Object	test1 ordinal	test3
1.	A excellent	45
2.	B fair	22
3.	C good	64
4.	A excellent	28

ordinal value	rank
excellent	3
good	2
fair	1

Object	test1	test3	test3
1	A	3	45
3	C	2	64

distance between 1, 3

A, C = 1

test 3: 2 = |3 − 2| = 1

test 3: 45, 64 = |45 − 64| = 19

Manhattan distance

D = 1 + 1 + 19 = 21

Euclidean distance

$D = \sqrt{(1)^2 + (1)^2 + (19)^2}$

$D = \sqrt{1 + 1 + 361} = \sqrt{363} = 19.05$

	passed	failed	total
attended	$\frac{31 \times 33}{54} = 18.94$	$\frac{31 \times 21}{54} = 12.06$	31
skipped	$\frac{23 \times 33}{54} = 14.06$	$\frac{23 \times 21}{54} = 8.94$	23
total	33	21	54

computing chi square statistic $x^2 = \sum \frac{(O-E)^2}{E}$

1. $\frac{(25-18.94)^2}{18.94} = \frac{6.06^2}{18.94} = \frac{36.72}{18.94} = 1.94$

2. $\frac{(6-12.06)^2}{12.06} = \frac{(-6.06)^2}{12.06} = \frac{36.72}{12.06} = 3.04$

3. $\frac{(8-14.06)^2}{14.06} = \frac{(-6.06)^2}{14.06} = \frac{36.72}{14.06} = 2.61$

4. $\frac{(15-8.94)^2}{8.94} = \frac{(6.06)^2}{8.94} = \frac{36.72}{8.94} = 4.11$

students who attend are more likely to pass

$x^2 = 1.94 + 3.04 + 2.61 + 4.11 = 11.7$

df = (2 − 1) × (2 − 1) = 1

$\alpha = 0.05$, df = 1 is 3.841

11.7 > 3.841