

Course: Math 11

Week 1

Question 1: Which type of chart is most suitable for comparing the sales of different products?

- a) Bar chart
- b) Line chart
- c) Pie chart
- d) Scatter plot

Question 2: Which type of chart is best used to show the change in temperature over time?

- a) Bar chart
- b) Line chart
- c) Pie chart
- d) Scatter plot

Question 3: True or False: In a bar chart, the length of each bar represents the frequency or quantity of a category or group.

- a) True
- b) False

Question 4: True or False: In a line chart, each data point is represented by a dot and connected by straight lines.

- a) True
- b) False

Question 5: Which type of chart is commonly used to display categorical data?

- a) Bar chart
- b) Line chart
- c) Pie chart
- d) Scatter plot

Question 6: True or False: Bar charts are not suitable for showing trends over time.

- a) True
- b) False

Question 7: Which type of chart is best used to represent percentages or proportions?

- a) Bar chart
- b) Line chart
- c) Pie chart
- d) Scatter plot

Question 8: True or False: Line charts are effective in showing continuous data over a period of time.

- a) True

b) False

Question 9: In a bar chart, the horizontal axis represents:

- a) Categories or groups
- b) Frequency or quantity
- c) Time
- d) None of the above

Question 10: Line charts are useful for:

- a) Showing trends over time
- b) Comparing different categories
- c) Representing proportions or percentages
- d) Displaying scatter plot data

Answers:

- 1. a) Bar chart
- 2. b) Line chart
- 3. a) True
- 4. a) True
- 5. a) Bar chart
- 6. b) False
- 7. c) Pie chart
- 8. a) True
- 9. a) Categories or groups
- 10. a) Showing trends over time

Week 2

Question 1. What is the median of a set of numbers?

- a. The most frequently occurring number
- b. The difference between the largest and smallest number
- c. The middle number when the numbers are arranged in ascending order
- d. The sum of all the numbers divided by the number of numbers

Question 2. If a data set has an even number of observations, how is the median calculated?

- a. It is the average of the two middle numbers
- b. It is the middle number
- c. It is the most frequently occurring number
- d. It is the largest number

Question 3. If a data set has an odd number of observations, how is the median calculated?

- a. It is the average of the two middle numbers
- b. It is the middle number
- c. It is the most frequently occurring number
- d. It is the largest number

Question 4. Does changing a single value in a data set always change the median?

- a. Yes, always
- b. No, never
- c. Only if the value is above the median
- d. Only if the value is below the median

Question 5. Does adding a value to a data set always change the median?

- a. Yes, always
- b. No, never
- c. Only if the value is above the median
- d. Only if the value is below the median

Question 6. Is the median affected by extremely large or small values in the data set?

- a. Yes, always
- b. No, never
- c. Only if the value is above the median
- d. Only if the value is below the median

Question 7. What type of data set is the median most useful for?

- a. Data sets with an even number of observations
- b. Data sets with an odd number of observations
- c. Data sets with outliers
- d. Data sets with no outliers

Question 8. Is the median always a number in the data set?

- a. Yes, always
- b. No, never
- c. Only if the data set has an odd number of observations
- d. Only if the data set has an even number of observations

Question 9. Can a data set have more than one median?

- a. Yes, always
- b. No, never
- c. Only if the data set has an odd number of observations
- d. Only if the data set has an even number of observations

Question 10. Is the median a measure of central tendency?

- a. Yes
- b. No
- c. Only for normally distributed data
- d. Only for skewed data

Answer Key

1. c. The middle number when the numbers are arranged in ascending order
2. a. It is the average of the two middle numbers
3. b. It is the middle number
4. b. No, never
5. a. Yes, always

6. b. No, never
7. c. Data sets with outliers
8. c. Only if the data set has an odd number of observations
9. b. No, never
10. a. Yes

Week 3

Question 1. What is the mean of a set of numbers?

- a. The most frequently occurring number
- b. The middle number when the numbers are arranged in ascending order
- c. The sum of all the numbers divided by the number of numbers
- d. The square root of the sum of the squared deviations from the mean

Question 2. What is the median of a set of numbers?

- a. The most frequently occurring number
- b. The middle number when the numbers are arranged in ascending order
- c. The sum of all the numbers divided by the number of numbers
- d. The square root of the sum of the squared deviations from the mean

Question 3. What is the mode of a set of numbers?

- a. The most frequently occurring number
- b. The middle number when the numbers are arranged in ascending order
- c. The sum of all the numbers divided by the number of numbers
- d. The square root of the sum of the squared deviations from the mean

Question 4. What is the standard deviation of a set of numbers?

- a. The most frequently occurring number
- b. The middle number when the numbers are arranged in ascending order
- c. The sum of all the numbers divided by the number of numbers
- d. The square root of the sum of the squared deviations from the mean

Question 5. Does changing a single value in a data set always change the mean?

- a. Yes, always
- b. No, never
- c. Only if the value is above the mean
- d. Only if the value is below the mean

Question 6. Does changing a single value in a data set always change the median?

- a. Yes, always
- b. No, never
- c. Only if the value is above the median
- d. Only if the value is below the median

Question 7. Does changing a single value in a data set always change the mode?

- a. Yes, always
- b. No, never
- c. Only if the value is the most frequently occurring number
- d. Only if the value is not the most frequently occurring number

Question 8. Does changing a single value in a data set always change the standard deviation?

- a. Yes, always
- b. No, never
- c. Only if the value is above the mean
- d. Only if the value is below the mean

Question 9. Can a data set have more than one mode?

- a. Yes, always
- b. No, never
- c. Only if the data set has an odd number of observations
- d. Only if the data set has an even number of observations

Question 10. Are the mean, median, and mode always the same for a symmetric, bell-shaped distribution?

- a. Yes
- b. No
- c. Only for normally distributed data
- d. Only for skewed data

Answer Key

- 1. c. The sum of all the numbers divided by the number of numbers
- 2. b. The middle number when the numbers are arranged in ascending order
- 3. a. The most frequently occurring number
- 4. c. The measure of the amount of variation or dispersion of a set of values.
- 5. a. Yes, always
- 6. b. No, never
- 7. a. Yes, always
- 8. a. Yes, always
- 9. a. Yes, always
- 10. a. Yes

Week 4

Question 1. What does the standard deviation measure?

- a. The average value of a data set
- b. The middle value of a data set
- c. The most frequently occurring value in a data set
- d. The dispersion or spread in a data set

Question 2. What does a low standard deviation indicate?

- a. The data points are spread out from the mean
- b. The data points are close to the mean
- c. The data points are above the mean
- d. The data points are below the mean

Question 3. What does a high standard deviation indicate?

- a. The data points are spread out from the mean
- b. The data points are close to the mean
- c. The data points are above the mean
- d. The data points are below the mean

Question 4. What is a z-score?

- a. A measure of how many standard deviations an element is from the mean
- b. A measure of how spread out the numbers in a data set are
- c. The middle value in a data set
- d. The most frequently occurring number in a data set

Question 5. What does a positive z-score indicate?

- a. The data point is below the mean
- b. The data point is above the mean
- c. The data point is equal to the mean
- d. The data point is the most frequently occurring number

Question 6. What does a negative z-score indicate?

- a. The data point is below the mean
- b. The data point is above the mean
- c. The data point is equal to the mean
- d. The data point is the most frequently occurring number

Question 7. What does a z-score of 0 indicate?

- a. The data point is below the mean
- b. The data point is above the mean
- c. The data point is equal to the mean
- d. The data point is the most frequently occurring number

Question 8. Can a z-score be greater than 1?

- a. Yes
- b. No
- c. Only if the data point is above the mean
- d. Only if the data point is below the mean

Question 9. Can a z-score be less than -1?

- a. Yes
- b. No
- c. Only if the data point is above the mean
- d. Only if the data point is below the mean

Question 10. What does a z-score tell you?

- a. How spread out the numbers in a data set are
- b. How a data point compares to the rest of the data set
- c. The middle value in a data set
- d. The most frequently occurring number in a data set

Answer Key

1. d. The dispersion or spread in a data set
2. b. The data points are close to the mean
3. a. The data points are spread out from the mean
4. a. A measure of how many standard deviations an element is from the mean
5. b. The data point is above the mean
6. a. The data point is below the mean
7. c. The data point is equal to the mean
8. a. Yes
9. a. Yes
10. b. How a data point compares to the rest of the data set

Week 5

Question 1: In Excel, which function can be used to create a frequency distribution table?

- a) COUNTIF
- b) SUMIF
- c) VLOOKUP
- d) AVERAGE

Question 2: When creating a frequency distribution table for categorical data, which column represents the categories?

- a) Cumulative Frequency
- b) Relative Frequency
- c) Class Boundaries
- d) Class Intervals

Question 3: Which Excel feature allows you to group categorical data into bins for creating a frequency distribution table?

- a) PivotTable
- b) Conditional Formatting
- c) Sort and Filter
- d) Data Validation

Question 4: In a frequency distribution table, what does the cumulative frequency column represent?

- a) The total number of observations in a category
- b) The relative frequency of each category
- c) The running total of frequencies up to a certain point
- d) The midpoint of each class interval

Question 5: When creating a frequency distribution table in Excel, which chart type is commonly used to visualize the data?

- a) Line Chart
- b) Bar Chart
- c) Pie Chart
- d) Scatter Plot

Question 6: Which Excel function is used to calculate relative frequency in a frequency distribution table?

- a) COUNT
- b) SUM
- c) AVERAGE
- d) COUNTIF

Question 7: What is the purpose of creating a frequency distribution table in Excel?

- a) To organize data in alphabetical order
- b) To summarize and analyze categorical data
- c) To sort data based on conditions
- d) To calculate the average of a data set

Question 8: Which Excel function is used to find the largest value in a range of data?

- a) MAX
- b) MIN
- c) MEDIAN
- d) MODE

Question 9: In Excel, how can you calculate the total number of observations in a data set?

- a) Using the SUM function
- b) Using the AVERAGE function
- c) Using the COUNT function
- d) Using the MAX function

Question 10: When creating a frequency distribution table in Excel, which column represents the class intervals?

- a) Cumulative Frequency
- b) Relative Frequency
- c) Class Boundaries
- d) Midpoints

Answers:

1. a) COUNTIF
2. d) Class Intervals
3. a) PivotTable
4. c) The running total of frequencies up to a certain point
5. b) Bar Chart
6. a) COUNT
7. b) To summarize and analyze categorical data
8. a) MAX
9. c) Using the COUNT function
10. c) Class Boundaries

Week 6

Question 1: How is a scatter plot used to represent the relationship between two variables?\

- a) By connecting the data points with lines\

- b) By plotting the data points on a coordinate plane\
- c) By using bars of different heights\
- d) By arranging the data in alphabetical order

Question 2: What is the purpose of creating a scatter plot?\

- a) To show the correlation between two variables\
- b) To summarize categorical data\
- c) To calculate the mean of a data set\
- d) To plot a continuous function

Question 3: Which axis is typically used to represent the independent variable in a scatter plot?\

- a) x-axis\
- b) y-axis\
- c) z-axis\
- d) None of the above

Question 4: How can you create a scatter plot in Excel?\

- a) Using the SUM function\
- b) Using the AVERAGE function\
- c) Using the Scatter Chart option\
- d) Using the IF function

Question 5: True or False: A scatter plot can only represent linear relationships between variables.\

- a) True\
- b) False

Question 6: What is the purpose of adding a trendline to a scatter plot?\

- a) To connect the data points with a line\
- b) To identify outliers in the data\
- c) To visualize the relationship between variables\
- d) To calculate the correlation coefficient

Question 7: Which Excel chart type is suitable for creating a scatter plot?\

- a) Bar Chart\
- b) Pie Chart\
- c) Line Chart\
- d) Scatter Chart

Question 8: How do you label the axes in a scatter plot?\

- a) By using numbers\
- b) By using alphabetical letters\
- c) By using the variable names\
- d) By using symbols

Question 9: In a scatter plot, what does a positive correlation indicate?\

- a) No relationship between the variables\
- b) A strong positive relationship between the variables\

- c) A strong negative relationship between the variables\
- d) A weak positive relationship between the variables

Question 10: What type of relationship is shown in a scatter plot when the data points form a straight line going upwards?\

- a) Positive linear relationship\
- b) Negative linear relationship\
- c) Curvilinear relationship\
- d) No relationship

Answers:

1. b) By plotting the data points on a coordinate plane
2. a) To show the correlation between two variables
3. a) x-axis
4. c) Using the Scatter Chart option
5. b) False
6. c) To visualize the relationship between variables
7. d) Scatter Chart
8. c) By using the variable names
9. b) A strong positive relationship between the variables
10. a) Positive linear relationship

Week 7

Question 1: Which of the following is the equation of a linear function?

- a) $y = x^2$
- b) $y = 2x + 3$
- c) $y = 3\sin(x)$
- d) $y = 1/x$

Question 2: Which of the following is not a way to check if a given set of data is linear?

- a) Plotting the data on a scatter plot
- b) Calculating the slope of the data
- c) Determining if the data follows a specific pattern
- d) Calculating the mean of the data points

Question 3: What is the slope of a linear function that passes through the points (2, 5) and (4, 9)?

- a) -2
- b) 2
- c) -4
- d) 4

Question 4: Which of the following equations represents a non-linear function?

- a) $y = 3x + 2$
- b) $y = x^3 - 5x + 1$
- c) $y = 2x - 1$
- d) $y = 5$

Question 5: If two data sets have the same constant rate of change, what can be concluded about their linearity?

- a) They are both linear
- b) One is linear and the other is non-linear
- c) One is increasing linearly, while the other is decreasing linearly
- d) They cannot be determined to be linear without additional information

Question 6: What is the y-intercept of the linear function $y = 3x + 2$?

- a) 2
- b) 3
- c) -2
- d) -3

Question 7: Which of the following is a method to determine if a data set is linear?

- a) Evaluating the data points at different intervals
- b) Calculating the median of the data points
- c) Observing if the data points fall on a straight line
- d) Determining if the data points have a similar range

Question 8: If the slope of a linear function is negative, what can be concluded about the relationship between the independent and dependent variables?

- a) They have a positive relationship
- b) They have a negative relationship
- c) There is no relationship between them
- d) The relationship is non-linear

Question 9: What is the equation of the line passing through the point (1, 4) with a slope of -2?

- a) $y = -2x + 6$
- b) $y = 2x - 4$
- c) $y = -4x + 2$
- d) $y = 4x - 2$

Question 10: Which of the following is true for a linear function?

- a) The independent variable is always time
- b) The dependent variable can be measured on an arbitrary scale
- c) The slope remains constant throughout the line
- d) The y-intercept is always zero

Answers:

1. b) $y = 2x + 3$
2. d) Calculating the mean of the data points
3. b) 2
4. b) $y = x^3 - 5x + 1$
5. a) They are both linear
6. a) 2
7. c) Observing if the data points fall on a straight line

8. b) They have a negative relationship
9. c) $y = -2x + 6$
10. c) The slope remains constant throughout the line

Week 8

Question 1. What is a residual in the context of a regression analysis?

- a. The predicted value from the regression equation
- b. The actual value from the data set
- c. The difference between the actual and predicted values
- d. The sum of all the data points

Question 2. What is a residual plot?

- a. A graph that shows the relationship between two variables
- b. A graph that shows the residuals on the vertical axis and the independent variable on the horizontal axis
- c. A graph that shows the residuals on the horizontal axis and the independent variable on the vertical axis
- d. A graph that shows the predicted values on the vertical axis and the actual values on the horizontal axis

Question 3. What does a random pattern of residuals in a residual plot indicate?

- a. The regression model is a poor fit for the data
- b. The regression model is a good fit for the data
- c. The residuals are correlated with each other
- d. The residuals are not correlated with each other

Question 4. What does a non-random pattern of residuals in a residual plot indicate?

- a. The regression model is a poor fit for the data
- b. The regression model is a good fit for the data
- c. The residuals are correlated with each other
- d. The residuals are not correlated with each other

Question 5. Can you create a residual plot in Excel?

- a. Yes
- b. No
- c. Only with an add-on
- d. Only with a specific version of Excel

Question 6. What function in Excel can you use to calculate residuals?

- a. SUM
- b. AVERAGE
- c. STDEV
- d. None of the above

Question 7. How can you create a residual plot in Excel?

- a. By using the Chart Wizard
- b. By using the Scatter Plot option

- c. By using the Line Graph option
- d. By using the Bar Graph option

Question 8. What should you do if you see a pattern in your residual plot in Excel?

- a. Ignore it
- b. Try a different type of regression model
- c. Remove the outliers
- d. Add more data points

Question 9. What does it mean if the residuals in your residual plot in Excel are close to 0?

- a. The regression model is a poor fit for the data
- b. The regression model is a good fit for the data
- c. The residuals are correlated with each other
- d. The residuals are not correlated with each other

Question 10. What does it mean if the residuals in your residual plot in Excel are far from 0?

- a. The regression model is a poor fit for the data
- b. The regression model is a good fit for the data
- c. The residuals are correlated with each other
- d. The residuals are not correlated with each other

Answer Key

1. c. The difference between the actual and predicted values
2. b. A graph that shows the residuals on the vertical axis and the independent variable on the horizontal axis
3. b. The regression model is a good fit for the data
4. a. The regression model is a poor fit for the data
5. a. Yes
6. d. None of the above
7. b. By using the Scatter Plot option
8. b. Try a different type of regression model
9. b. The regression model is a good fit for the data
10. a. The regression model is a poor fit for the data

Week 9

Question 1. What does a linear scatter plot display?

- a. The relationship between two categorical variables
- b. The relationship between two numerical variables
- c. The relationship between one categorical and one numerical variable
- d. The relationship between three numerical variables

Question 2. What does a positive slope in a linear function indicate?

- a. As the x-values increase, the y-values decrease
- b. As the x-values increase, the y-values also increase
- c. As the x-values decrease, the y-values increase
- d. The x-values and y-values are not related

Question 3. What does a negative slope in a linear function indicate?

- a. As the x-values increase, the y-values decrease
- b. As the x-values increase, the y-values also increase
- c. As the x-values decrease, the y-values increase
- d. The x-values and y-values are not related

Question 4. What does a slope of 0 in a linear function indicate?

- a. The y-values increase as the x-values increase
- b. The y-values decrease as the x-values increase
- c. The y-values stay the same as the x-values increase
- d. The x-values and y-values are not related

Question 5. What does the y-intercept in a linear function represent?

- a. The value of y when x is 0
- b. The value of x when y is 0
- c. The slope of the line
- d. The correlation between x and y

Question 6. What does a strong positive correlation in a scatter plot look like?

- a. The points are scattered randomly
- b. The points form a line that slopes upward
- c. The points form a line that slopes downward
- d. The points form a horizontal line

Question 7. What does a strong negative correlation in a scatter plot look like?

- a. The points are scattered randomly
- b. The points form a line that slopes upward
- c. The points form a line that slopes downward
- d. The points form a horizontal line

Question 8. What does no correlation in a scatter plot look like?

- a. The points are scattered randomly
- b. The points form a line that slopes upward
- c. The points form a line that slopes downward
- d. The points form a horizontal line

Question 9. What is the slope-intercept form of a linear function?

- a. $y = mx + b$
- b. $y = mx - b$
- c. $y = bx + m$
- d. $y = bx - m$

Question 10. In the slope-intercept form of a linear function, what does m represent?

- a. The y-intercept
- b. The x-intercept
- c. The slope
- d. The correlation

Answer Key

1. b. The relationship between two numerical variables
2. b. As the x-values increase, the y-values also increase
3. a. As the x-values increase, the y-values decrease
4. c. The y-values stay the same as the x-values increase
5. a. The value of y when x is 0
6. b. The points form a line that slopes upward
7. c. The points form a line that slopes downward
8. a. The points are scattered randomly
9. a. $y = mx + b$
10. c. The slope

Week 10

Question 1: How can you add data labels to data points on an XY scatter plot in Excel?

- a) Right-click on the data point and select "Add Data Label"
- b) Click on the data point and press "Ctrl" + "L"
- c) Select the data point and choose "Add Data Label" from the "Insert" tab in the ribbon
- d) Data labels cannot be added to data points on an XY scatter plot

Question 2: When creating an XY scatter plot in Excel, which axis should be used for the independent variable?

- a) The x-axis
- b) The y-axis
- c) Either axis can be used for the independent variable
- d) The user can select their own axis for the independent variable

Question 3: How can you change the color of a data point on an XY scatter plot in Excel?

- a) Right-click on the data point and select "Format Data Point"
- b) Click on the data point and press "Ctrl" + "C" to copy, then "Ctrl" + "V" to paste with new formatting
- c) Select the data point and choose "Change Color" from the "Home" tab in the ribbon
- d) Data point colors cannot be changed on an XY scatter plot

Question 4: How can you add a trendline to an XY scatter plot in Excel?

- a) Right-click on the data points and select "Add Trendline"
- b) Click on the data points and press "Ctrl" + "T"
- c) Select the data points and choose "Add Trendline" from the "Chart Tools" tab in the ribbon
- d) Trendlines cannot be added to XY scatter plots in Excel

Question 5: When creating an XY scatter plot in Excel, what does the "smoothed line" option do?

- a) It displays a line of best fit for the data points
- b) It changes the color of the data points
- c) It adds gridlines to the chart
- d) It enlarges the size of the chart title

Question 6: How can you change the size of data points on an XY scatter plot in Excel?

- a) Right-click on the data points and select "Format Data Point"
- b) Click on the data points and press "Ctrl" + "+"
- c) Select the data points and choose "Change Size" from the "Chart Tools" tab in the ribbon
- d) Data point sizes cannot be changed on an XY scatter plot

Question 7: How can you add data to an existing XY scatter plot in Excel?

- a) Copy and paste the new data into the chart
- b) Re-create the chart with the new data added
- c) Select the chart and choose "Edit Data" from the "Chart Tools" tab in the ribbon
- d) Data cannot be added to an existing XY scatter plot in Excel

Question 8: What does the "bubble chart" option do when creating an XY scatter plot in Excel?

- a) It changes the shape of the data points from circles to bubbles
- b) It adds labels to the data points
- c) It adds a trendline to the chart
- d) It displays an additional data series as bubble sizes for each data point

Question 9: How can you format the axis labels on an XY scatter plot in Excel?

- a) Right-click on the axis and select "Format Axis Label"
- b) Click on the axis and press "Ctrl" + "F"
- c) Select the axis and choose "Change Label Style" from the "Chart Tools" tab in the ribbon
- d) Axis labels cannot be formatted on an XY scatter plot

Question 10: How can you change the range of data displayed on an axis in an XY scatter plot in Excel?

- a) Drag the axis to expand or contract the range
- b) Right-click on the axis and select "Format Axis"
- c) Select the axis and choose "Change Axis Range" from the "Chart Tools" tab in the ribbon
- d) The range of an axis cannot be changed on an XY scatter plot

Answers:

1. a) Right-click on the data point and select "Add Data Label"
2. a) The x-axis
3. a) Right-click on the data point and select "Format Data Point"
4. a) Right-click on the data points and select "Add Trendline"
5. a) It displays a line of best fit for the data points
6. a) Right-click on the data points and select "Format Data Point"
7. c) Select the chart and choose "Edit Data" from the "Chart Tools" tab in the ribbon
8. d) It displays an additional data series as bubble sizes for each data point
9. a) Right-click on the axis and select "Format Axis Label"
10. b) Right-click on the axis and select "Format Axis"

Week 11

Question 1: The scatter plot shows the relationship between the number of hours studied and test scores. What can be concluded from the scatter plot?

- a) There is a positive correlation between the number of hours studied and test scores.
- b) There is a negative correlation between the number of hours studied and test scores.
- c) There is no correlation between the number of hours studied and test scores.
- d) It is impossible to determine any correlation from the scatter plot.

Question 2: The scatter plot shows the relationship between the temperature and ice cream sales. What can be concluded from the scatter plot?

- a) There is a positive correlation between temperature and ice cream sales.
- b) There is a negative correlation between temperature and ice cream sales.
- c) There is no correlation between temperature and ice cream sales.
- d) It is impossible to determine any correlation from the scatter plot.

Question 3: A scatter plot shows the relationship between the height of plants and the amount of water they receive. What can be concluded if the data points are closely clustered around a straight line?

- a) There is a positive correlation between plant height and water received.
- b) There is a negative correlation between plant height and water received.
- c) There is no correlation between plant height and water received.
- d) It is impossible to determine any correlation from the scatter plot.

Question 4: In a scatter plot showing the relationship between time spent on homework and grades, if the data points are scattered randomly with no apparent pattern, what can be concluded?

- a) There is a positive correlation between time spent on homework and grades.
- b) There is a negative correlation between time spent on homework and grades.
- c) There is no correlation between time spent on homework and grades.
- d) It is impossible to determine any correlation from the scatter plot.

Question 5: The scatter plot represents the relationship between the number of miles run and calories burned. What can be concluded from the scatter plot if the data points are widely spread out with no apparent pattern?

- a) There is a positive correlation between miles run and calories burned.
- b) There is a negative correlation between miles run and calories burned.
- c) There is no correlation between miles run and calories burned.
- d) It is impossible to determine any correlation from the scatter plot.

Question 6: The scatter plot shows the relationship between the amount of fertilizer used and crop yield. What can be concluded if the data points form a curved line that increases and then levels off?

- a) There is a positive correlation between fertilizer used and crop yield.
- b) There is a negative correlation between fertilizer used and crop yield.
- c) There is no correlation between fertilizer used and crop yield.
- d) It is impossible to determine any correlation from the scatter plot.

Question 7: A scatter plot represents the relationship between the number of hours worked and income earned. What can be concluded if the data points are mostly clustered in the lower left corner and gradually spread out towards the upper right corner?

- a) There is a positive correlation between hours worked and income earned.
- b) There is a negative correlation between hours worked and income earned.

- c) There is no correlation between hours worked and income earned.
- d) It is impossible to determine any correlation from the scatter plot.

Question 8: The scatter plot shows the relationship between study time and test scores. What can be concluded if the data points are mostly concentrated around two distinct lines parallel to the x-axis?

- a) There is a positive correlation between study time and test scores.
- b) There is a negative correlation between study time and test scores.
- c) There is no correlation between study time and test scores.
- d) It is impossible to determine any correlation from the scatter plot.

Question 9: In a scatter plot representing the relationship between temperature and rainfall, if the data points form an upward-sloping line, what can be concluded?

- a) There is a positive correlation between temperature and rainfall.
- b) There is a negative correlation between temperature and rainfall.
- c) There is no correlation between temperature and rainfall.
- d) It is impossible to determine any correlation from the scatter plot.

Question 10: The scatter plot represents the relationship between the number of exercise sessions per week and weight loss. What can be concluded if the data points form a downward-sloping line?

- a) There is a positive correlation between exercise sessions per week and weight loss.
- b) There is a negative correlation between exercise sessions per week and weight loss.
- c) There is no correlation between exercise sessions per week and weight loss.
- d) It is impossible to determine any correlation from the scatter plot.

Answers:

1. a) There is a positive correlation between the number of hours studied and test scores.
2. a) There is a positive correlation between temperature and ice cream sales.
3. a) There is a positive correlation between plant height and water received.
4. c) There is no correlation between time spent on homework and grades.
5. c) There is no correlation between miles run and calories burned.
6. a) There is a positive correlation between fertilizer used and crop yield.
7. a) There is a positive correlation between hours worked and income earned.
8. c) There is no correlation between study time and test scores.
9. a) There is a positive correlation between temperature and rainfall.
10. b) There is a negative correlation between exercise sessions per week and weight loss.

Week 12

Question 1. What does a correlation coefficient measure?

- a. The strength and direction of the relationship between two variables
- b. The difference between two variables
- c. The sum of two variables
- d. The product of two variables

Question 2. What does a positive correlation indicate?

- a. As one variable increases, the other variable also increases
- b. As one variable increases, the other variable decreases
- c. The two variables are not related
- d. The two variables are identical

Question 3. What does a negative correlation indicate?

- a. As one variable increases, the other variable also increases
- b. As one variable increases, the other variable decreases
- c. The two variables are not related
- d. The two variables are identical

Question 4. What does a correlation coefficient of 0 indicate?

- a. A strong positive correlation
- b. A strong negative correlation
- c. No correlation
- d. A perfect correlation

Question 5. What does a correlation coefficient of 1 indicate?

- a. A strong positive correlation
- b. A strong negative correlation
- c. No correlation
- d. A perfect correlation

Question 6. What does a correlation coefficient of -1 indicate?

- a. A strong positive correlation
- b. A strong negative correlation
- c. No correlation
- d. A perfect correlation

Question 7. What does a strong correlation indicate?

- a. The variables are not related
- b. The variables are somewhat related
- c. The variables are closely related
- d. The variables are identical

Question 8. What does a weak correlation indicate?

- a. The variables are not related
- b. The variables are somewhat related
- c. The variables are closely related
- d. The variables are identical

Question 9. What does no correlation indicate?

- a. The variables are not related
- b. The variables are somewhat related
- c. The variables are closely related
- d. The variables are identical

Question 10. Can a correlation coefficient be greater than 1 or less than -1?

- a. Yes
- b. No
- c. Only if the variables are identical
- d. Only if the variables are not related

Answer Key

- 1. a. The strength and direction of the relationship between two variables
- 2. a. As one variable increases, the other variable also increases
- 3. b. As one variable increases, the other variable decreases
- 4. c. No correlation
- 5. a. A strong positive correlation
- 6. b. A strong negative correlation
- 7. c. The variables are closely related
- 8. b. The variables are somewhat related
- 9. a. The variables are not related
- 10. b. No

Week 13

Question 1. If the points on a scatter plot form a perfect straight line sloping upwards, what is the correlation coefficient?

- a. 0
- b. 1
- c. -1
- d. Cannot be determined

Question 2. If the points on a scatter plot form a perfect straight line sloping downwards, what is the correlation coefficient?

- a. 0
- b. 1
- c. -1
- d. Cannot be determined

Question 3. If the points on a scatter plot are randomly scattered with no discernible pattern, what is the correlation coefficient?

- a. 0
- b. 1
- c. -1
- d. Cannot be determined

Question 4. What does a strong positive correlation look like in a scatter plot?

- a. Points scattered randomly
- b. Points forming a downward sloping line
- c. Points forming an upward sloping line
- d. Points forming a horizontal line

Question 5. What does a strong negative correlation look like in a scatter plot?

- a. Points scattered randomly
- b. Points forming a downward sloping line
- c. Points forming an upward sloping line
- d. Points forming a horizontal line

Question 6. What does no correlation look like in a scatter plot?

- a. Points scattered randomly
- b. Points forming a downward sloping line
- c. Points forming an upward sloping line
- d. Points forming a horizontal line

Question 7. What does a weak correlation look like in a scatter plot?

- a. Points scattered randomly
- b. Points forming a downward sloping line
- c. Points forming an upward sloping line
- d. Points forming a horizontal line

Question 8. What does it mean if the correlation coefficient is close to 0 but not exactly 0?

- a. The variables have a strong positive correlation
- b. The variables have a strong negative correlation
- c. The variables have a weak correlation
- d. The variables have no correlation

Question 9. What does it mean if the correlation coefficient is exactly 0?

- a. The variables have a strong positive correlation
- b. The variables have a strong negative correlation
- c. The variables have a weak correlation
- d. The variables have no correlation

Question 10. What is the difference between a correlation of 0.8 and a correlation of -0.8?

- a. The strength of the correlation
- b. The direction of the correlation
- c. The type of correlation
- d. The variables involved in the correlation

Answer Key

- 1. b. 1
- 2. c. -1
- 3. a. 0
- 4. c. Points forming an upward sloping line
- 5. b. Points forming a downward sloping line
- 6. a. Points scattered randomly
- 7. a. Points scattered randomly
- 8. c. The variables have a weak correlation
- 9. d. The variables have no correlation
- 10. b. The direction of the correlation

Week 14

Question 1. What is a regression model used for?

- a. To predict the value of a dependent variable based on the value of one or more independent variables
- b. To calculate the mean of a dataset
- c. To find the median of a dataset
- d. To calculate the standard deviation of a dataset

Question 2. What is a residual in a regression model?

- a. The difference between the observed value and the predicted value of the dependent variable
- b. The slope of the regression line
- c. The y-intercept of the regression line
- d. The correlation coefficient of the regression model

Question 3. What does the R-squared value in a regression model represent?

- a. The proportion of the variance in the dependent variable that is predictable from the independent variable(s)
- b. The slope of the regression line
- c. The y-intercept of the regression line
- d. The correlation coefficient of the regression model

Question 4. What is the difference between a linear and a nonlinear regression model?

- a. The number of variables in the model
- b. The shape of the regression line
- c. The way residuals are calculated
- d. The way the R-squared value is calculated

Question 5. What does it mean if the residuals in a regression model are close to 0?

- a. The model is a poor fit for the data
- b. The model is a good fit for the data
- c. The model is overfitting the data
- d. The model is underfitting the data

Question 6. What does it mean if the R-squared value in a regression model is close to 1?

- a. The model is a poor fit for the data
- b. The model is a good fit for the data
- c. The model is overfitting the data
- d. The model is underfitting the data

Question 7. What does it mean if the R-squared value in a regression model is close to 0?

- a. The model is a poor fit for the data
- b. The model is a good fit for the data
- c. The model is overfitting the data
- d. The model is underfitting the data

Question 8. What does it mean if the residuals in a regression model are evenly distributed around 0?

- a. The model is a poor fit for the data
- b. The model is a good fit for the data
- c. The model is overfitting the data
- d. The model is underfitting the data

Question 9. What does it mean if the residuals in a regression model are not evenly distributed around 0?

- a. The model is a poor fit for the data
- b. The model is a good fit for the data
- c. The model is overfitting the data
- d. The model is underfitting the data

Question 10. What is the main purpose of using a regression model in data analysis?

- a. To predict the value of a dependent variable based on the value of one or more independent variables
- b. To calculate the mean of a dataset
- c. To find the median of a dataset
- d. To calculate the standard deviation of a dataset

Answer Key

1. a. To predict the value of a dependent variable based on the value of one or more independent variables
2. a. The difference between the observed value and the predicted value of the dependent variable
3. a. The proportion of the variance in the dependent variable that is predictable from the independent variable(s)
4. b. The shape of the regression line
5. b. The model is a good fit for the data
6. b. The model is a good fit for the data
7. a. The model is a poor fit for the data
8. b. The model is a good fit for the data
9. a. The model is a poor fit for the data
10. a. To predict the value of a dependent variable based on the value of one or more independent variables

Week 15

Question 1. What is the first step in analyzing survey data in Excel?

- a. Creating a pivot table
- b. Creating a chart
- c. Cleaning the data
- d. Calculating the mean

Question 2. What is a pivot table used for in Excel?

- a. To summarize large amounts of data
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Question 3. What is the COUNT function used for in Excel?

- a. To count the number of cells in a range that meet a certain condition
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Question 4. What is the AVERAGE function used for in Excel?

- a. To count the number of cells in a range that meet a certain condition
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Question 5. What is the purpose of data cleaning in Excel?

- a. To ensure the data is accurate and consistent
- b. To create a chart
- c. To summarize large amounts of data
- d. To calculate the mean

Question 6. What is the purpose of creating a chart in Excel?

- a. To visualize the data
- b. To clean the data
- c. To summarize large amounts of data
- d. To calculate the mean

Question 7. What is the purpose of the IF function in Excel?

- a. To perform a calculation if a certain condition is met
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Question 8. What is the purpose of the VLOOKUP function in Excel?

- a. To find a value in a table based on a lookup value
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Question 9. What is the purpose of the CONCATENATE function in Excel?

- a. To join two or more text strings into one text string
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Question 10. What is the purpose of the SORT function in Excel?

- a. To arrange data in a certain order
- b. To create a chart
- c. To clean the data
- d. To calculate the mean

Answer Key

1. c. Cleaning the data
2. a. To summarize large amounts of data
3. a. To count the number of cells in a range that meet a certain condition
4. d. To calculate the mean
5. a. To ensure the data is accurate and consistent
6. a. To visualize the data
7. a. To perform a calculation if a certain condition is met
8. a. To find a value in a table based on a lookup value
9. a. To join two or more text strings into one text string
10. a. To arrange data in a certain order

Week 16

Question 1. The margin of error gives an interval estimate for:

- a) The sample mean.
- b) The population mean.
- c) The sample size.
- d) The population size.

Question 2. A larger margin of error indicates:

- a) A more precise estimate.
- b) A less precise estimate.
- c) A smaller sample size.
- d) A biased sample.

Question 3. To decrease the margin of error without changing the confidence level, one should:

- a) Increase the sample size.
- b) Decrease the sample size.
- c) Increase the population size.
- d) Use a different sample.

Question 4. The margin of error is affected by all of the following EXCEPT:

- a) Sample size.
- b) Confidence level.
- c) Population size.
- d) Standard deviation.

Question 5. If you want to be more confident in your results, the margin of error will generally:

- a) Increase.
- b) Decrease.
- c) Stay the same.
- d) Become negative.

Question 6. The margin of error is typically reported with:

- a) The sample mean.

- b) The population mean.
- c) The sample size.
- d) The population size.

Question 7. A 95% confidence interval means:

- a) There is a 95% chance the population parameter is in the interval.
- b) 95% of the sample data falls within the interval.
- c) If we took many samples, 95% of the intervals would contain the population parameter.
- d) The sample mean is 95% accurate.

Question 8. The margin of error is smallest when the sample size is:

- a) Small.
- b) Large.
- c) Equal to the population size.
- d) Half the population size.

Question 9. If the standard deviation is zero, the margin of error will be:

- a) Zero.
- b) One.
- c) Undefined.
- d) Infinite.

Question 10. The margin of error provides a range in which:

- a) All sample data will fall.
- b) The population parameter is likely to fall.
- c) The sample mean will always fall.
- d) The population mean will always fall.

Answer Key:

1. b) The population mean.
2. b) A less precise estimate.
3. a) Increase the sample size.
4. c) Population size.
5. a) Increase.
6. a) The sample mean.
7. c) If we took many samples, 95% of the intervals would contain the population parameter.
8. b) Large.
9. a) Zero.
10. b) The population parameter is likely to fall.

Week 17

Question 1. Which Excel function can be used to compare two lists and identify matches?

- a) VLOOKUP
- b) HLOOKUP
- c) SUMIF
- d) AVERAGE

Question 2. If you want to highlight cells in one list that appear in another, you would use:

- a) Data Validation
- b) Conditional Formatting
- c) Pivot Tables
- d) Data Sorting

Question 3. To find the difference between two numbers in separate lists, you would use:

- a) Subtraction
- b) Division
- c) Multiplication
- d) Addition

Question 4. Which feature allows you to view two Excel sheets side by side?

- a) Split
- b) Freeze Panes
- c) Arrange All
- d) None of the above

Question 5. If two lists have different lengths, what should you be cautious about when comparing?

- a) Merging cells
- b) Missing data
- c) Changing fonts
- d) Inserting new rows

Question 6. Which function returns TRUE if two values in separate lists are the same?

- a) EQUALS
- b) MATCH
- c) IF
- d) EXACT

Question 7. To compare two columns and count how many times a value appears in both, you can use:

- a) COUNTIF
- b) COUNTA
- c) COUNTDUP
- d) COUNTMATCH

Question 8. If you want to merge data from two lists based on a common column, you would use:

- a) Merge & Center
- b) VLOOKUP
- c) CONCATENATE
- d) SPLIT

Question 9. Which chart type is best for visually comparing two sets of data in Excel?

- a) Pie Chart
- b) Scatter Plot

- c) Column Chart
- d) Line Chart

Question 10. To check if two lists are sorted in the same order, you can use the function:

- a) SORTCHECK
- b) ORDERMATCH
- c) RANK
- d) SORTBY

Answer Key:

1. a) VLOOKUP
2. b) Conditional Formatting
3. a) Subtraction
4. c) Arrange All
5. b) Missing data
6. d) EXACT
7. a) COUNTIF
8. b) VLOOKUP
9. c) Column Chart
10. c) RANK

Week 18

Question 1. Which Excel feature allows you to summarize large datasets into a concise table?

- a) Data Validation
- b) Pivot Table
- c) Merge & Center
- d) Data Sorting

Question 2. If you want to find the average of a set of numbers in Excel, which function would you use?

- a) SUM
- b) COUNT
- c) AVERAGE
- d) MEDIAN

Question 3. Which function in Excel is used to count the number of cells in a range that meet a single condition?

- a) COUNTIF
- b) COUNTA
- c) VLOOKUP
- d) HLOOKUP

Question 4. To determine the correlation between two sets of data in Excel, you would use:

- a) CORREL
- b) MATCH
- c) INDEX

d) FIND

Question 5. Which Excel tool can help you visually represent trends in a dataset?

- a) Data Bars
- b) Sparklines
- c) Data Validation
- d) Freeze Panes

Question 6. If you want to group data by months or years in Excel, which feature would be most helpful?

- a) Grouping
- b) Sorting
- c) Filtering
- d) Slicing

Question 7. Which function can be used to find the middle number in a sorted set of numbers?

- a) MODE
- b) MEAN
- c) AVERAGE
- d) MEDIAN

Question 8. In Excel, which feature allows you to see a quick summary of selected cells, like average, count, and sum, at the bottom right of the window?

- a) Quick Analysis
- b) Status Bar
- c) Formula Bar
- d) Name Box

Question 9. Which function can be used in Excel to estimate future values based on existing values?

- a) FORECAST
- b) PREDICT
- c) ESTIMATE
- d) PROJECT

Question 10. To evaluate the distribution of data in Excel, which chart type can be particularly useful?

- a) Pie Chart
- b) Line Chart
- c) Histogram
- d) Scatter Plot

Answer Key:

1. b) Pivot Table
2. c) AVERAGE
3. a) COUNTIF
4. a) CORREL

5. b) Sparklines
6. a) Grouping
7. d) MEDIAN
8. b) Status Bar
9. a) FORECAST
10. c) Histogram

Week 19

Question 1. If two events are independent, the probability of both events happening is:

- a) The sum of their individual probabilities.
- b) The difference of their individual probabilities.
- c) The product of their individual probabilities.
- d) Not related to their individual probabilities.

Question 2. Two events are independent if:

- a) They have no outcomes in common.
- b) The occurrence of one does not affect the occurrence of the other.
- c) They both have the same probability of occurring.
- d) They can never occur at the same time.

Question 3. If a coin is flipped twice, the probability that it lands heads up both times is:

- a) $1/4$
- b) $1/2$
- c) $3/4$
- d) 1

Question 4. If the probability of event A occurring is 0.5 and the probability of event B occurring is 0.4, and A and B are independent, the probability of both A and B occurring is:

- a) 0.9
- b) 0.2
- c) 0.02
- d) 0.45

Question 5. If two independent events cannot happen at the same time, they are:

- a) Mutually exclusive.
- b) Dependent.
- c) Complementary.
- d) None of the above.

Question 6. If the probability of event A is 0 and the probability of event B is 0.5, the probability of both A and B occurring is:

- a) 0
- b) 0.25
- c) 0.5
- d) 1

Question 7. If two events are independent, the probability of neither event happening is:

- a) The sum of the probabilities of the two events not happening.

- b) The difference of the probabilities of the two events not happening.
- c) The product of the probabilities of the two events not happening.
- d) Not related to the probabilities of the two events not happening.

Question 8. If a die is rolled twice, the probability that it shows a 6 both times is:

- a) $1/6$
- b) $1/12$
- c) $1/36$
- d) $1/3$

Question 9. If two events are independent, then:

- a) They must be mutually exclusive.
- b) They can't be mutually exclusive.
- c) They can be mutually exclusive or not.
- d) Their probabilities must add up to 1.

Question 10. If the probability of event A occurring is 0.3 and the probability of event B occurring is 0.7, and A and B are independent, the probability of both A and B not occurring is:

- a) 0.21
- b) 0.79
- c) 0.09
- d) 0.91

Answer Key:

1. c) The product of their individual probabilities.
2. b) The occurrence of one does not affect the occurrence of the other.
3. a) $1/4$
4. b) 0.2
5. a) Mutually exclusive.
6. a) 0
7. c) The product of the probabilities of the two events not happening.
8. c) $1/36$
9. c) They can be mutually exclusive or not.
10. a) 0.21

Week 20

Question 1. The probability of an impossible event is:

- a) 0
- b) 1
- c) 0.5
- d) Undefined

Question 2. The probability of a certain event is:

- a) 0
- b) 1
- c) 0.5

d) Undefined

Question 3. The sum of the probabilities of all possible outcomes of a simple event is:

- a) 0
- b) 1
- c) 0.5
- d) Undefined

Question 4. If there are 4 equally likely outcomes in an event, the probability of each outcome is:

- a) $\frac{1}{4}$
- b) $\frac{1}{2}$
- c) 1
- d) 4

Question 5. The probability of an event not occurring is:

- a) 1 minus the probability of the event occurring.
- b) The same as the probability of the event occurring.
- c) 0.5
- d) Undefined

Question 6. If a single die is rolled, the probability of getting a number greater than 6 is:

- a) 0
- b) $\frac{1}{6}$
- c) $\frac{1}{3}$
- d) 1

Question 7. The highest possible value for the probability of an event is:

- a) 0
- b) 0.5
- c) 1
- d) 2

Question 8. If a fair coin is flipped, the probability of getting tails is:

- a) 0
- b) $\frac{1}{4}$
- c) $\frac{1}{2}$
- d) 1

Question 9. In a standard deck of 52 cards, the probability of drawing an ace is:

- a) $\frac{1}{52}$
- b) 0
- c) $\frac{1}{13}$
- d) $\frac{1}{4}$

Question 10. The probability of an event that is equally likely to occur as not to occur is:

- a) 0
- b) 1
- c) 0.25

d) 0.5

Answer Key:

1. a) 0
2. b) 1
3. b) 1
4. a) 1/4
5. a) 1 minus the probability of the event occurring.
6. a) 0
7. c) 1
8. c) 1/2
9. c) 1/13
10. d) 0.5

Week 21

Question 1. Conditional probability is the probability of an event occurring:

- a) Without any conditions
- b) Given that another event has already occurred
- c) Without considering any other events
- d) In isolation from all other events

Question 2. The notation $P(A|B)$ represents:

- a) The probability of A and B both occurring
- b) The probability of A given that B has occurred
- c) The probability of B given that A has occurred
- d) The probability of neither A nor B occurring

Question 3. If two events are independent, then:

- a) $P(A|B) = P(A)$
- b) $P(A|B) = P(B)$
- c) $P(A|B) = 0$
- d) $P(A|B) = 1$

Question 4. The formula for conditional probability is:

- a) $P(A|B) = P(A \text{ and } B) / P(B)$
- b) $P(A|B) = P(A) / P(B)$
- c) $P(A|B) = P(B) / P(A)$
- d) $P(A|B) = P(A \text{ and } B) / P(A)$

Question 5. If $P(A|B) = P(A)$, then events A and B are:

- a) Dependent
- b) Mutually exclusive
- c) Independent
- d) Complementary

Question 6. If $P(A|B) = 0$, then:

- a) A and B are independent events

- b) A and B are mutually exclusive events
- c) A and B are complementary events
- d) A and B are dependent events

Question 7. The probability that it rains given that there are clouds in the sky is an example of:

- a) Joint probability
- b) Marginal probability
- c) Conditional probability
- d) Independent probability

Question 8. If two events are mutually exclusive, then:

- a) $P(A|B) = P(A)$
- b) $P(A|B) = 0$
- c) $P(A|B) = 1$
- d) $P(A|B) = P(B)$

Question 9. Conditional probability is used when:

- a) Events are independent
- b) Events have no relation
- c) The outcome of one event affects the outcome of another
- d) Events cannot occur at the same time

Question 10. If $P(A) = 0.5$, $P(B) = 0.4$, and $P(A \text{ and } B) = 0.2$, then $P(A|B)$ is:

- a) 0.5
- b) 0.2
- c) 0.8
- d) 0.4

Answer Key:

1. b) Given that another event has already occurred
2. b) The probability of A given that B has occurred
3. a) $P(A|B) = P(A)$
4. a) $P(A|B) = P(A \text{ and } B) / P(B)$
5. c) Independent
6. b) A and B are mutually exclusive events
7. c) Conditional probability
8. b) $P(A|B) = 0$
9. c) The outcome of one event affects the outcome of another
10. a) 0.5

Week 22

Question 1. The probability of "at least one" success is calculated by:

- a) Adding the probabilities of all possible successes
- b) Subtracting the probability of no success from 1
- c) Multiplying the probabilities of all possible successes
- d) Dividing the probability of one success by the total number of outcomes

Question 2. If the probability of an event not happening is 0.3, the probability of the event happening at least once is:

- a) 0.3
- b) 0.7
- c) 1.3
- d) 0

Question 3. "At least one" probability is often used in:

- a) Mutually exclusive events
- b) Dependent events
- c) Independent trials
- d) Complementary events

Question 4. The formula for "at least one" success in probability is:

- a) $P(\text{at least one}) = 1 - P(\text{none})$
- b) $P(\text{at least one}) = P(\text{one}) + P(\text{two}) + \dots$
- c) $P(\text{at least one}) = P(\text{one}) \times P(\text{two})$
- d) $P(\text{at least one}) = 1/P(\text{none})$

Question 5. If an event has a 20% chance of occurring, the probability of it not occurring in two trials is:

- a) 0.2
- b) 0.04
- c) 0.8
- d) 0.16

Question 6. "At least one" probability statements are most closely related to:

- a) Joint probabilities
- b) Conditional probabilities
- c) Complementary probabilities
- d) Marginal probabilities

Question 7. If you flip a coin three times, the probability of getting at least one tails is:

- a) The same as getting three tails
- b) The same as getting no heads
- c) Less than getting one heads
- d) More than getting two tails

Question 8. In "at least one" probability, the key is to find the probability of:

- a) The event happening every time
- b) The event never happening
- c) The event happening once
- d) The event happening twice

Question 9. "At least one" probability problems often involve:

- a) Multiplication rule
- b) Addition rule
- c) Both multiplication and addition rules
- d) Neither multiplication nor addition rules

Question 10. If an event is certain to happen, the probability of it happening at least once is:

- a) 0
- b) 0.5
- c) 1
- d) Undefined

Answer Key:

- 1. b) Subtracting the probability of no success from 1
- 2. b) 0.7
- 3. c) Independent trials
- 4. a) $P(\text{at least one}) = 1 - P(\text{none})$
- 5. d) 0.16
- 6. c) Complementary probabilities
- 7. b) The same as getting no heads
- 8. b) The event never happening
- 9. a) Multiplication rule
- 10. c) 1

Week 23

Question 1. Bayes' Theorem is used to find:

- a) Joint probability
- b) Marginal probability
- c) Conditional probability
- d) Independent probability

Question 2. Bayes' Theorem is named after:

- a) Sir Isaac Newton
- b) Albert Einstein
- c) Thomas Bayes
- d) Pierre-Simon Laplace

Question 3. The main concept behind Bayes' Theorem is:

- a) Predicting future events
- b) Reversing conditional probabilities
- c) Calculating joint probabilities
- d) Finding the mean of a dataset

Question 4. Bayes' Theorem is particularly useful when:

- a) All probabilities are known
- b) We have prior knowledge about an event
- c) Events are mutually exclusive
- d) Probabilities are independent

Question 5. The term "prior probability" in Bayes' Theorem refers to:

- a) The probability of the event after new evidence
- b) The original probability of the event before new evidence

- c) The probability of the evidence itself
- d) The joint probability of the event and evidence

Question 6. In Bayes' Theorem, the "likelihood" refers to:

- a) The probability of the evidence given the event
- b) The probability of the event given the evidence
- c) The original probability of the event
- d) The probability of neither the event nor the evidence occurring

Question 7. Bayes' Theorem combines our prior knowledge with:

- a) New experimental data
- b) Joint probabilities
- c) Marginal probabilities
- d) Independent events

Question 8. The result of Bayes' Theorem is often called the:

- a) Prior probability
- b) Joint probability
- c) Posterior probability
- d) Marginal probability

Question 9. Bayes' Theorem is essential in:

- a) Classical mechanics
- b) Quantum physics
- c) Machine learning and data science
- d) Geometry

Question 10. Bayes' Theorem can be applied when:

- a) Only one event is considered
- b) Events are mutually exclusive
- c) New evidence is available for a given event
- d) Probabilities are always independent

Answer Key:

1. c) Conditional probability
2. c) Thomas Bayes
3. b) Reversing conditional probabilities
4. b) We have prior knowledge about an event
5. b) The original probability of the event before new evidence
6. a) The probability of the evidence given the event
7. a) New experimental data
8. c) Posterior probability
9. c) Machine learning and data science
10. c) New evidence is available for a given event

Week 24

Question 1. Which of the following best describes probability?

- a) A measure of certainty
- b) A measure of uncertainty
- c) A type of geometry
- d) A type of algebra

Question 2. In the context of probability, what does "mutually exclusive" mean?

- a) Two events can happen at the same time
- b) One event's occurrence affects the other's
- c) Two events cannot happen at the same time
- d) The events are dependent on each other

Question 3. Bayes' Theorem is a fundamental concept in which field?

- a) Geometry
- b) Algebra
- c) Calculus
- d) Statistics

Question 4. The probability of all possible outcomes of an experiment sums up to:

- a) 0
- b) 0.5
- c) 1
- d) 2

Question 5. Which term in Bayes' Theorem represents our initial estimate of probability?

- a) Posterior
- b) Likelihood
- c) Prior
- d) Evidence

Question 6. If two events A and B are independent, then the probability of both events happening is:

- a) $P(A) + P(B)$
- b) $P(A) - P(B)$
- c) $P(A) * P(B)$
- d) $P(A) / P(B)$

Question 7. In Bayes' Theorem, what does the "posterior" represent?

- a) The probability before considering new evidence
- b) The probability after considering new evidence
- c) The probability of the evidence itself
- d) The joint probability of two events

Question 8. Which of the following is NOT a valid probability?

- a) 0.75
- b) 1.25
- c) 0
- d) 1

Question 9. Bayes' Theorem allows us to update our beliefs based on:

- a) Prior knowledge
- b) New evidence
- c) Both prior knowledge and new evidence
- d) Neither prior knowledge nor new evidence

Question 10. In the context of Bayes' Theorem, what does "evidence" refer to?

- a) The result of an experiment
- b) The initial belief about an event
- c) The updated belief after new data
- d) The likelihood of an event occurring

Answer Key:

- 1. b) A measure of uncertainty
- 2. c) Two events cannot happen at the same time
- 3. d) Statistics
- 4. c) 1
- 5. c) Prior
- 6. c) $P(A) * P(B)$
- 7. b) The probability after considering new evidence
- 8. b) 1.25
- 9. c) Both prior knowledge and new evidence
- 10. a) The result of an experiment

Week 25

Question 1. If you want to create a table in Excel to record the outcomes of rolling a die, which of the following columns would NOT be necessary?

- a) Roll Number
- b) Chances
- c) Color of the Die
- d) Probability

Question 2. How many possible outcomes are there when rolling a standard six-sided die?

- a) 4
- b) 5
- c) 6
- d) 7

Question 3. In Excel, if you want to calculate the probability of rolling a 3 on a six-sided die, what would the formula be?

- a) =1/4
- b) =1/5
- c) =1/6
- d) =1/3

Question 4. Which Excel function can help you count the number of times you rolled a 4 in a list of rolls?

- a) SUM

- b) AVERAGE
- c) COUNTIF
- d) PROB

Question 5. If you want to represent the probability of each outcome of a die roll graphically in Excel, which chart type would be most appropriate?

- a) Line Chart
- b) Pie Chart
- c) Column Chart
- d) Scatter Plot

Question 6. In Excel, if you have a column that lists the outcomes of 100 die rolls, which function can help you find the total number of rolls?

- a) SUM
- b) COUNT
- c) AVERAGE
- d) PROB

Question 7. If you want to calculate the probability of rolling an even number on a six-sided die in Excel, what would the formula be?

- a) =1/2
- b) =1/3
- c) =1/4
- d) =1/6

Question 8. Which Excel function can help you find the average value of a list of die rolls?

- a) SUM
- b) COUNTIF
- c) AVERAGE
- d) PROB

Question 9. In Excel, if you want to calculate the probability of NOT rolling a 5 on a six-sided die, what would the formula be?

- a) =1/5
- b) =1/6
- c) =5/6
- d) =4/6

Question 10. If you want to create a formula in Excel that calculates the probability of rolling a number greater than 4 on a six-sided die, what would the formula be?

- a) =1/6
- b) =2/6
- c) =3/6
- d) =4/6

Answer Key:

1. c) Color of the Die
2. c) 6

3. c) $=1/6$
4. c) COUNTIF
5. c) Column Chart
6. b) COUNT
7. a) $=1/2$
8. c) AVERAGE
9. c) $=5/6$
10. b) $=2/6$

Week 26

Question 1. The probability of an event not occurring is called:

- a) A complement.
- b) A subset.
- c) A permutation.
- d) A combination.

Question 2. If the probability of an event A occurring is 0.7, the probability of A not occurring is:

- a) 0.3
- b) 0.7
- c) 1.0
- d) 0.5

Question 3. The phrase "at least" in probability typically means:

- a) The event will happen more than once.
- b) The event will happen a maximum of one time.
- c) The event will happen one time or not at all.
- d) The event will happen one time or more.

Question 4. To find the probability of "at least one" occurrence, you can use:

- a) The probability of the event occurring once.
- b) The probability of the event not occurring at all.
- c) 1 minus the probability of the event not occurring.
- d) The sum of the probabilities of all possible outcomes.

Question 5. If you want to find the probability of getting at least one head when flipping a coin twice, you would consider:

- a) The probability of getting two tails.
- b) The probability of getting two heads.
- c) The probability of getting one head.
- d) Both b and c.

Question 6. The complement rule states:

- a) $P(A) + P(\text{not } A) = 2$
- b) $P(A) + P(\text{not } A) = 0$
- c) $P(A) + P(\text{not } A) = 1$
- d) $P(A) - P(\text{not } A) = 1$

Question 7. If an event is certain to happen, its complement probability is:

- a) 0
- b) 1
- c) 0.5
- d) Undefined

Question 8. "At least 2" means:

- a) Exactly 2.
- b) 2 or more.
- c) 1 or 2.
- d) Less than 2.

Question 9. If the probability of an event B occurring is 0.4, the probability of B occurring at least once in two tries is:

- a) 0.4
- b) 0.8
- c) Greater than 0.4 but less than 0.8
- d) 1.0

Question 10. The complement of "at least one" is:

- a) At most one.
- b) At least two.
- c) None.
- d) All.

Answer Key:

- 1. a) A complement.
- 2. a) 0.3
- 3. d) The event will happen one time or more.
- 4. c) 1 minus the probability of the event not occurring.
- 5. a) The probability of getting two tails.
- 6. c) $P(A) + P(\text{not } A) = 1$
- 7. a) 0
- 8. b) 2 or more.
- 9. c) Greater than 0.4 but less than 0.8
- 10. c) None.

Week 27

Question 1. In genetics, the probability of an offspring inheriting a specific trait is determined by:

- a) The weather.
- b) The parents' genes.
- c) The offspring's choice.
- d) The age of the parents.

Question 2. If two events are mutually exclusive in genetics, it means:

- a) They can both happen at the same time.
- b) They cannot both happen at the same time.
- c) They are dependent on each other.
- d) They have no relation to each other.

Question 3. Using the addition rule, the probability of one of two mutually exclusive genetic events occurring is:

- a) The sum of their individual probabilities.
- b) The product of their individual probabilities.
- c) The difference of their individual probabilities.
- d) Zero.

Question 4. In a genetic cross, if the probability of getting trait A is 0.25 and the probability of getting trait B is 0.3, and they are mutually exclusive, the probability of getting either trait A or trait B is:

- a) 0.55
- b) 0.075
- c) 0.5
- d) 0.8

Question 5. The addition rule is used in genetics to determine the probability of:

- a) Two events happening at the same time.
- b) One of two or more events happening.
- c) An event not happening.
- d) All possible outcomes of an event.

Question 6. In genetics, two events that have no effect on each other's outcomes are called:

- a) Inclusive.
- b) Exclusive.
- c) Independent.
- d) Dependent.

Question 7. If two genetic traits are not mutually exclusive:

- a) They can both appear in an offspring.
- b) They can never appear together in an offspring.
- c) They are always found together.
- d) They are the same trait.

Question 8. The addition rule is especially useful in genetics when considering:

- a) Traits that are influenced by multiple genes.
- b) Traits that are influenced by a single gene.
- c) The height of the offspring.
- d) The weight of the offspring.

Question 9. In a genetic cross, if two events are not mutually exclusive, the addition rule:

- a) Cannot be used.
- b) Can be used directly.
- c) Requires subtracting the probability of both events happening together.
- d) Requires adding the probabilities and then dividing by two.

Question 10. The addition rule helps geneticists predict:

- a) The exact traits of an offspring.
- b) The color of the offspring's eyes.
- c) The probability of potential genetic outcomes.
- d) The age at which an offspring will develop a trait.

Answer Key:

- 1. b) The parents' genes.
- 2. b) They cannot both happen at the same time.
- 3. a) The sum of their individual probabilities.
- 4. a) 0.55
- 5. b) One of two or more events happening.
- 6. c) Independent.
- 7. a) They can both appear in an offspring.
- 8. a) Traits that are influenced by multiple genes.
- 9. c) Requires subtracting the probability of both events happening together.
- 10. c) The probability of potential genetic outcomes.

Week 28

Question 1. The multiplication rule in probability is used when:

- a) Events are dependent on each other.
- b) Events are mutually exclusive.
- c) Only one event can occur.
- d) Events have no relation to each other.

Question 2. If two events are independent, the probability of both occurring is:

- a) The sum of their individual probabilities.
- b) The difference of their individual probabilities.
- c) The product of their individual probabilities.
- d) Zero.

Question 3. The multiplication rule can be applied to:

- a) Only two events.
- b) More than two events.
- c) Only mutually exclusive events.
- d) Only complementary events.

Question 4. If the probability of event A occurring is 0.5 and the probability of event B occurring given A has occurred is 0.4, the joint probability of both A and B occurring is:

- a) 0.9
- b) 0.1
- c) 0.2
- d) 0.02

Question 5. Two events A and B are independent if:

- a) The occurrence of A affects the occurrence of B.

- b) The occurrence of A does not affect the occurrence of B.
- c) A and B always occur together.
- d) A and B never occur together.

Question 6. In the multiplication rule, when two events are independent, the joint probability is:

- a) Always greater than the individual probabilities.
- b) Always less than the individual probabilities.
- c) Equal to the sum of the individual probabilities.
- d) Equal to the product of the individual probabilities.

Question 7. The multiplication rule is especially useful when:

- a) Considering the probability of a single event.
- b) Considering the probability of two or more events happening in sequence.
- c) Calculating the median of a data set.
- d) Calculating the mode of a data set.

Question 8. If two events are not independent, the multiplication rule:

- a) Cannot be used.
- b) Can be used directly.
- c) Requires considering the conditional probability.
- d) Requires adding the probabilities.

Question 9. The multiplication rule helps in determining:

- a) The exact outcome of an event.
- b) The probability of potential outcomes when events are related.
- c) The average of a data set.
- d) The range of a data set.

Question 10. If the probability of event A is 0.3 and the probability of event B given A is 0.5, the probability of both A and B occurring is:

- a) 0.8
- b) 0.15
- c) 0.65
- d) 0.05

Answer Key:

1. a) Events are dependent on each other.
2. c) The product of their individual probabilities.
3. b) More than two events.
4. c) 0.2
5. b) The occurrence of A does not affect the occurrence of B.
6. d) Equal to the product of the individual probabilities.
7. b) Considering the probability of two or more events happening in sequence.
8. c) Requires considering the conditional probability.
9. b) The probability of potential outcomes when events are related.
10. b) 0.15.

Week 29

Question 1. Which of the following is an example of a discrete random variable?

- a) The number of cars in a parking lot.
- b) The height of a person.
- c) The temperature on a given day.
- d) The amount of water in a lake.

Question 2. A continuous random variable can take on:

- a) Only whole numbers.
- b) Only specific values.
- c) Any value within a given range.
- d) Only positive values.

Question 3. The probability distribution of a discrete random variable:

- a) Is always uniform.
- b) Lists all possible outcomes and their probabilities.
- c) Can take on any value between $-\infty$ and ∞ .
- d) Is represented by a smooth curve.

Question 4. Which of the following is an example of a continuous random variable?

- a) The number of students in a class.
- b) The number of books on a shelf.
- c) The weight of a person.
- d) The number of pets in a household.

Question 5. The sum of the probabilities in the probability distribution of a discrete random variable is:

- a) 0
- b) 0.5
- c) 1
- d) Infinite

Question 6. A probability density function is used for:

- a) Discrete random variables.
- b) Continuous random variables.
- c) Both discrete and continuous random variables.
- d) Neither discrete nor continuous random variables.

Question 7. The set of values that a random variable can take on is called its:

- a) Range
- b) Domain
- c) Sample space
- d) Distribution

Question 8. Which of the following cannot be a probability for a discrete random variable?

- a) 0.25
- b) 1
- c) -0.5

d) 0

Question 9. A random variable that can take on a countable number of values is:

- a) Continuous
- b) Discrete
- c) Neither discrete nor continuous
- d) Both discrete and continuous

Question 10. The height of a person in meters is an example of:

- a) A discrete random variable.
- b) A continuous random variable.
- c) A deterministic variable.
- d) A non-random variable.

Answer Key:

- 1. a) The number of cars in a parking lot.
- 2. c) Any value within a given range.
- 3. b) Lists all possible outcomes and their probabilities.
- 4. c) The weight of a person.
- 5. c) 1
- 6. b) Continuous random variables.
- 7. a) Range
- 8. c) -0.5
- 9. b) Discrete
- 10. b) A continuous random variable.

Week 30

Question 1. A random variable is:

- a) Always a whole number.
- b) A variable that varies randomly.
- c) A function that assigns a real number to each outcome in a sample space.
- d) A variable that can only take positive values.

Question 2. Which of the following is NOT a random variable?

- a) The number of tails when flipping three coins.
- b) The color of a car.
- c) The time it takes to run a mile.
- d) The age of a randomly selected person.

Question 3. The expected value of a random variable gives:

- a) The most common value.
- b) The median of the values.
- c) The average value.
- d) The smallest value.

Question 4. A random variable that can only take on a finite number of values is:

- a) Continuous.

- b) Infinite.
- c) Discrete.
- d) Non-deterministic.

Question 5. The variance of a random variable measures:

- a) Its average value.
- b) Its spread or dispersion.
- c) Its maximum value.
- d) Its minimum value.

Question 6. If a random variable X can take on any value between 0 and 1, it is:

- a) Discrete.
- b) Continuous.
- c) Neither.
- d) Both.

Question 7. The outcome of a single dice roll is an example of:

- a) A continuous random variable.
- b) A deterministic variable.
- c) A discrete random variable.
- d) A non-random variable.

Question 8. The sum of the probabilities of all possible values of a discrete random variable is:

- a) 0
- b) 0.5
- c) 1
- d) Infinite

Question 9. Which of the following is a discrete random variable?

- a) The weight of a randomly chosen apple.
- b) The number of apples in a basket.
- c) The temperature on a given day.
- d) The height of a tree.

Question 10. The probability that a random variable X takes on a particular value x is denoted by:

- a) $P(X = x)$
- b) $P(X > x)$
- c) $P(X < x)$
- d) $P(X \neq x)$

Answer Key:

1. c) A function that assigns a real number to each outcome in a sample space.
2. b) The color of a car.
3. c) The average value.
4. c) Discrete.
5. b) Its spread or dispersion.

6. b) Continuous.
7. c) A discrete random variable.
8. c) 1
9. b) The number of apples in a basket.
10. a) $P(X = x)$

Week 31

Question 1. What is a discrete random variable?

- a) A variable that can take on any value in a range
- b) A variable that can take on only specific, separate values
- c) A variable that is continuous
- d) A variable that is always equal to zero

Question 2. What is a probability distribution?

- a) A function that assigns probabilities to the possible values of a random variable
- b) A graph that displays data
- c) A mathematical operation on random variables
- d) A type of statistical test

Question 3. What must the sum of the probabilities in a probability distribution be equal to?

- a) 0
- b) 0.5
- c) 1
- d) 100

Question 4. What is the range of a discrete random variable?

- a) The set of all possible values the variable can take
- b) The difference between the highest and lowest values
- c) The average value of the variable
- d) The median of the variable's values

Question 5. What is a probability function?

- a) A function that assigns probabilities to the outcomes of a random variable
- b) A function that calculates the mean of a dataset
- c) A function that calculates the median of a dataset
- d) A function that calculates the standard deviation of a dataset

Question 6. Can a probability of a particular outcome be negative?

- a) Yes
- b) No
- c) Only if the outcome is undesirable
- d) Only if the outcome is favorable

Question 7. What is the expected value of a discrete random variable?

- a) The most likely value of the random variable
- b) The average value of the random variable over many repetitions of the experiment
- c) The median value of the random variable
- d) The sum of all possible values of the random variable

Question 8. What is the role of a probability histogram in the context of a discrete random variable?

- a) To display the probabilities of the different outcomes graphically
- b) To calculate the probabilities of different outcomes
- c) To find the median of a dataset
- d) To find the correlation between two variables

Question 9. Can a discrete random variable take on an infinite number of values?

- a) Yes
- b) No
- c) Only in theoretical scenarios
- d) Only in practical scenarios

Question 10. What does it mean if an outcome has a probability of 0?

- a) The outcome is certain to happen
- b) The outcome is certain not to happen
- c) The outcome is equally likely to happen or not happen
- d) The probability of the outcome is unknown

Answer Key:

- 1. b) A variable that can take on only specific, separate values
- 2. a) A function that assigns probabilities to the possible values of a random variable
- 3. c) 1
- 4. a) The set of all possible values the variable can take
- 5. a) A function that assigns probabilities to the outcomes of a random variable
- 6. b) No
- 7. b) The average value of the random variable over many repetitions of the experiment
- 8. a) To display the probabilities of the different outcomes graphically
- 9. a) Yes
- 10. b) The outcome is certain not to happen

Week 32

Question 1. What is the probability of an impossible event?

- a) 0
- b) 0.5
- c) 1
- d) 100

Question 2. What is the probability of a certain event?

- a) 0
- b) 0.5
- c) 1
- d) 100

Question 3. What is the maximum value that a probability can take?

- a) 0

- b) 0.5
- c) 1
- d) 100

Question 4. If two events are independent, what does it mean?

- a) The occurrence of one event affects the occurrence of the other
- b) The occurrence of one event does not affect the occurrence of the other
- c) The events always occur together
- d) The events can never occur at the same time

Question 5. What is a compound event in probability?

- a) An event with only one outcome
- b) An event with two or more simple events
- c) An event that cannot happen
- d) An event that is certain to happen

Question 6. What does it mean if two events are mutually exclusive?

- a) They can occur at the same time
- b) They cannot occur at the same time
- c) They are dependent on each other
- d) They are independent of each other

Question 7. In probability, what does "OR" mean in terms of outcomes?

- a) The outcome must satisfy all the events
- b) The outcome must satisfy at least one of the events
- c) The outcome cannot satisfy any of the events
- d) The outcome can satisfy only one specific event

Question 8. What is a sample space in probability?

- a) A physical space where experiments are conducted
- b) The set of all possible outcomes of an experiment
- c) A mathematical formula for finding probabilities
- d) The average outcome of an experiment

Question 9. What does it mean if events A and B are complementary?

- a) They always occur together
- b) They can never occur together
- c) The occurrence of one means the other cannot occur
- d) They are independent events

Question 10. What is the probability of the complement of an event?

- a) The same as the probability of the event
- b) One minus the probability of the event
- c) Zero
- d) One

Answer Key:

- 1. a) 0

2. c) 1
3. c) 1
4. b) The occurrence of one event does not affect the occurrence of the other
5. b) An event with two or more simple events
6. b) They cannot occur at the same time
7. b) The outcome must satisfy at least one of the events
8. b) The set of all possible outcomes of an experiment
9. c) The occurrence of one means the other cannot occur
10. b) One minus the probability of the event

Week 33

Question 1. When rolling a standard six-sided die, what is the total number of possible outcomes?

- a) 4
- b) 6
- c) 8
- d) 12

Question 2. What is the probability of rolling an even number on a six-sided die?

- a) $\frac{1}{2}$
- b) $\frac{1}{3}$
- c) $\frac{1}{4}$
- d) $\frac{1}{6}$

Question 3. What is the probability of rolling a number greater than 6 on a standard six-sided die?

- a) 0
- b) $\frac{1}{6}$
- c) $\frac{1}{3}$
- d) $\frac{1}{2}$

Question 4. If you roll a six-sided die twice, how many possible outcomes are there for the two rolls combined?

- a) 6
- b) 12
- c) 36
- d) 72

Question 5. What is the probability of rolling a 3 on a six-sided die?

- a) $\frac{1}{2}$
- b) $\frac{1}{3}$
- c) $\frac{1}{4}$
- d) $\frac{1}{6}$

Question 6. If you roll a six-sided die, what is the probability of rolling a number less than 7?

- a) 1
- b) $\frac{1}{2}$
- c) $\frac{1}{3}$

d) $\frac{1}{6}$

Question 7. What is the probability of rolling either a 2 or a 4 on a six-sided die?

- a) $\frac{1}{2}$
- b) $\frac{1}{3}$
- c) $\frac{1}{6}$
- d) $\frac{1}{12}$

Question 8. When you roll a standard six-sided die, each outcome is:

- a) Dependent on the previous roll
- b) Independent of the previous roll
- c) Determined by the weight of the die
- d) Determined by the way you throw the die

Question 9. What is the probability of rolling a number that is not 3 on a six-sided die?

- a) $\frac{1}{6}$
- b) $\frac{1}{3}$
- c) $\frac{1}{2}$
- d) $\frac{5}{6}$

Question 10. If you know you rolled an odd number on a six-sided die, what is the probability that you rolled a 3?

- a) $\frac{1}{3}$
- b) $\frac{1}{2}$
- c) $\frac{1}{6}$
- d) $\frac{1}{4}$

Answer Key:

- 1. b) 6
- 2. a) $\frac{1}{2}$
- 3. a) 0
- 4. c) 36
- 5. d) $\frac{1}{6}$
- 6. a) 1
- 7. b) $\frac{1}{3}$
- 8. b) Independent of the previous roll
- 9. d) $\frac{5}{6}$
- 10. a) $\frac{1}{3}$

Week 34

Question 1. What does conditional probability refer to?

- a) The probability of an event occurring given that another event has occurred
- b) The probability of an event occurring in general
- c) The probability of two events occurring at the same time
- d) The probability of an event not occurring

Question 2. If events A and B are independent, what is the conditional probability $P(A|B)$?

- a) $P(A) \times P(B)$
- b) $P(A)$

- c) $P(B)$
- d) $P(A) + P(B)$

Question 3. What symbol is commonly used to represent "given that" in conditional probability?

- a) \times
- b) $+$
- c) $|$
- d) \div

Question 4. If $P(A|B) = P(A)$, what can be said about events A and B?

- a) They are dependent events
- b) They are independent events
- c) They are mutually exclusive events
- d) They are complementary events

Question 5. What is the formula for conditional probability?

- a) $P(A|B) = P(A \cap B) / P(B)$
- b) $P(A|B) = P(A) \times P(B)$
- c) $P(A|B) = P(A) + P(B)$
- d) $P(A|B) = P(A) / P(B)$

Question 6. What is the probability of A given that B has occurred if B cannot occur?

- a) 0
- b) 1
- c) Undefined
- d) 0.5

Question 7. If $P(A|B) > P(A)$, what can be inferred?

- a) Event B occurring increases the probability of event A occurring
- b) Event B occurring decreases the probability of event A occurring
- c) Events A and B are independent
- d) Events A and B are mutually exclusive

Question 8. What is the probability of the complement of event A given that event B has occurred?

- a) $P(A' | B)$
- b) $P(A | B')$
- c) $P(A \cap B')$
- d) $P(A' \cap B)$

Question 9. In conditional probability, what does $P(A \cap B)$ represent?

- a) The probability of either event A or event B occurring
- b) The probability of both event A and event B occurring
- c) The probability of event A occurring given that event B has occurred
- d) The probability of event B occurring given that event A has occurred

Question 10. If $P(A|B) = 0$, what can be said about events A and B?

- a) They are independent events

- b) They are mutually exclusive events
- c) Event B occurring increases the probability of event A occurring
- d) Event B occurring does not affect the probability of event A occurring

Answer Key:

1. a) The probability of an event occurring given that another event has occurred
2. b) $P(A)$
3. c) $|$
4. b) They are independent events
5. a) $P(A|B) = P(A \cap B) / P(B)$
6. c) Undefined
7. a) Event B occurring increases the probability of event A occurring
8. a) $P(A' | B)$
9. b) The probability of both event A and event B occurring
10. b) They are mutually exclusive events

Week 35

Question 1. What is probability?

- a) A type of mathematical operation
- b) A measure of the likelihood of an event occurring
- c) A method to solve equations
- d) A type of geometric shape

Question 2. If an event is certain to happen, what is its probability?

- a) 0
- b) 0.5
- c) 1
- d) 100

Question 3. What is the probability of rolling a number greater than 4 on a standard six-sided die?

- a) $1/6$
- b) $1/3$
- c) $1/2$
- d) $2/3$

Question 4. If you flip a coin, what is the probability it will land on heads?

- a) 0
- b) 0.5
- c) 1
- d) 2

Question 5. In a bag of 3 red balls and 2 blue balls, what is the probability of picking a red ball?

- a) $1/5$
- b) $2/5$
- c) $3/5$
- d) $4/5$

Question 6. If an event cannot happen, what is its probability?

- a) 0
- b) 0.5
- c) 1
- d) 100

Question 7. What is the probability of rolling an even number on a standard six-sided die?

- a) $1/6$
- b) $1/3$
- c) $1/2$
- d) $2/3$

Question 8. If the weather forecast says there is a 70% chance of rain, what does this mean?

- a) It will definitely rain
- b) It will definitely not rain
- c) There is a high likelihood of rain
- d) There is a low likelihood of rain

Question 9. What is the total probability of all possible outcomes in a probability experiment?

- a) 0
- b) 0.5
- c) 1
- d) 100

Question 10. If you know the probability of an event happening, can you predict with 100% certainty that it will happen?

- a) Yes
- b) No
- c) Sometimes
- d) Only if the probability is 1

Answer Key:

1. b) A measure of the likelihood of an event occurring
2. c) 1
3. b) $1/3$
4. b) 0.5
5. c) $3/5$
6. a) 0
7. c) $1/2$
8. c) There is a high likelihood of rain
9. c) 1
10. b) No

Week 36

Question 1. What is a scatter plot used for?

- a) To display data points on a two-dimensional graph
- b) To draw straight lines
- c) To create pie charts
- d) To write paragraphs

Question 2. In a scatter plot, what does the x-axis represent?

- a) The dependent variable
- b) The independent variable
- c) The title of the graph
- d) The legend of the graph

Question 3. What does each point on a scatter plot represent?

- a) A pair of values
- b) A summary of the data
- c) A single value
- d) A title

Question 4. What can you use to describe the strength and direction of the relationship between variables in a scatter plot?

- a) Correlation coefficient
- b) Pie chart
- c) Bar graph
- d) Histogram

Question 5. What is it called when the points on a scatter plot form a straight line going upwards from left to right?

- a) Negative correlation
- b) Positive correlation
- c) No correlation
- d) Zero correlation

Question 6. What is it called when the points on a scatter plot do not show any clear pattern?

- a) Negative correlation
- b) Positive correlation
- c) No correlation
- d) Zero correlation

Question 7. What can be used to predict unknown values from known values in a scatter plot?

- a) Line of best fit
- b) Pie chart
- c) Bar graph
- d) Histogram

Question 8. What is the y-axis used for in a scatter plot?

- a) To represent the dependent variable
- b) To represent the independent variable
- c) To represent the title of the graph
- d) To represent the legend of the graph

Question 9. What should you do before drawing a scatter plot?

- a) Collect and organize the data
- b) Draw a pie chart
- c) Write a paragraph
- d) Create a histogram

Question 10. What is one of the first things you should do when interpreting a scatter plot?

- a) Identify any patterns or trends in the data
- b) Ignore the data points
- c) Focus only on the x-axis
- d) Focus only on the y-axis

Answer Key:

- 1. a) To display data points on a two-dimensional graph
- 2. b) The independent variable
- 3. a) A pair of values
- 4. a) Correlation coefficient
- 5. b) Positive correlation
- 6. c) No correlation
- 7. a) Line of best fit
- 8. a) To represent the dependent variable
- 9. a) Collect and organize the data
- 10. a) Identify any patterns or trends in the data

Week 37

Question 1. The set of all possible outcomes of a probability experiment is called:

- a) Event
- b) Probability
- c) Sample space
- d) Outcome

Question 2. If an event is certain to happen, its probability is:

- a) 0
- b) 0.5
- c) 1
- d) Undefined

Question 3. If an event is impossible, its probability is:

- a) 0
- b) 0.5
- c) 1
- d) Undefined

Question 4. The probability of an event not happening is called the:

- a) Complement
- b) Subset
- c) Union
- d) Intersection

Question 5. The sum of the probabilities of all possible outcomes in a sample space is:

- a) 0
- b) 0.5
- c) 1
- d) 2

Question 6. Two events that cannot happen at the same time are called:

- a) Complementary
- b) Independent
- c) Dependent
- d) Mutually exclusive

Question 7. If two events A and B are independent, the probability of both A and B happening is:

- a) $P(A) + P(B)$
- b) $P(A) - P(B)$
- c) $P(A) \times P(B)$
- d) $P(A) / P(B)$

Question 8. The probability of an event that is certain to happen and impossible to happen adds up to:

- a) 0
- b) 0.5
- c) 1
- d) 2

Question 9. The number of favorable outcomes divided by the total number of outcomes gives:

- a) Odds
- b) Ratio
- c) Probability
- d) Percentage

Question 10. If the probability of an event A happening is 0.7, the probability of event A not happening is:

- a) 0.3
- b) 0.7
- c) 1.4
- d) 0

Answer Key

1. c) Sample space

2. c) 1
3. a) 0
4. a) Complement
5. c) 1
6. d) Mutually exclusive
7. c) $P(A) \times P(B)$
8. c) 1
9. c) Probability
10. a) 0.3