

Estimation station and class survey for CBSE Class 9 and 10: answers

CBSE Math Revision · CBSE Class 9 and 10 · Teacher answers and notes

No calculator. Every answer works out exactly.

Teacher notes

- Estimation station: set up four or five stations (a desk to measure, a jar of counters, a corridor, a book's thickness, a minute with eyes closed). Students write an estimate first, then measure. Being wrong is the point: celebrate the closest estimate and the best reasoning, not just the right answer, and agree a class norm that a reasoned wrong answer is a good start.
- Class survey: the data in the tasks are made up, so the answers can be checked. Then collect your own class's anonymous data on the board (a show of hands for travel-time groups, hand spans written on sticky notes with no names) and repeat the calculations. Nothing is stored on the site.
- Tasks B and C use the Statistics chapter formulas for grouped data (Class 10) and the averages from Class 9.

Starter

1. About 1000

- $50 \times 20 = 1000$

2. About 200

- $(600 + 400) \div 5 = 200$

3. 25%

- $30 - 24 = 6$
- $6/24 \times 100 = 25\%$

Task A: Estimation station

a. 25%

- $120 - 90 = 30$
- $30/120 \times 100 = 25\%$

b. Mean 200; 4 more than 196

- $\text{Mean} = 1000 \div 5 = 200$
- $200 - 196 = 4$

c. Mode 12 m; median 11.5 m

- 12 appears three times.
- The 5th and 6th values are 11 and 12: median = $(11 + 12) \div 2 = 11.5$

Task B: Class survey: travel times

a. 17.8 minutes

- Class marks 5, 15, 25, 35
- $\Sigma fx = 30 + 135 + 175 + 105 = 445$
- $\text{Mean} = 445 \div 25 = 17.8$

b. **155/9 = 17 2/9 minutes**

- $n/2 = 12.5$; cumulative frequencies 6, 15, 22, 25, so the median class is 10-20.
- Median = $l + ((n/2 - cf)/f) \times h = 10 + (12.5 - 6)/9 \times 10 = 10 + 65/9 = 155/9$

c. **16 minutes**

- The modal class is 10-20 (frequency 9).
- Mode = $l + ((f_1 - f_0)/(2f_1 - f_0 - f_2)) \times h = 10 + (9 - 6)/(18 - 6 - 7) \times 10 = 10 + 6 = 16$

Task C: Hand spans

a. **Mean 20 cm; range 6 cm**

- Total 200, so mean = 20
- $23 - 17 = 6$

b. **20 cm**

- In order: 17, 18, 19, 19, 20, 20, 21, 21, 22, 23
- $(20 + 20) \div 2 = 20$

Extension

1. **Mean 20 cm; range 8 cm**

- $(200 + 16 + 24) \div 12 = 240 \div 12 = 20$
- $24 - 16 = 8$

Every question is original and every answer was recomputed by computer before publishing.