1st course. Graphs. **Surname Name Group**

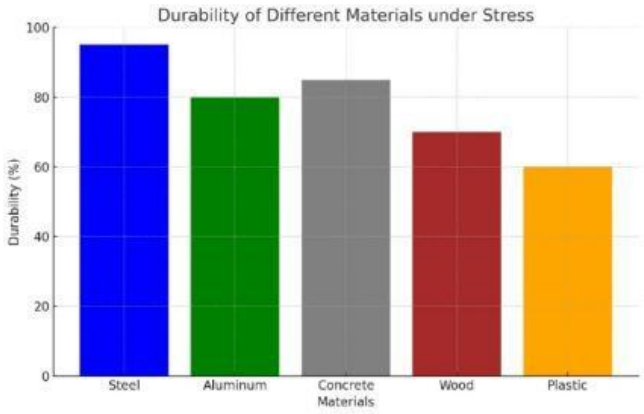
Task 1. Match the terms with their functions.

1. Independent Variable:	a) Numerical values that specify a point's position on a graph, typically represented as (x, y).
2. Dependent Variable:	b) The variable that is measured or observed in response to changes in the independent variable.
3. Scatter Plot:	c) The reference lines in a graph; the x-axis is usually for the independent variable, and the y-axis is for the dependent variable.
4. Coordinates:	d) The variable that is changed or controlled in an experiment to see its effects.
5. Bar Graph:	e) A graph showing the relationship between two variables using points to represent data.
6. Axis:	f) A visual representation that uses rectangular bars to show the quantity or frequency of different categories, making it easy to compare values at a glance.

Task 2. Fill in the gaps with the appropriate collocation.

1. In the experiment, the _____ was the type of insulation used, which varied among different test samples.
2. The researchers created a _____ to visualize the relationship between the temperature changes and the time taken for each insulation material to reach its maximum efficiency.
3. The _____ of the scatter plot showed the different insulation materials tested, enabling the researchers to assess trends across various types.
4. Each point on the scatter plot was represented by _____ that indicated the specific temperature and corresponding efficiency of the insulation tested.
5. The results of the thermal efficiency tests were displayed in a _____, allowing for a quick comparison of how each insulation type performed.
6. The _____ measured in the study was the thermal efficiency of each insulation type after exposure to heat.
7. The _____ of the bar graph represented the thermal efficiency percentage, providing a clear scale for evaluating each material's performance.

Task 3. Read the text and answer the questions.



In an engineering study, a **bar graph** was created to compare the durability of various materials under stress. The **independent variable** - the type of material - is represented on the x-**axis** and includes steel, aluminum, and composite materials. The **dependent variable**, durability, is displayed on the y-**axis** and shows how long each material can withstand stress before failure.

Each bar corresponds to a specific material, with its height indicating the durability level. To further analyze the data, a **scatter plot** was also generated, where each material's **coordinates** reflect its stress level and time to failure. This helps engineers see any patterns and trends, ensuring the results are reliable. The findings from this experiment, plotted in both the **bar graph** and **scatter plot**, help engineers identify the most durable material for future projects.

1. **What does the independent variable represent in the bar graph?**
   A) Durability
   B) Stress level
   C) Type of material
2. **Which materials are compared in the bar graph?**
   A) Wood, plastic, and glass
   B) Steel, aluminum, and composite materials
   C) Concrete, rubber, and ceramics
3. **What is displayed on the y-axis of the bar graph?**
   A) Type of material
   B) Stress level
   C) Durability
4. **What additional analysis method was used alongside the bar graph?**
   A) Scatter plot
   B) Pie chart
   C) Line graph
5. **What do the coordinates in the scatter plot reflect?**
   A) Durability and type of material
   B) Stress level and time to failure
   C) Material type and stress level

Task 4. Read the text and fill in the gaps with the appropriate word (words).

In a climate study, a **1)**_____ was created to show the average rainfall in different regions. The **2)**_____ (region) was placed on the **3)**_____, while the **4)**_____ (rainfall in millimeters) was shown on the **5)**_____. Each bar represented a region's total annual rainfall.

To further analyze the data, a **6)**_____ was also created to plot individual rainfall events over time. The **7)**_____for each event were plotted, showing the relationship between the date and the amount of rainfall. Both the bar graph and scatter plot provided valuable insights, with the labeled **8)**_____ helping to identify patterns in rainfall distribution across regions.

Task 5. Match the parts of the sentences.

1. Engineers must understand how to control and manipulate variables in experiments and projects	**a)** or results across different categories in a clear and concise way.
2. When analyzing large data sets, scatter plots allow engineers	**b)** to test the effects of different factors on outcomes.
3. Engineers rely on coordinates for accurate spatial representation,	**c)** to identify outliers or unusual data points that may need further investigation.
4. Bar graphs help engineers compare quantities, performance metrics,	**d)** the variables being compared, allowing engineers to make sense of the data presented.
5. Understanding axes is critical for interpreting graphs, as the x-axis and y-axis represent	**e)** whether in design, modeling, or analysis.