_____ Total Score

_____ Rank

School Name: _____

Team Number: _____

Student Name(s) (1): _____

(2): _____

DIVISION B ANSWER KEY
DISEASE DETECTIVES

National Science Olympiad
University of Illinois
Urbana-Champaign, Illinois
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Developed by the
Career Paths to Public Health Program
Centers for Disease Control and Prevention (CDC)

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service

DIVISION B

African Sleeping Sickness

24 questions, 41 total possible points

1. incubation period
2. zoonoses
3. vectors
4. b. biological vectors
5. c. lethargy
6. limited medical infrastructure, lack of clean water, difficult/harsh living conditions after a conflict or war, limited toilet facilities, displaced populations in close contact with strangers
7. d. Use pesticide to kill flies
8. T.b. gambiense
9. T.b. gambiense
10. Epidemic/epi curve
11. Cases of sleeping sickness
12. B. The rise in disease is correlated with the civil conflict in Uganda.
13. Cross sectional
14. fever more than a month, farming where tsetse flies live, living in Ezo village (ACCEPT ANY OF THE THREE ANSWERS)

DIVISION B

15.

163	277	440
		918
	1095	

16. 163x818 = 133334
    100 x 277 = 27700

    133334/27700 = 4.8135018 = 4.184

17. C. People living in Ezo village are almost X times more likely to be infected as people not living in Ezo village.

18. A. Parasites identified in the blood during microscopic examination.

19. 25,000 x 0.194 = 4850

20. Collecting water, farming

21. Rainy

22. 35/624 = 0.0560897
    43/273 = 0.1575091

    0.0560897/0.1575091 = 0.3561045 = 0.356

23. b. In sandy soil under a tree

DIVISION B

24. Endemic = present at a continuous level throughout a population or geographic area; the constant presence of an agent or health condition within a given geographic area or population; can also refer to the usual prevalence of an agent or condition.
Epidemic = the occurrence of more cases of disease, injury, or other health condition than expected in a given area or among a specific group of persons during a particular period. Usually, the cases are presumed to have a common cause or to be related to one another in some way (see also outbreak)
Outbreak = Synonymous with epidemic. Sometimes the preferred word, as it may escape sensationalism associated with the word epidemic. Alternatively, a localized as opposed to generalized epidemic; the occurrence of more cases of disease, injury, or other health condition than expected in a given area or among a specific group of persons during a specific period. Usually, the cases are presumed to have a common cause or to be related to one another in some way. Sometimes distinguished from an epidemic as more localized, or the term less likely to evoke public panic (see also epidemic).

Road Safety is No Accident

24 questions, 59 total possible points

25. A. incidence

26. incidence = number of new cases per population at risk per unit time; a measure of the frequency with which new cases of illness, injury, or other health condition occurs among a population during a specified period (key part is ”new cases”)

    prevalence = number of existing cases per population; the number or proportion of cases or events or attributes among a given population (key part is “existing cases”) PLEASE ACCEPT ALL REASONABLE ANSWERS

27. (367282/1046000000)x100,000 = 35.1130 = 35.11

28. (118329/1148000000)x10000 = 1.029956 = 1.03

29. B. cause specific mortality rate

30. (105725/452922) = 23.34287% = 23.34% OR 0.23

31. (91376/72718000)x1000 = 1.25658 = 1.26

32. age, gender, occupation, alcohol use, drug use, helmet use, driver experience, tiredness, wearing glasses or not, distracted (talking to/looking at people across the street; on the phone) FOCUS ON THE PERSON; PLEASE ACCEPT ALL REASONABLE ANSWERS

33. no lights or reflectors, no horn, brakes, speed, poorly maintained/raggedy, no seat belt or restraints, no mirrors, type of vehicle FOCUS ON THE VEHICLE; PLEASE ACCEPT ALL REASONABLE ANSWERS

34. weather (rain,fog); lighting/time of day, traffic, urban/rural, road curvature or gradient (hills) FOCUS ON ROADS AND SURROUNDINGS; PLEASE ACCEPT ALL REASONABLE ANSWERS

35. DTC buses and motorcycles/scooters

DIVISION B

36.18/90 = 20%

37.Cross sectional study

38.378-252 = 126 x 0.698 = 88

39.378 x 0.196 = 74

40.

106	198
22	52

106/304 = 0.3486842
22/74 = 0.297297297

0.3486842/0.297297297 = 1.172846 = 1.17

RR = 1.17

41.EITHER a or b, but should be b

a. Riders and passengers who did wear a helmet were X times more likely to have a superficial head injury than those who did not wear a helmet. *(answer = 0.85; accept this if students flipped the relative risk in the previous question)*
b. Riders and passengers who did not wear a helmet were X times more likely to have a superficial head injury than those who did wear a helmet. *(answer = 1.17)*

42.Open wound and intracranial

43.B. bus/truck/van collisions
e. MAIS – head
f. MAIS – chest
g. MAIS – abdomen

44.Title (number of cases/monthly RTI cases in Nepal); x axis label (month); y axis label (number of cases)

45.July, August, September

DIVISION B

46. Roads wet, cause more accidents; mudslides on steep slopes; low, decreased visibility due to, mud slides, improper rain; equipment on vehicles, no windshield wipers, etc. ACCEPT ALL REASONABLE ANSWERS

47. 36%

48. Helmet laws, Speed limits, Clearly marked driving lanes, Traffic lights, lights/reflectors, ACCEPT ALL REASONABLE ANSWERS