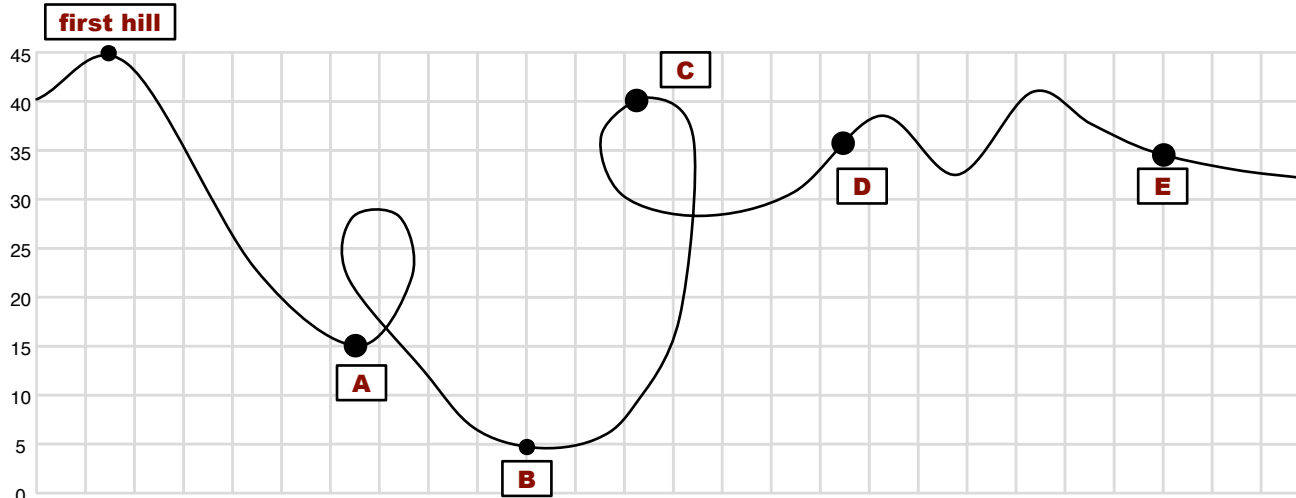


Wk 28 Roller Coaster

D1: Coaster Calculation

$$mg(h_{\text{first hill}} - h_{\text{that spot}}) = \frac{mv^2}{2}$$

name: _____



_____ 1. Which spot is the fastest spot?

_____ 2. Which spot is the slowest spot?

_____ 3. Which two spots will have the same speed?

_____ 4. Which spot is most likely to crush spines?

_____ 5. Which spot is most likely to hurt the shoulders?

6. Use the formula to find the velocity at the FASTEST spot.

7. Use the formula to find the velocity at the SLOWEST spot.

8. MARK YOUR OWN SPOT (NOT THE SAME AS THE PERSON SITTING NEXT TO YOU). Use the formula to find the velocity at the spot .

1. Which hill should be the highest?

2. Do you want to cause spinal injury?

- If yes, what should you put into your design?
- If no, what should you not put into your design?

3. Do you want to hurt their shoulders?

- If yes, what should you put into your design?
- If no, what should you not put into your design?

STEPS	COMMENTS
1. Set a scale: 1 box = ?? meters.	The height controls the speed. Choosing a scale essentially puts a limit on the speed of your coaster.
2. Sketch with pencil.	You only get one piece of large graph paper. Use it wisely.
3. Get your sketch approved.	I am checking to make sure you understand the physics, so I may ask you questions about it.
4. On your paper, label: a) The height of the first hill. (label it A) b) The height of the fastest spot. (label it B) c) The height of the slowest spot. (label it C) d) The height of one other spot (label it D)	Count boxes and use your scale to convert.
5. Calculate the velocity of (B), (C), and (D) on scrap paper first.	Get Mr. Mont to check them. They will be graded!
6. Transfer calculations to your paper near the spot.	Neatly!
7. Name the coaster, color & decorate. Label hazards!	Neatly!