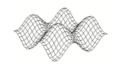


GIMNASIO FEMENINO ÁREA DE MATEMÁTICAS 4º CONCURSO NACIONAL DE MATEMÁTICAS IB PRUEBA 1 Y 2 – ESTUDIOS MATEMÁTICOS NM 2017 – 2018



QUESTION 3.4

(a) (i)
$$\frac{220}{500} \left(\frac{11}{25}, 0.44, 44\% \right)$$
 (A1)(G1)

(ii)
$$\frac{180}{500} \left(\frac{9}{25}, 0.36, 36\% \right)$$
 (A1)(G1)

(iii)
$$\frac{40}{500} \left(\frac{2}{25}, 0.08, 8\% \right)$$
 (A1)(A1)(G2)

(iv)
$$\frac{55}{280} \left(\frac{11}{56}, 0.196, 19.6 \% \right)$$
 (A1)(A1)(G2) [6 marks]

Note: Award (A1) for numerator, (A1) for denominator. Award (A0)(A0) if answers are given as incorrect reduced fractions without working.

(b) "The size of the television screen is independent of gender." (A1) [1 mark]

Note: Accept "not associated", do not accept "not correlated".

(c)
$$\frac{180}{500} \times \frac{220}{500} \times 500 \text{ OR } \frac{180 \times 220}{500}$$
 (M1)

$$= 79.2$$
 (A1)
= 79 (AG) [2 marks]

Note: Both the unrounded and the given answer must be seen for the final (A1) to be awarded.

$$(A1) [1 mark]$$

(e)
$$\chi_{calc}^2 = 104 (103.957...)$$
 (G2) [2 marks]

Note: Award (M1) if an attempt at using the formula is seen but incorrect answer obtained.

(f)
$$11.345$$
 (A1)(ft) [1 mark]

Notes: Follow through from their degrees of freedom.

(g)
$$\chi_{calc}^2 > \chi_{crit}^2$$
 OR $p < 0.01$ (R1)

Do not accept
$$H_0$$
. (A1)(ft) [2 marks]

Note: Do not award (R0)(A1)(ft). Follow through from their parts (d), (e) and (f).