

Probability Distribution

1

A probability distribution shows the probabilities of the possible outcomes $\sum P(X = x) = 1$

x	0	1	2
P(X = x)	0.5	3y	2y

Calculate the value of y $\sum P(X = x) = 1$

$$0.5 + 3y + 2y = 1 \quad 5y = 0.5 \quad y = 0.1$$

Calculate E(X)

$$0 \times 0.5 + 1 \times 0.3 + 2 \times 0.2 = 0.7$$

Hypothesis Testing

1

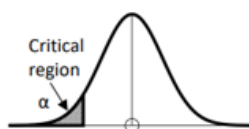
Normal Distribution: testing for changes in the mean

- Set up the hypothesis

$$H_0: \mu = \mu_0$$

$H_1: \mu < \mu_0$ one sided test mean has decreased
 $H_1: \mu \neq \mu_0$ two sided test $H_1: \mu \neq \mu_0$ two sided test
 $H_1: \mu > \mu_0$ one sided test mean has increased

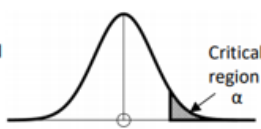
$H_1: \mu < \mu_0$ one sided test
mean has decreased



$H_1: \mu \neq \mu_0$ two sided test
mean has changed



$H_1: \mu > \mu_0$ one sided test
mean has increased



- Investigate the value you are working with by either
Method 1: See if your observed value lies in the critical region – reject H_0 if it does
or
Method 2: Calculate the probability (p value) of getting the observed value (or greater if testing for increase) if H_0 is true and reject H_0 if the probability is less than the significance level
- Write a conclusion DO NOT just state 'Accept/Reject H_0 '
Accept H_0

2

CORRELATION COEFFICIENT: testing to investigate whether the linear relationship represented by r (calculated from the sample) is strong enough to use the model the relationship in the population

r = correlation coefficient calculated using sample size n

ρ = unknown population correlation coefficient

The test checks whether ρ is 'close to 0' or 'significantly different from 0'

$H_0: \rho = 0$ there is no correlation between the 2 variables

$H_1: \rho \neq 0$ the two variables are correlated (2 tailed test)

$H_1: \rho > 0$ the two variables are positively correlated (one tailed test)

$H_1: \rho < 0$ the two variables are negatively correlated (one tailed test)



How do we use Knowledge Organisers in Mathematics?

How can you use knowledge organisers at home to help us?

- **Retrieval Practice:** Read over a section of the knowledge organiser, cover it up and then write down everything you can remember. Repeat until you remember everything.
- **Flash Cards:** Using the Knowledge Organisers to help on one side of a piece of paper write a question, on the other side write an answer. Ask someone to test you by asking a question and seeing if you know the answer.
- **Mind Maps:** Turn the information from the knowledge organiser into a mind map. Then reread the mind map and on a piece of paper half the size try and recreate the key phrases of the mind map from memory.
- **Sketch it:** Draw an image to represent each fact; this can be done in isolation or as part of the mind map/flash card.
- **Teach it:** Teach someone the information on your knowledge organiser, let them ask you questions and see if you know the answers.

How will we use knowledge organisers in Mathematics?

Knowledge organisers will be used before I complete a Learning Check or Common Assessment. I will spend part of the lesson looking over each of the key topics of the half term before completing the Learning Check or Common Assessment.

I will also use these at home to complete my own independent learning and revision of these key topics.

GLUE HERE