Congratulations! You passed!

Grade received 100%

Latest Submission Grade 100%

To pass 75% or higher

Go to next item

1. What is the expected value of rolling a fair six-sided dice?

1 / 1 point

- ( ) 1
- (•) 3.5
- ( ) 3
- ( ) 6

Correct
Correct! The expected value of rolling a fair six-sided dice is 3.5.

2. If we roll two fair six-sided dice, what is the probability that the sum of the dice is greater than or equal to 9?

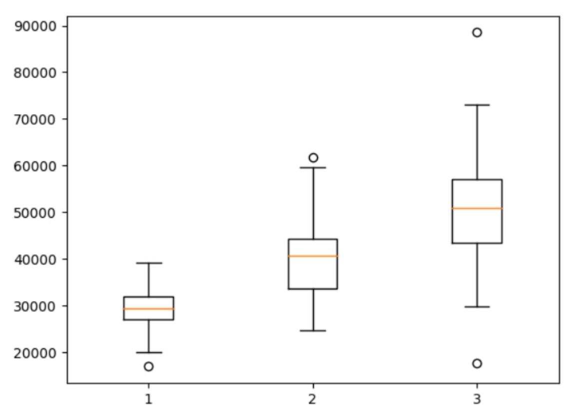
1 / 1 point

- ( ) 1/9
- ( ) 1/6
- (•) 5/18
- ( ) 1/3

Correct
Correct! There are 36 possible outcomes when rolling two dice, each with a probability of 1/36. There are 4 outcomes where the sum of the dice is 9, and 6 outcomes where the sum of the dice is 10 or 11. Therefore, the probability of rolling a sum of 9 or greater is (6+4)/36 = 10/36 = 5/18.

3. The box plot below shows the distribution of salaries for employees in three different departments of a company. Interpret the box plot and select all that apply.

1 / 1 point



- [x] The median salary of department 2 is higher than the median salary of department 1.

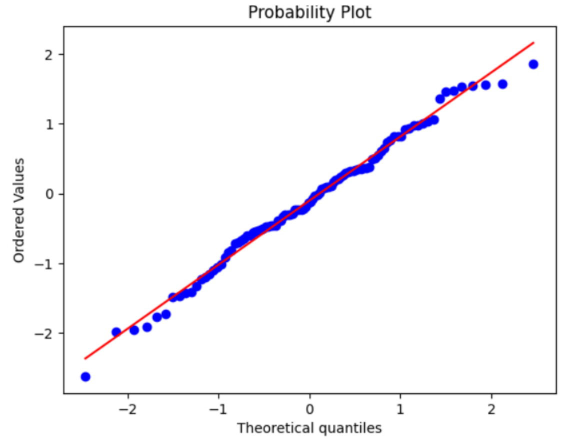
Correct
Correct. The box plot shows that the median salary of department 2 is around 40,000 and the median salary of department 1 is around 30,000.

- [ ] The IQR of department 3 is smaller than department 1.
- [ ] There are no outliers in department 2.
- [x] The range of salaries in department 3 is larger than the range of salaries in department 2.

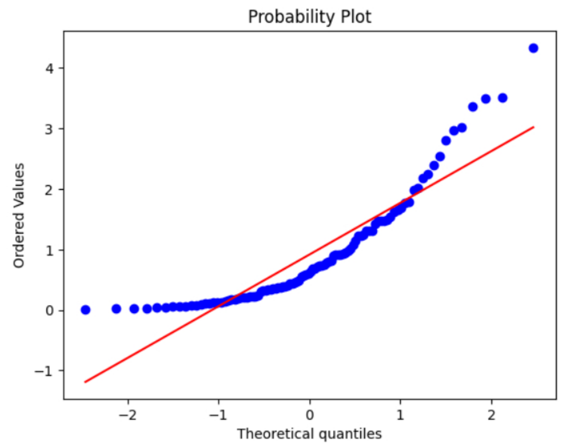
Correct
Correct. The box plot shows that the range of salaries in department 3 is larger than the range of salaries in department 2. Therefore, the correct statement is that the range of salaries in department 3 is larger than department 2.

4. Which of the following QQ plots represents a set of data that is more likely normally distributed?

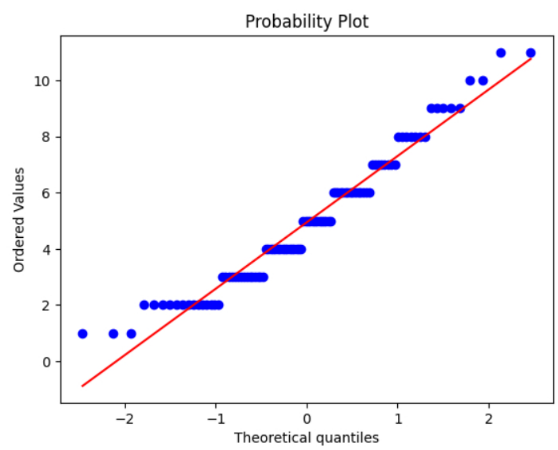
1 / 1 point



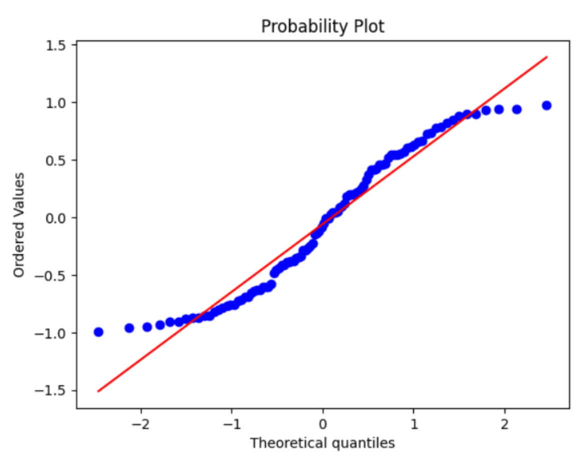
Probability Plot
Ordered Values
Theoretical quantiles



Probability Plot
Ordered Values
Theoretical quantiles



Probability Plot
Ordered Values
Theoretical quantiles



Probability Plot
Ordered Values
Theoretical quantiles

Correct

Correct! This is the graph that best fits in the red line!

5. A fair six-sided dice is rolled. What is the expected value of the square of the number rolled?

1 / 1 point

- ○ $\frac{7}{6}$
- ○ $\frac{35}{36}$
- ◉ $\frac{91}{6}$
- ○ $\frac{49}{36}$

Correct

Correct, squaring the values between 1 and 6 we get 91 and each value is equally likely to happen, therefore the result is $\frac{91}{6}$.

6. Suppose that the joint probability distribution of two random variables X and Y is given by the following table:

1 / 1 point

X/Y	1	2	3
1	0.1	0.2	0.3
2	0.2	0.1	0.1

What is the probability that X and Y both take even values?

- ○ 0.2
- ◉ 0.1
- ○ 0.3
- ○ 0.4

Correct

Correct!

The even values for X are 2, and the even values for Y are 2. Thus, the probability that X and Y both take even values is the sum of the probabilities in the joint distribution table where $X = 2$ and $Y = 2$:

$$P(X = 2 \text{ and } Y = 2) = 0.1$$

.

7. About the correlation coeficient, it is correct to say (check all that apply):

1 / 1 point

- ☐ It is always positive real number.
- ☐ It can be any real number.
- ☑ It measures how linearly correlated two variables are.

Correct

Correct! The correlation coeficient, known as Pearson coeficient, measures how close to a linear relationship two variables are.

- ☑ It is a real number between -1 and 1.

Correct

Correct! The correlation coeficient is a real number between -1 and 1. Where the closer to -1, the more negatively correlated the variables are, the closer to 1, the more positively correlated the variables are and the closer to 0, it means that the variables have no linear realationship.

8. Suppose that the joint probability distribution of two random variables X and Y is given by the following table:

1 / 1 point

X/Y	0	1
0	0.2	0.1
1	0.1	0.6

What is the covariance between X and Y?

- ○ -0.04

- [x] 0.11
- [ ] 0.02
- [ ] 0.04

Correct

Correct! The mean of X is

$$\mu_X = (0 \times 0.2 + 1 \times 0.1) + (0 \times 0.1 + 1 \times 0.6) = 0.7$$

And the mean of Y is

$$\mu_Y = (0 \times 0.2 + 0 \times 0.1) + (1 \times 0.1 + 1 \times 0.6) = 0.7$$

Therefore, the covariance between X and Y is:

$$\begin{aligned} \operatorname{cov}(X, Y) &= (0 - 0.7)(0 - 0.7) \times 0.2 \\ &+ (1 - 0.7)(0 - 0.7) \times 0.1 \\ &+ (0 - 0.7)(1 - 0.7) \times 0.1 \\ &+ (1 - 0.7)(1 - 0.7) \times 0.6 \\ &= 0.11 \end{aligned}$$