

Assessment in IGCSE Mathematics 0580

Session 2: Handout 2.15(b)

Extended - Questions and responses

Question: - extract from a question on statistics.

d represents the depth of a river in centimetres.

d	$0 < d \leq 10$	$10 < d \leq 20$	$20 < d \leq 30$	$30 < d \leq 40$	$40 < d \leq 50$	$50 < d \leq 60$	$60 < d \leq 70$
Number of days	17	41	62	98	85	47	15

(June 2004 paper 4)

Calculate an estimate of the mean depth of the river.

4 marks

Mark scheme

Mark scheme	Marks	Notes
Midpoints 5, 15, 25, 35, 45, 55, 65 Σfx attempted (13065)	M1 M1*	At least 6 correct Dependent on first M1 or using midpoints ± 0.5
$\Sigma fx/365$ 35.8 or 36	M1 A1	Dependent on second M1* www 4 [35.79452055]

Note – www means ‘without wrong working’.

Answer – Candidate A:

$$5.5 \times 17 + 15 \times 41 + 25.5 \times 62 + 35.5 \times 98 + 45.5 \times 85 + 55.5 \times 47 + 65.5 \times 15 = 13247.5 / 365 = \underline{\underline{36}}$$

Answer – Candidate B:

$$5 + 15 + 25 + 35 + 45 + 55 + 65 = 245 / 7 = 35$$

Answer – Candidate C:

No working – 36 given as answer.

Answer – Candidate D:

$$0 \times 17 + 10 \times 41 + 20 \times 62 + 30 \times 98 + 40 \times 85 + 50 \times 47 + 60 \times 15 = 11240$$

$$10 \times 17 + 20 \times 41 + 30 \times 62 + 40 \times 98 + 50 \times 85 + 60 \times 47 + 70 \times 15 = 14890$$

$$14890 + 11240 = 26130 / 2 = 13065$$

$$13065 / 365 = 35.79$$

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Session 2: Handout 2.15(b) (contd.)

Marks and comments

The question is a standard estimated mean question. The mark scheme used on Paper 4 questions is slightly different in style to papers 1, 2, 3 and 4, with method marks listed vertically to ensure that markers do not look at answers first, but follow methods in working.

Comments:

Candidate A: 2 marks

This response does not get the first method mark because the mid values are incorrect. The second and third method marks are given in this case – although they are dependent on the first method mark, in the notes mid values ± 0.5 are allowed. The final mark is not given for a wrong answer. Please note that A marks cannot be given when errors are seen in the method even if the final answer is correct. In other words, A marks are dependent on all of the method marks.

Candidate B: 1 marks

Although this candidate clearly has the wrong idea, this response will score the first method mark for including the correct mid values.

Candidate C: 4 marks

No working at all seen but a correct answer given. The mark scheme allows all four marks as there is no *incorrect* working seen.

Candidate D: 4 marks

The first two lines of working gain no credit. The third line of working, however, earns all three method marks as a correct method is implied by the average of the two totals. The final answer is in the correct range and scores the final mark. An unconventional method is used by the student, but it is correct.