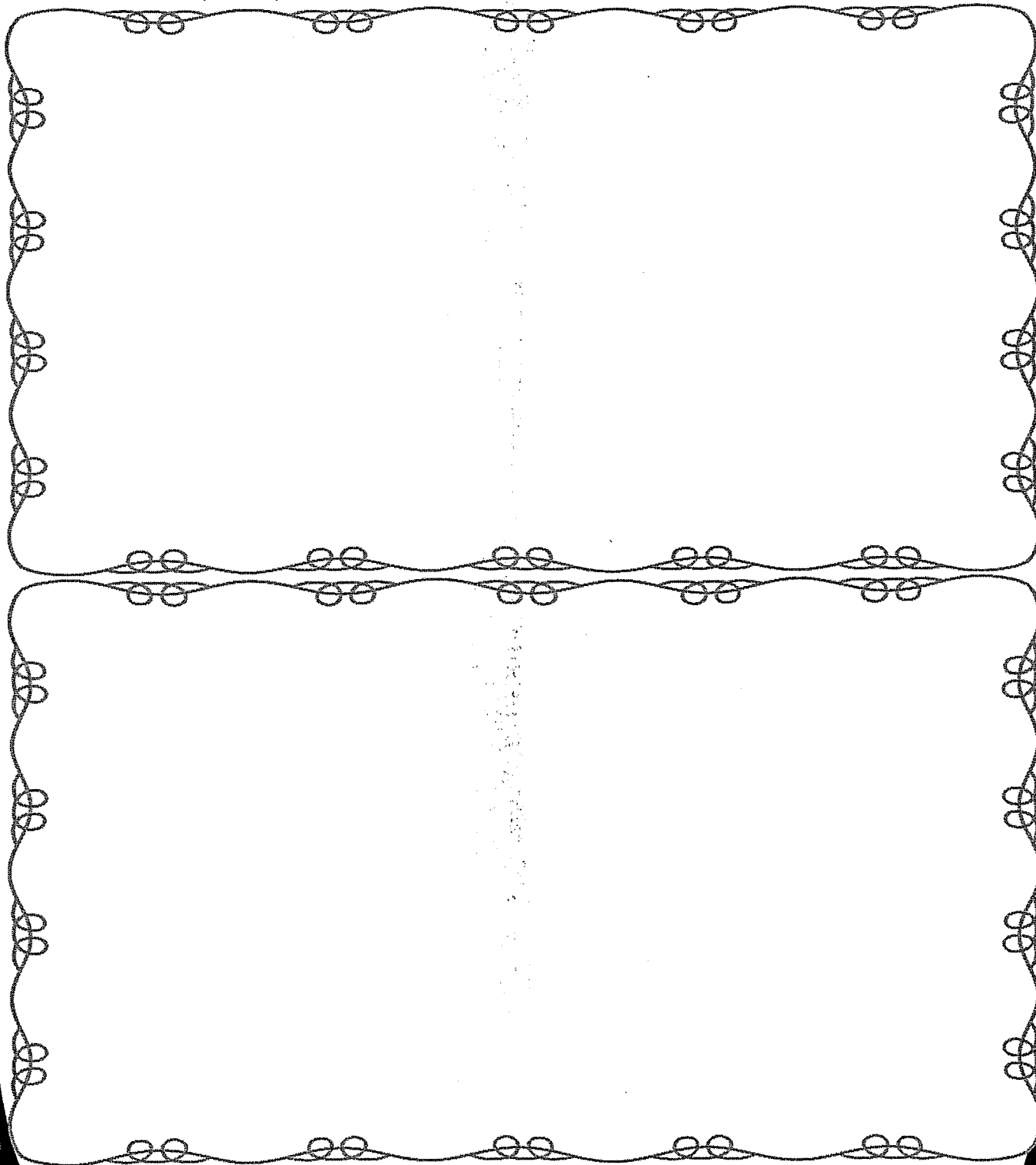
If you sold sixteen small cotton candies and 8 large cotton candies, how many ounces of cotton candy did you sell?

Symmetrical Slopes

You are in charge of designing TWO rides of your choice from the ground up. The only requirement is that the rides MUST be symmetrical. Draw a proposed design for each of the two rides. They must have a PERFECT line of symmetry either horizontally or vertically.



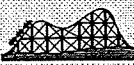

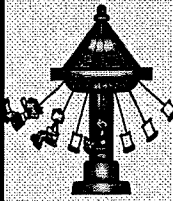


EXAMPLE:
This Drop Tower Ride has a perfect vertical line of symmetry.





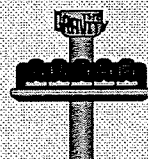


Picky Ticket Designs 1

You're getting so close! Each of your rides must have its own special ticket design so that it's easy to tell them apart. Follow the specifications below to create tickets for each of your rides. Underneath the specifications, write what the shape of your ticket is. Have fun and be creative!

RIDE	SPECIFICATIONS	TICKET DESIGN
FERRIS WHEEL 	Your Ferris Wheel ticket must be a quadrilateral with four right angles and two pairs of parallel sides. _____	
ROLLER COASTER #1 	Your first Roller Coaster ticket should be a polygon with only one pair of parallel sides. _____	
ROLLER COASTER #2 	Your second Roller Coaster ticket should be a quadrilateral with 2 pairs of parallel sides, and the opposite angles should be equal. _____	
MERRY GO ROUND 	Your Merry Go Round ticket should have opposite parallel sides, all sides should be equal, and all angles are right angles. _____	
SWINGS 	Your Swings ticket should have four diagonal lines that intersect at right angles, all sides are equal, and opposite sides are parallel. _____	

Picky Ticket Designs 2

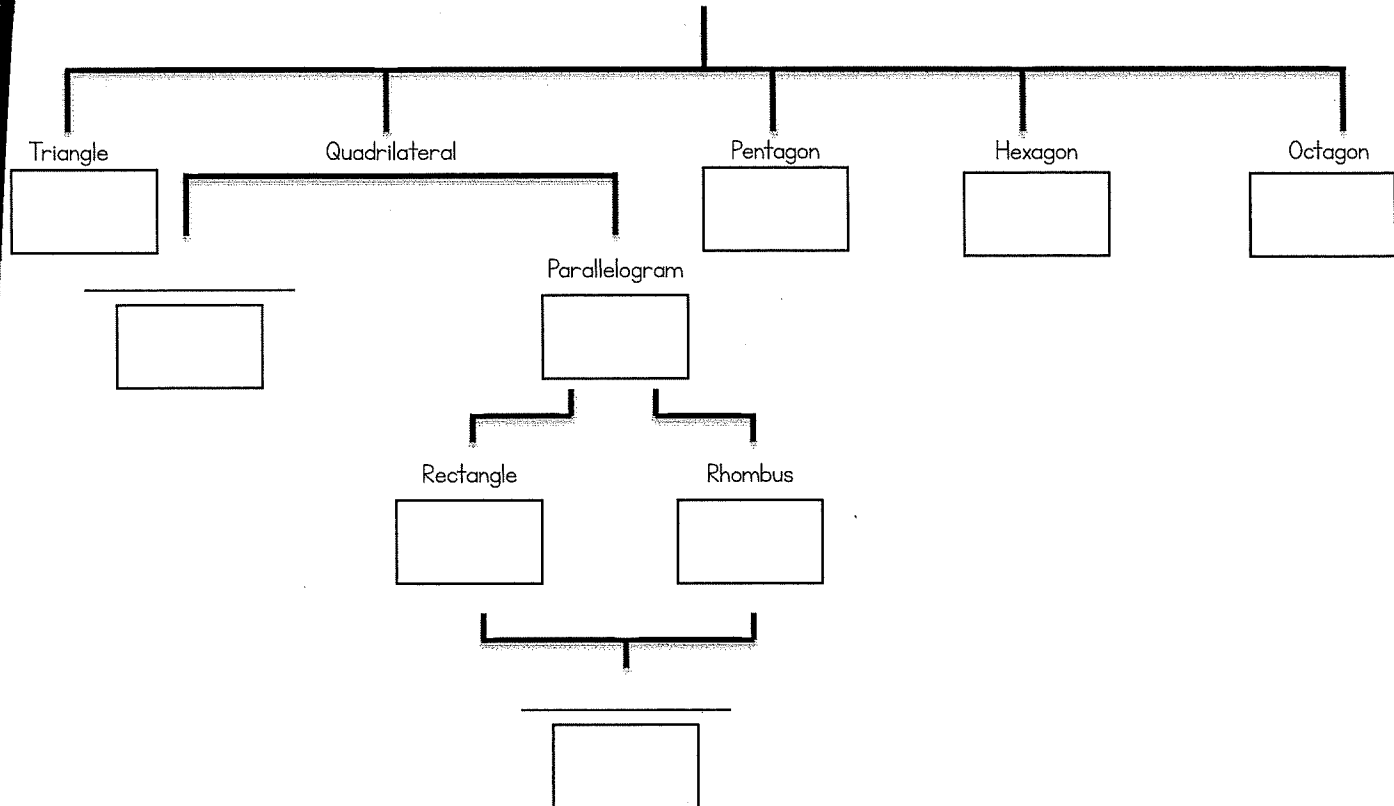
Keep on designing those tickets! Don't forget to write the shape below.

RIDE	SPECIFICATIONS	TICKET DESIGN
BUMPER CARS 	Your Bumper Cars ticket should have five sides and five angles. <hr/>	
SHIP 	Your ship ticket should have six sides and six angles. <hr/>	
DROP TOWER 	Your Drop Tower ticket should have three sides, no parallel lines, and one right angle. <hr/>	
WATER LOG RIDE 	Your Water Log Ride ticket should have eight equal sides. <hr/>	
TRAIN 	Your Train ticket should have four sides, four angles, and only one pair of parallel lines. <hr/>	

Picky Ticket Designs 3

Now that all of your tickets are designed, fill in the blanks on the chart below to show how each of your tickets should be classified. In the box underneath each shape type, write the name of the ride whose ticket is that shape.

POLYGONS



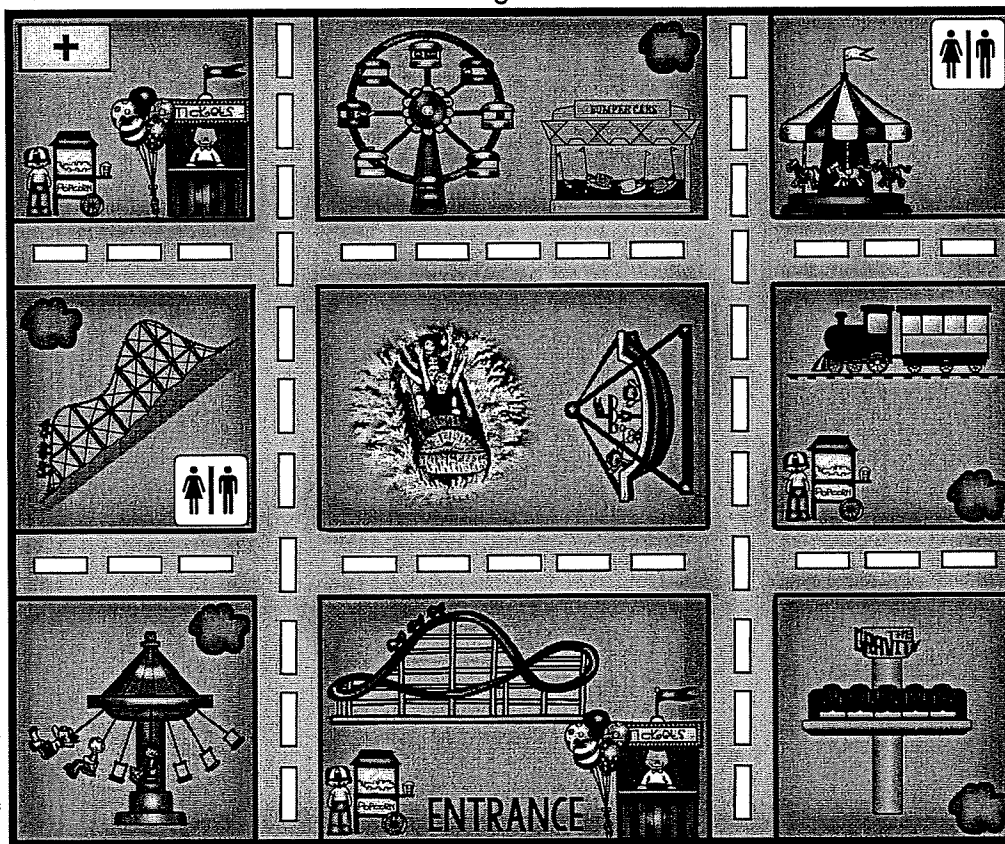
IDENTIFY EACH OF THE FOLLOWING STATEMENTS AS TRUE OR FALSE.

- 1) A rhombus is a quadrilateral. _____
- 2) A pentagon is a parallelogram. _____
- 3) A rectangle is a rhombus. _____
- 4) A hexagon is a polygon. _____
- 5) A square is also a parallelogram. _____
- 6) A square is not a polygon. _____
- 7) A parallelogram is also a square. _____
- 8) A triangle is a quadrilateral. _____
- 9) A trapezoid is not a parallelogram. _____
- 10) A rhombus is also a trapezoid. _____

YOU HAVE PURCHASED A TICKET MAKING MACHINE THAT CAN ONLY CUT FOUR-SIDED TICKETS. HOW MANY OF YOUR TICKETS WILL IT PRINT? HOW DO YOU KNOW?

Mapping It All Out

Your final task before you present to the board of directors is mapping out your theme park. You've designed a map, but now you need to make sure it meets certain criteria that the board has asked you to meet and answer some of their questions. NOTE: You can measure "as the crow flies" in a straight line. You DON'T need to follow a road.



SCALE
 $\frac{1}{2}$ inch = 200 feet

Note: Ride sizes and parking spaces NOT to scale.

WEST PARKING LOT

SOUTH PARKING LOT

LAYOUT SPECIFICATIONS

Underline or highlight the statement in GREEN if the map meets the criteria.

Underline the statement in RED if the map does NOT meet the criteria.

1. There must be a ticket booth within 500 feet of each ride.
2. There must be a restroom within 400 feet of each ride.
3. There must be a concession stand within 1,000 feet of each ride.
4. There must be a concession stand within 500 feet of the entrance.
5. There must be a medical center within 1,000 feet of the entrance.
6. The Water Log Ride must be within 500 feet of a restroom.
7. At least half of the parking spots must be within 1,000 feet of the entrance.

BOARD QUESTIONS

Answer the board's questions about your layout.

1. About how far from the train are the swings?
2. About how far apart are the two rollercoasters?
3. About how far from the entrance is the Ferris Wheel?
4. About how far from the closest bathroom is the medical center?
5. About how far from the entrance is the nearest restroom?

EXTEND AND ENRICH

YOUR MAP HAD QUITE A FEW ERRORS, ACCORDING TO THE BOARD OF DIRECTORS' REQUIREMENTS. CREATE A NEW MAP, WHERE YOU FOLLOW ALL OF THE REQUIREMENTS.

IMAGINE YOU WERE GOING TO ACTUALLY PRESENT THIS TO A BOARD OF DIRECTORS FOR CONSIDERATION. WRITE A SHORT SPEECH TO PRESENT YOUR THEME PARK! BE SURE TO TELL THEM WHY THEY SHOULD CHOOSE TO BUILD YOUR THEME PARK.

RESEARCH WORLDWIDE RECORDS FOR EACH OF THE TEN RIDES YOU HAVE IN YOUR AMUSEMENT PARK. FIND THE BIGGEST AND TALLEST OF EACH AND COMPARE THE SIZE OF YOUR RIDES TO THE RECORD RIDES.

DESIGN A FLYER FOR YOUR AMUSEMENT PARK THAT INCLUDES ALL OF THE POLYGONS SHOWN ON THE PICKY TICKETS 3 PAGE.

RESEARCH THE AVERAGE SPEEDS OF EACH OF YOUR RIDES. DETERMINE ABOUT HOW LONG EACH RIDE WOULD TAKE.

MEASURE EACH STUDENT IN YOUR CLASS. DETERMINE WHICH RIDES EVERYONE WOULD BE ABLE TO RIDE, ACCORDING TO THE GREAT HEIGHT DEBATE PAGE.