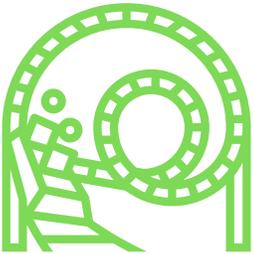# STEM ACTIVITY SHEET

1. Storm Runner has two separate loading platforms. If each train has 60% of its seats filled, how many total riders are on Storm Runner?

2. If every seat on Jolly Rancher Remix is filled, and a train departs every 2 minutes, how many riders will ride it in a span of 10 minutes?

3. If each row on Tidal Force can hold up to 4 riders, how many riders can ride in one boat if 2 of the rows are half filled?

4. If there are 6 riders in each gondola on the Ferris Wheel, and only 80% of the gondolas are being filled, how many riders are on the Ferris Wheel at one time?
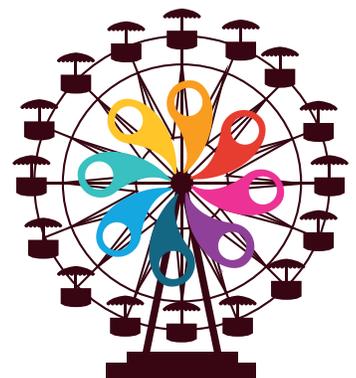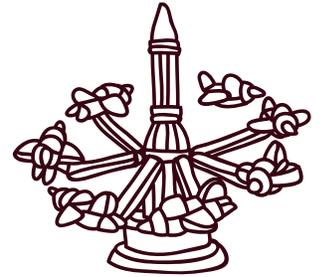
5. If each seat on the Frontier Flyers has 2 riders per seat, how many riders total will ride after 4 ride cycles?

6. Skyrush has 2 trains that operate on it at once. If every row on each train is 75% filled, how many total riders are on Skyrush?

7. Each seat on the Scrambler can hold up to 3 riders. How many riders will ride after 3 ride cycles if each seat is full?

8. Tilt-A-Whirl can seat up to 4 riders per car. If each car is 50% filled, how many riders are on the ride at one time?

9. Candymonium has 3 trains. If one row on each train is empty, how many total riders are on Candymonium?

SPEED ACTIVITY

Materials Needed: Stopwatch, Calculator

Directions:
For each of the roller coasters on the next page, time each of them from when the train leaves the lift hill (or launches, in the case of Storm Runner) to when the train hits the final brakes at the end of the ride.

- *For Cocoa Cruiser, time only one lap around the circuit.*
- *For Jolly Rancher Remix, only time one of the directions (forward or backward).*
- *For Lightning Racer, you can do either side.*

Use the formula **S = d/t** to calculate the average speed of each roller coaster in feet per second. The lengths of each roller coaster are listed in the table on next page.

S = speed
d = distance
t = time

Convert the average speed from feet per second to miles per hour.

1 mile = 5280 feet

Compare the average speed (in mph) to the maximum speed (in mph) of the roller coaster. How do they differ? Is this what you expected?

Coaster	Track Length (ft)	Time of Rollercoaster (seconds)	Average Speed (FT/SEC)	Average Speed (MPH)	Maximum Speed (MPH)
Candymonium	4636				76
Cocoa Cruiser	279				18
Comet	3360				50
Fahrenheit	2700				58
Great Bear	2800				61
Jolly Rancher Remix	935				47
Lightning Racer	3393				50
Skyrush	3600				75
sooperdooperLooper	2614				45
Storm Runner	2600				72
Trailblazer	1874				45
Wildcat	3183				48
Wild Mouse	1213				28

10. Observe the support systems on each roller coaster. Why are some supports larger in some spots and smaller in others? How do the supports differ between wooden coasters and steel coasters?
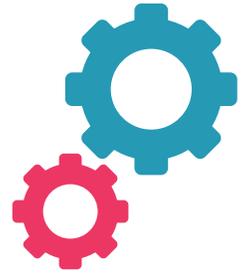
11. Why is each roller coaster's first drop at a different angle? What factors help determine this?

12. What kinds of systems are used to move roller coaster trains in and out of the station, as well as throughout the ride? How does this affect the potential and kinetic energies of the trains?

13. Skyrush uses a cable lift system to pull the train to the top of its lift hill faster. What are the advantages and disadvantages to using a cable lift instead of a standard chain lift?

15. Why is it unsafe to operate roller coasters during a thunderstorm? Why can smaller rides continue to operate when a storm is closely approaching?