Student name   Section

Please fill in your name and section. Answer both the questions, on the question paper.
It should take at most 20 minutes to complete this quiz.
Continue your answer on to the back of the piece of paper if necessary.

1. (**Explain your answers**)
(a) (2 points) In a study funded by the drug manufacturers, a new drug to treat gambling addiction was
tested on a total of 2000 patients across the US. After 3 months on the treatment, 60% of the patients
reported a "significant decrease" in their gambling compulsion. The drug company claims the study shows
their new drug is effective. Is this claim justified?

No.
1. There are no controls, so no comparison is possible.
**2. Study is not blinded, and results are self-reported, so there is strong possibility of placebo
effect.**
(Either of these points, made clearly, gets 2 points.)

(b) (2 points) In a large-scale study of boys aged 7 to 10 years old, researchers found a strong association
between the number of hours per day watching TV, and a professionally measured tendency to react with
physical violence in conflict situations with their classmates. The researchers claim their study shows that
watching TV causes school violence. Is this claim justified?

**No. There are many possible <u>confounding factors</u> here, that would be related to both hours
watching TV and to behavior in confrontations with peers. Home environment, parental
education, ...**
*For 2 points: need to mention confounding factor (either in general or specific), and the fact that it affects
BOTH TV-watching and confrontation behavior.*

(c) (2 points) To survey customer preferences, the ice cream company ICC mails out postcards to 100,000
households asking whether the family enjoys ICC ice cream. They get about 10,000 responses, of which 95%
are positive. The company claims their survey shows that 95% of households enjoy ICC ice cream. Is this
claim justified?

**No. The main point here is <u>non-response bias</u>. Only 10% respond: people who enjoy (or at
least have heard of) ICC ice cream are much more likely to respond. (2 points)**
**(There is also possibility of response bias – among those responding they might be more
inclined to say they enjoy it ?? maybe. (1 point only).)**

2.(**One-word answers are sufficient**) The following three histograms show the distribution of daily round-
trip commute distances (in miles) for residents in three suburbs Avondale (A), Burnaby (B) and Chester
(C) of a large US city.

Figure from FPP P. 65

(i) (2 points) Transit planners are interested in what proportion of residents have a round-trip commute of
more than 35 miles. For each of the 3 suburbs, is this proportion <u>about</u> half, well <u>over</u> half, or well <u>under</u>
half?

| Avondale: **OVER** | Burnaby: **UNDER** | Chester: **ABOUT** |

(ii) (1 point) Which suburb has the smallest proportion of households with round-trip commutes of under
25 miles.

AVONDALE or **A**

(iii) (1 point) Which suburb has many residents with short commute distances, but also some residents with
round-trip commutes of over 90 miles.

CHESTER or **C**