

Edexcel GCE October 2020

Maths 8MA0/01

Paper 2 / 1 Statistics

① More than 15 min $36 + 15 + 4 = 55$ squares

55 squares = 78 not used as only found % of total

Total $8 + 16 + 12 = 36$

$$36 + 55 = 91$$

less than 11 $\frac{8+8}{91} = 17.58241758$ 17.6%

18% to nearest %

② (a) $0 \leq \text{distance} < 50$

(b) $1.5 \times \text{IQR} = 1.5 \times 1600 = 2400$

$$Q_3 + 2400 = 1100 + 1600 + 2400 = 5100$$

At 5300 above range for outlier.

(c) Strong negative correlation, as visibility falls humidity rises

(d) Hours of sunshine

③

S	0	1	2	3	4
$P(S=s)$	a	b	c	0.1	0.15

$$P(S < 2) = 2P(S=2)$$

$$a + b = 2(c + 0.25) \text{ Also } a + b + c + 0.1 + 0.15 = 1$$

$$\text{So } 2c + 0.5 + c + 0.1 + 0.15 = 1$$

$$3c = 0.25$$

$$c = \frac{0.25}{3} = \frac{1}{12}$$

Score 6 in 2 games

$$4 + 2$$

$$2 + 4$$

$$3 + 3$$

$$0.15 \times \frac{1}{12}$$

$$\frac{1}{12} \times 0.15$$

$$\frac{0.1 \times 0.1}{0.035}$$

$$\underline{\underline{0.035}}$$

(4) 450 m, 300 L, 850 c

(a) It is not possible to have a sampling frame

(b) Quota sampling $\frac{160}{450+300+850} = 1/10$

so 45 Mirror carp, 30 leather carp, 85 common carp

Once you have made the quota return the fish to the water.

(c) Standard Deviation $\sqrt{\frac{\sum x^2}{n} - \bar{x}^2}$

$$= \sqrt{\frac{3053}{160} - \left(\frac{642}{160}\right)^2} = 0.6128825336$$

0.613 to 3SF

(d) 2.3 instead of 3.2
4.6
↑

(i) Both figures in the same class so no change to the results.

(ii) correct weight further from mean so increases the SD, in a different class now.

wrong figures

↑
correct figures

$$\textcircled{5} \quad P(S) = 1/6 \quad X \sim B(n, 1/6)$$

$$\textcircled{a} \quad P(X \geq 3) / X \sim B(9, 1/6) = 1 - 0.8217404057 \\ = 0.1782595943$$

$$\textcircled{b} \quad Y \sim B(5, 0.17825943)$$

$$P(Y = 1) = 0.4064072377$$

$$\textcircled{c} \quad \begin{array}{ll} H_0 & P(S = 1/6) \quad \text{one tail} \\ H_1 & P(S > 1/6) \quad 5\% \end{array}$$

$$1 - P(X \leq 10)$$

$$P(\text{11 successes}) / X \sim B(35, 1/6) = 1 - 0.9768183834 \\ \text{or more} \quad = 0.02318161661$$

As this is less than 5% reject H_0 in favour of H_1 . Rowan is more successful salesperson.