Calculation of Drag Factor From Test Skids

Part I

From the given information, calculate the drag factor for each of the following scenarios. Points to remember:

- Drag factor has no units.
- The formulas for calculating drag factor are
  - \( f = \frac{s^2}{30d} \)
  - \( f = \frac{\text{Force}}{\text{Weight}} \)
- Follow the rules for choosing the correct skid distance
- Round answers to two decimal places
- Speed is in mph; velocity is fps

1. Three sets of test skids are done on new asphalt at a speed of 30 mph. The lengths of the skids were 40 feet, 41 feet, and 44 feet. What is the drag factor of the surface?
2. Test skid are done on worn asphalt at a speed of 30 mph. The lengths of the skids were 55 feet, 52 feet, and 57 feet. What is the drag factor of the surface?
3. Three sets of test skids are done on concrete at a velocity of 36.665 fps. The skids measured 23 feet, 25 feet, and 21 feet. What is the drag factor of the roadway surface?
4. Three sets of test skids are done on a tar and gravel surface at a velocity of 43.998 fps. The skids measured 53 feet, 50.2 feet, and 47.7 feet. What is the drag factor of the roadway surface?
5. Three sets of test skids are done on a worn asphalt surface at a speed of 25 mph. The distances of the skids were 30 feet, 33 feet, and 31 feet. What is the drag factor of the surface?
6. Test skid are done on a surface at a speed of 25 mph. The lengths of the skids were 97 feet, 101 feet, and 98 feet. What is the drag factor of the surface? Is there something unusual about this number? If so, what do you think is a possible cause? (Assume that the test vehicle was working properly throughout the test.)

Part II

For this part of the exercise, assume that all test skids are done at a speed of 30 mph. Using the data from the Skid Distance Practice handout, calculate the drag factor for the roadway surface for all of the ODD numbered problems.

Part III

For this part of the exercise, choose ONE of the problems from the Skid Distance Practice handout in which the correct skid distance to use IS NOT the longest of the three distances listed. Using a speed of 25 mph and 30 mph, calculate the drag factor using the correct skid distance AND the longest skid listed for that problem. Describe the results. Using your data, explain why we don’t always use the longest skid.