Data Science Olympiad - Preliminary test

Sample question paper

Time: 30 minutes

	Question	A	B	C	D	Answer
1	If $f(x) = x^2+2x+1$, what is f(-1)?	0	-1	-2	-3	
2	What is the output of the function f(x) = 2x + 3 when x = 4?	7	8	11	10	
3	Which of the following best describes an **onto** function?	A function where every element in the domain has a unique corresponding element in the range	A function where every element in the range has a unique corresponding element in the domain	A function where there is no unique corresponding element for at least one element in the domain	A function where the domain and range are the same set	
4	If f(x) = 3x-2, find f(-1)?	-5	-1	1	5	
5	A standard deck of cards contains 52 cards, including four aces. If you draw one card at random, what is the probability of drawing an ace?	1/13	1/4	1/52	4/52	
6	Which of the following is an example of primary data?	A textbook on the history of the American Civil War	A survey conducted by a research team on the causes of stress among teenagers	A newspaper article reporting on the results of a national election	A graph showing the growth rate of the world population over the past century	
7	Which of the following is **not** a valid Python identifier naming convention?	myvariable	_myVariable	MyVariable	my-variable	
8	A company produces 10 different products. The production levels of the products for a week are 100, 150, 200, 250, 300, 350, 400, 450, 500, and 550 units, respectively. What is the range of production levels of the products for the week?	100	200	250	450	

9	A teacher gave a quiz to a class of 25 students. The highest and lowest scores were 95 and 55, respectively. What is the range of scores on the quiz?	20	30	40	50	
10	A teacher records the scores of 25 students on a test, and finds that the scores range from 60 to 95. Which of the following measures of central tendency is least useful in this scenario?	Mean	Mode	Median	Range	
11	A company wants to determine the mode of the number of hours its employees work per week. The number of hours worked by its 12 employees is as follows: 32, 35, 37, 40, 40, 40, 40, 42, 45, 48, 48, 48. What is the mode of the number of hours worked per week?	40	42	45	48	
12	A store owner wants to determine the most popular colour of T-shirts among his customers. He surveyed 100 customers and found that 35 of them bought a blue T-shirt, 25 bought a red one, 20 bought a green one, and 20 bought a yellow one. What percentage of customers bought a blue T-shirt?	20%	25%	35%	40%	
13	What is the range of the correlation coefficient?	-1 to 0	0 to 1	-∞ to ∞	-1 to 1	
14	If the function H(t) represents the height of a ball at time t in seconds, what does H(0) represent?	The initial height of the ball	The maximum height of the ball	The height of the ball after 0 seconds of being in the air	The height of the ball after 1 second of being in the air	
15	Which of the following functions is both onto and one-to-one?	f(x) = sin(x)	f(x) = 2x + 1	f(x) = |x|	f(x) = x^3	
16	Which of the following is an example of a constant?	x-5=0	PI = 3.14159	name = "John"	y = x + 3	
17	Which of the following is an example of a continuous variable?	gender	hair colour	height	zip code	
18	Which of the following is not a measure of dispersion?	range	standard deviation	variance	mode	
19	Which of the following is a measure of central tendency?	range	variance	median	standard deviation	
20	Which operator is used for equality comparison in Python?	==	=	!=	<=	

21	What is the output of the expression 4 > 3?	TRUE	FALSE	4	3	
22	A car travels 20 km/h for the first hour, 40 km/h for the second hour, and 60 km/h for the third hour. What is the mean speed of the car for the three hours?	30 km/h	40 km/h	50 km/h	60 km/h	
23	Which of the following best describes correlation?	A relationship between two variables where one variable causes the other variable.	A relationship between two variables where changes in one variable are associated with changes in the other variable	A relationship between two variables where the value of one variable is dependent on the value of the other variable	A relationship between two variables where there is no connection between the two	
24	A researcher is interested in studying the association between temperature and ice cream sales. Which of the following is a dependent variable in this study?	Temperature	Ice cream sales	Both temperature and ice cream sales	Neither temperature nor ice cream sales	
25	Which of the following is an example of making a quantitative comparison using units?	Comparing the colour of two different shirts	Comparing the weight of two different books	Comparing the texture of two different types of food	Comparing the smell of two different flowers	
26	A pizza has a diameter of 20 centimetres. What is the area of the pizza?	20 square centimetres	400 square centimetres	314 square centimetre	1256 square centimetre	
27	Solve for x: -2x + 7 > 13	x < -3	x < -2	x < 2	x < 3	
28	In a right-angled triangle, if the length of one leg is 3 units and the length of the other leg is 4 units, what is the hypotenuse?	5 units	7 units	9 units	12 units	
29	A graph showing the number of students in a school who play different sports would be **BEST** represented by which of the following graphs?	A line graph	A scatter plot	A histogram	A bar graph	

30	If a graph shows a linear relationship between two variables, what is the slope of the line?	the vertical change between the two points	the horizontal change between the two points	the ratio of the vertical change to the horizontal change	the ratio of the horizontal change to the vertical change	