DS 1000B: Midterm Exam

Information Sheet

Winter 2026

When & Where

Exam Details

Date: Sunday, March 1st, 2026

Time: 2:00 PM – 4:00 PM (120 minutes)

Duration: 2 hours

Room Assignments

Room	Section	Last Name Range
Section 003		
HSB 35	003	A – G
HSB 240	003	H – O
HSB 236	003	P – Y
FNB 1240	003	Z
Section 002		
FNB 1270	002	A – C
FNB 1250	002	D – K
FNB 1220	002	L – O
FNB 1240	002	P – Z

Please make sure to go to the correct room based on your section and last name. The seating capacity is limited in each room.

Allowed Aids

- **Calculator:** Non-programmable, non-graphing.
- **Formula sheet:** Please find a copy of it at the end of this document. A copy will be provided during the exam. Do **not** bring your own.
- **Photo ID:** Please bring valid photo identification.

Content Coverage

The midterm covers all material from **Chapters 1, 2, 4, 5, 6** of the course notes, including but **not** limited to the following topics:

Chapter	Topics
Chapter 1	Variable types, individuals/variables, data visualization basics
Chapter 2	Measures of center, boxplots
Chapter 4	Scatterplots, correlation
Chapter 5	Least-squares regression, residuals, R^2, extrapolation
Chapter 6	Contingency tables, conditional distributions, relative risk, odds ratio

Approximate Weighting

Topic Area	Approx. % of Exam
Chapter 1: Data Visualization	15%
Chapter 2: Descriptive Statistics	30%
Chapter 4: Correlation	10%
Chapter 5: Regression	30%
Chapter 6: Contingency Tables	15%
Total	**100%**

Exam Format

The exam consists of two parts:

Section	Question Type	Weight
Part A	Multiple Choice (15 questions)	15%
Part B	Written	85%

Please see the final page of this document to view the cover page of the midterm exam.

The total number of parts in the written section is 38.

Preparation Tips

- **Highly recommended:** Practice by completing the past midterm and cumulative problem set under exam-like conditions (timed, using only permitted aids). A similar approach would also be recommended when reviewing lecture notes.
- Carefully review your lecture notes and assignments.
- Attend scheduled office hours and the review sessions, which will take place at the scheduled labs on the last week of February.
- Please see the Midterm FAQ thread on Piazza prior to submitting new questions. There is a good chance your question has already been answered there.

Important Reminders

Please read carefully:

- **Do not write on or near the barcodes** at the top of exam pages. This renders them unscannable and may result in zero marks for those questions.
- **Do not use colored pens, markers, or highlighters**. They do not scan properly.
- **Bring a photo ID** to the exam.
- **There will be no makeup midterm.** We strongly encourage all students to write the midterm.

Good luck with your preparation!

— Marieke Mur & Pavel Shuldiner

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Midterm Formula Sheet

Descriptive Statistics

Mean:

$$\bar{x} = \frac{\sum_{i=1}^{n} x_i}{n} = \frac{x_1 + x_2 + \cdots + x_n}{n}$$

Variance:

$$s^2 = \frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}$$

Standard Deviation:

$$s = \sqrt{s^2} = \sqrt{\frac{\sum_{i=1}^{n} (x_i - \bar{x})^2}{n-1}}$$

Interquartile Range:

$$\text{IQR} = Q_3 - Q_1$$

Outlier Fences (1.5×IQR Rule):

$$\text{Lower: } Q_1 - 1.5 \times \text{IQR} \quad \text{Upper: } Q_3 + 1.5 \times \text{IQR}$$

Correlation

Correlation Coefficient:

$$r = \frac{1}{n-1} \sum_{i=1}^{n} \left(\frac{x_i - \bar{x}}{s_x} \right) \left(\frac{y_i - \bar{y}}{s_y} \right)$$

Linear Regression

Regression Line:

$$\hat{y} = a + bx$$

Slope:

$$b = r \cdot \frac{s_y}{s_x}$$

Intercept:

$$a = \bar{y} - b\bar{x}$$

Residual:

$$e = y - \hat{y}$$

Coefficient of Determination:

$$R^2 = r^2$$

Contingency Tables

Proportion / Risk / Probability:

$$\frac{\text{Number with outcome}}{\text{Total}}$$

Percentage:

$$\frac{\text{Number with outcome}}{\text{Total}} \times 100\%$$

Odds:

$$\frac{\text{Number with outcome}}{\text{Number without outcome}}$$

Relative Risk (RR):

$$\frac{\text{Risk in group 1}}{\text{Risk in group 2}}$$

Odds Ratio (OR):

$$\frac{\text{Odds in group 1}}{\text{Odds in group 2}}$$

Do NOT write in the area above this line.

Midterm Exam

Course: DS 1000B Winter 2026

Sections: 002, 003

Date: March 1st, 2026

2:00 – 4:00 pm (120 minutes)

Instructors:

Marieke Mur

Pavel Shuldiner

Allowed aids:

A calculator (non-programmable, non-graphing)

Formula sheet provided for you with the exam.

Full Name (print) *(e.g. Tom Marvolo Riddle):*	
Western ID *(e.g. baldemort13):*	
Student Number *(e.g. 251123456):*	

1. Legibly **print** your Western User ID, full name, and student number in the spaces provided above.
2. Do **not** detach the pages of the exam. You may ask for scrap paper if needed.
3. The space at the top of each page is reserved for the scanner. Do **not** write on or near the barcode.
4. Do **not** use highlighters, coloured pens, pencils or markers.
5. The exam has 20 pages. The last three pages may be used for additional workspace or scrap paper.
6. When applicable, enter your final answer in the provided answer box rounded to 2 decimal places.

Section	**Marks**
Multiple Choice (1 mark each)	15
Miscellaneous	10
Section 1	5
Section 2	13
Section 3	7
Section 4	6
Section 5	25
Section 6	19
Total	**100**