

Solutions

2.1 The state of physical and mental well-being.

2.2 Obesity.

2.3 Benign is contained in one area within a membrane while malignant invades neighbouring tissues; malignant spreads in the blood to form secondary tumours, benign does not.

3.1 Cigarette smoke contains carcinogens; these mutate the DNA of cells in the lung lining; the mutated cells divide uncontrollably, forming a malignant tumour.

3.2 (a) As the percentage obese rises, the diabetes rate rises – a positive correlation; the rate roughly doubles from A to C. (b) Obesity is a proven risk factor with a known causal mechanism for Type 2 diabetes, so the correlation here reflects cause, not chance.

3.3 Any two, each with reason: a mechanism – how would the drink cause the disease?; controlled for other lifestyle factors – diet, exercise, smoking, otherwise those could be the true cause; sample size and representativeness – small or biased samples mislead; peer review of the study. [max 4]