



STEAM MIDDLE SCHOOL

WORKSHEET

NAME:

DATE:

S = Science: Forces in Motion

The KC Wheel rotates in a vertical circle using motors and gears.

1. Identify two forces acting on you while you're riding the wheel:

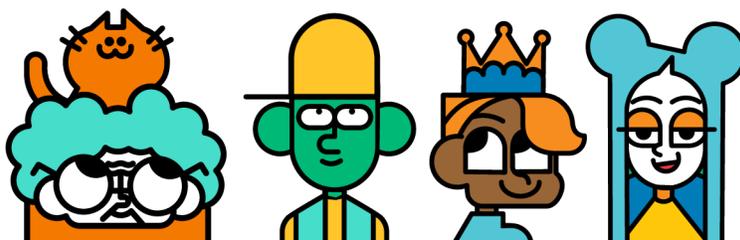
2. What happens to your body as you reach the highest point on the wheel? Explain using one of Newton's Laws of Motion.

T = Technology: The Brains Behind the Ride

The KC Wheel relies on technology for safety and performance.

3. What types of technology are needed to operate a giant observation wheel like this one? (List at least two)

4. Imagine you're a technician. How would sensors and computers help monitor the wheel during operation?





E = Engineering: Built to Last

Observation wheels require precise engineering to remain safe and stable.

5. Think about the materials used to build the KC Wheel. Why might engineers choose steel instead of wood or plastic?

6. What shape do you notice in the structure of the wheel that helps make it strong? Why do engineers often use this shape?

Shape: _____

Reason: _____

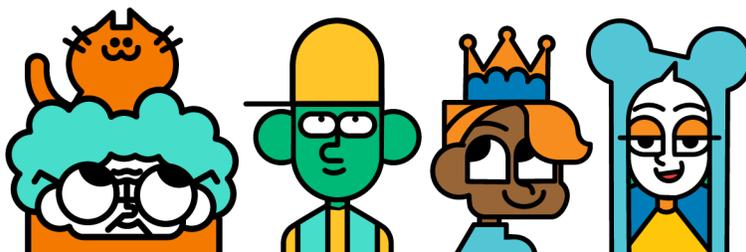
A = Art: Design & Experience

The KC Wheel is not just functional—it's also designed to be a beautiful landmark.

7. If you were to redesign the KC Wheel's lights for a special event (like a school night or holiday), sketch your design and explain your theme.

Theme: _____

Why I chose it: _____





M = Math: Wheel by the Numbers

The KC Wheel is approximately 150 feet tall and has 36 gondolas. Each gondola can carry up to 6 people.

8. What's the maximum number of riders per full rotation?

A: _____

9. If the wheel completes one rotation every 12 minutes, how many full rotations can it make in a 6-hour day?

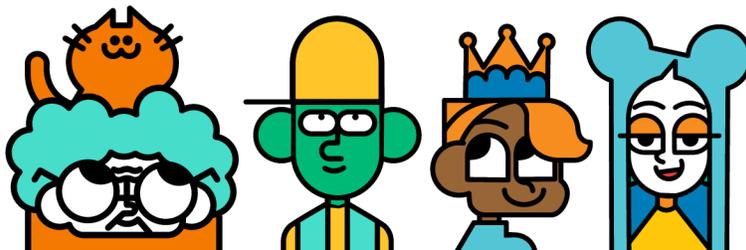
A: _____

10. If 5 students sit in each gondola, how many total students can ride at once?

A: _____

Reflection

11. Which STEAM field (science, tech, engineering, art, or math) did you find most interesting while learning about the KC Wheel, and why?





ANSWER KEY

S = Science

1. Sample answers:

- Gravity
- Normal force
- Centripetal force
- Friction

2. Example:

- Newton's First Law (Inertia): At the top, your body wants to keep moving upward even though the wheel is curving downward.
- Newton's Second Law: Acceleration changes as direction changes.

T = Technology

3. Sample answers:

- Sensors
- Electric motors
- Computerized control systems
- Safety monitoring systems

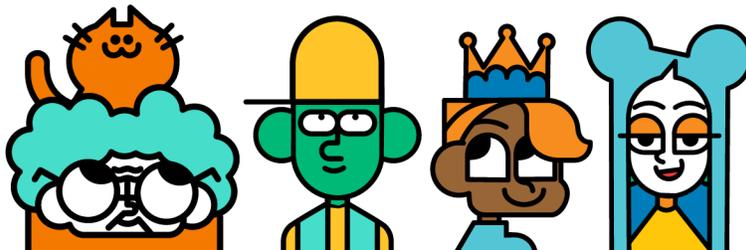
4. Sample answer:

- Sensors can detect speed, temperature, and position. Computers use this data to operate the ride safely and alert operators if anything goes wrong.

E = Engineering

5. Steel is strong, durable, can support heavy loads, and resists weather.

6. Shape: **Triangle** or **Circle**; Reason: Triangles are strong and stable; circles distribute weight evenly in a rotating wheel.





ANSWER KEY

A = Art

7. Answers will vary but expect creative light themes. Students should explain the concept behind their design (e.g., school colors, holiday celebration, city pride).

M = Math

8. $36 \text{ gondolas} \times 6 \text{ people} = \mathbf{216 \text{ riders per rotation}}$

9. $6 \text{ hours} = 360 \text{ minutes}; 360 \div 12 = \mathbf{30 \text{ rotations}}$

10. $36 \text{ gondolas} \times 5 \text{ students} = \mathbf{180 \text{ students}}$

Reflection

11. Open-ended. Expect connections to areas they find interesting (engineering, tech, design, etc.)

