La Scuola d'Italia / Huson / IB Math: Sequences
14 November 2025

First & last name: Solutions
Grade:

3.4 Classwork: Frequency tables

1. A class of students was asked about their preferred type of music. The results are summarized in the table.

Type of music	Frequency
Pop	7
Rock	5
Hip–hop	9
Classical	3
Other	2

(a) How many students are in the survey altogether?

$n = 7+5+9+3+2 = 26$

(b) Which type of music is the mode of this data set?

Hip-hop

(c) What fraction of the students chose rock? (Do not simplify.)

5/26

(d) Is *type of music* a categorical variable or a quantitative variable? Explain in one short sentence.

Categorical. Types of music are not numbers, they are things.

2. The table shows the number of books each student in a reading club finished last month.

Number of books	Frequency
0	2
1	4
2	7
3	5
4	2

(a) How many students read at least 2 books?

$N(x \geq 2) = 7+5+2 = 14$

(b) How many students are in the reading club?

$n = 2+4+7+5+2 = 20$

(c) What is the most common number of books read?

Two books

(d) Is *number of books* discrete or continuous? Briefly justify.

Discrete. We are not considering partial books, only Natural numbers

3. A teacher recorded the test scores (out of 100) for one class and grouped them into intervals.

Score interval	Frequency
50–59	1
60–69	3
70–79	7
80–89	9
90–99	4

(a) How many students scored at least 80?

$N(x \geq 80) = 9 + 4 = 13$

(b) Which interval is the modal class?

70 - 79

(c) Looking at the frequencies, is the distribution roughly symmetric, skewed left, or skewed right? Explain your choice in one or two sentences.

Skewed left.

4. Forty IB high school students range in age from 15 to 18 years old. The following table shows the frequencies of each age.

Age (years)	15	16	17	18
Frequency	5	k	15	7

(a) Calculate the value of k. [1 mark]

$n = 5 + k + 15 + 7 = 40$

$k = 13$

(b) Write down the mode. [1 mark]

17

(c) Find the value of the range. [1 marks]

range $= 18 - 15 = 3$

(d) Find the median. [1 marks]

$\frac{n+1}{2} = 10\frac{1}{2}$ median $= 17$

(e) Find the mean. [2 marks]

$\bar{x} = \frac{1}{40}(5 \cdot 15 + 13 \cdot 16 + 15 \cdot 17 + 7 \cdot 18) = 16.6$

(f) Find the standard deviation. [2 marks]

$\sigma = \sqrt{\frac{\Sigma(x_i - \mu)^2}{n}} = 0,916515\ldots \approx 0.917$

Calculator

La Scuola d'Italia / Huson / IB Math: Sequences
14 November 2025

First & last name:
Grade:

5. A runner records her pace in terms of distance run (d) in miles over time (t) in minutes during a 4.5 mile run. She models her pace with a linear regression equation $d = at + b$.

minutes (t)	0	8	15	22	30
miles (d)	0	1.8	2.7	3.7	4.5

(a) Find the values of a, b, and the correlation r. [3 marks]

$a = 0.147445...$
≈ 0.147
$b = 0.32832...$
≈ 0.328
$r = 0.987706...$
≈ 0.988

(b) Explain what the value of a represents in the context of the situation. [2 marks]

$a = 0.147$ miles/minute
She runs the equivalent of 0.147 miles each minute of the race.

5. Constructing a frequency table from raw data

6. The following data show the number of goals scored by a soccer team in 15 matches:

0, 1, 3, 2, 1, 4, 2, 2, 0, 1, 3, 5, 2, 1, 2

(a) Complete a frequency table with the possible number of goals from 0 to 5.

Goals	Frequency	
0	11	2
1	1111	4
2	1111	5
3	11	2
4	1	1
5	1	1

(b) From your table, what is the mode of this data set? 2 goals

(c) Explain in one or two sentences why a frequency table is helpful for describing this data.

It summarizes the data in a form making it easier to see the center, spread, and shape of the distribution

7. A small survey asked students how many hours they sleep on a school night. The results are summarized below.

Hours of sleep	Frequency
4	1
5	3
6	5
7	4
8	2

(a) How many students were surveyed?

$n = 1+3+5+4+2 = 15$

(b) What is the mode of the data?

6 hours

(c) What is the median number of hours of sleep? Show how you locate it using the frequencies.

$\frac{15+1}{2} = 8$ The 8th data point is 6 hours

(d) Write an expression for the mean number of hours of sleep, using the values and their frequencies.

$\bar{x} = \frac{4.1 + 5.3 + 6.5 + 7.4 + 8.2}{15} = 6.2$

(e) Compare your estimation of the mean to the value given by the calculator.

Also 6.2