

CAT MOVING

A printed page has a sequence of 24 photos showing a cat moving. During our second class meeting pairs of students analyzed them to be able to respond to abbreviated task-descriptions.

- a) cat's speed at frame 20
- b) cat's speed at frame 10
- c) If the cat's speed changed dramatically, when did that happen?

The printed page has handwritten information about this sequence of photos.

- i) The (numbered) sequence of photos is presented Left to Right, top row to bottom row.
- ii) Time interval between consecutive frames is 0.031 seconds.
- iii) Background gridlines are 5 cm apart, every tenth gridline is darker.

Analyze that sequence of photos showing a cat moving. Write a report which answers the following questions; submit your report at the start of class on Friday, 27–January–2017.

1. How big is the cat?
2. How far did the cat go? What was the total time for this sequence of photos. What was the cat's average speed?
3. In which frames do you think the cat was probably going faster than that average speed?
4. What was the cat's average speed between start and frame 10?
5. What was the cat's average speed between frame 10 and frame 20 (inclusive)?
6. Estimate the cat's speed at the moment when frame 20 was photographed. Discuss how you decided which information was relevant for your estimation.
7. Estimate the cat's speed at the moment when frame 10 was photographed. Discuss how you decided which information was relevant for your estimation.
8. Do you think the cat's speed changed in some non-trivial way? Explain your answer.
(For example: if *YES*, then when do you think that happened?)

Your analysis will use various data, obtained by examining these photos, involving time and location. I recommend your report present a table with all of your data before your responses to individual tasks use appropriately selected portions. That tabulation should include a description of your procedure to get numerical values: e.g., what did you use as a reference point for measuring distance, what part of the cat did you use to track the cat's position?

Note: Two electronic versions of the page of cat photos are posted on the class website. Links to view or download one or both are indexed at <http://lennes.math.umt.edu/171/worksheets/>