

PreAP Mousetrap Car Show

Specifications:

- The car must be powered by a single spring mouse trap. (NOT a rat trap!)
- The car must have wheels that roll. Flying or sliding is not allowed.
- The car must remain a single unit.
- No mousetrap car kits may be used.
- The mouse trap may not be modified in any way except to attach it to your car.
- The car may be any size, shape, or weight.
- As always, a good design and quality construction are contributing factors toward success.
- Your car must have a theme and be decorated. A color is not a theme, duct tape is not a theme, being lazy is not a theme.

Groups: You may work with up to one other person in your class. There is a 10 point bonus for working alone.

Scoring: Each group will have a chance for three trials. Teams may work on their car between trials.

Location: The competition will be held in the classroom or the hallway. Keep this floor surface in mind when testing your car.

Questions: As a team, submit your answers to the following questions:

1. Analyze your mousetrap car's motion:
 - a. How far did your car travel horizontally?
 - b. How long did your car take to travel this far?
 - c. What was your car's average velocity?
2. How did your group maximize the effectiveness of the mousetrap spring delivering power to your car?
3. What role did friction play in the performance of your car? Did it aid or hinder?
4. What could you have changed on your car to increase the average velocity? Be specific; what is the change and how would it lead to increased velocity.
5. What could you have changed on your car to increase the distance traveled? Be specific; what is the change and how would it lead to increased distance.
6. Give examples of how your car demonstrates each of Newton's 3 laws of motion.
7. What would you have done differently as you and your team worked through this project?

Scoring:

Distance	>0m	>1m	>2m	>5m	>10m	Score
Points	2	5	10	15	20	
Velocity Calculations	Attempted		Complete, with most work shown	Correct, with all work shown		Score
Points	1		5	10		
Completion	On time (meaning, the beginning of your class period)					Score
Points	25					
Theme and Decoration	Unclear theme, Hasty decoration				Clear Theme, Well Decorated	Score
Points	2	4	6	8	10	
Questions	Partially answered		Completely attempted		Introspective and thoughtful	Score
Points	5		10		15	
Completed a Car?	No				Yes	Score
	0				20	
Worked Alone?	No				Yes	Score
(Bonus)	0				+10	