UNIVERSITI TEKNOLOGI MALAYSIA

SECI2143 – SECTION 01

PROBABILITY & STATISTICAL DATA ANALYSIS

ASSIGNMENT 1

CHAPTER 1 & CHAPTER 2

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Question 1

a) **Qualitative Data**

- Customer name
- Age group (Child, Teen, Adult, Senior)
- Favourite pizza topping (Pepperoni, Veggie, Cheese)

Quantitative Data

- Rating of services (1–5 stars)
- Number of slices ordered
- Total bill amount (RM)
- Time spent eating (Minutes)

b) **Discrete Data**

- Rating of services (1–5 stars) - whole number values (eg. 3 stars, 5 stars)
- Number of slices ordered - can be counted (e.g. 4 slices, 6 slices)

Continuous Data

- Total bill amount (RM) - can be any value (e.g. RM 15.50, RM 139.45)
- Time spent eating (minutes) - can be measure (e.g. 15 minutes, 1 houre 35 minutes)

c)

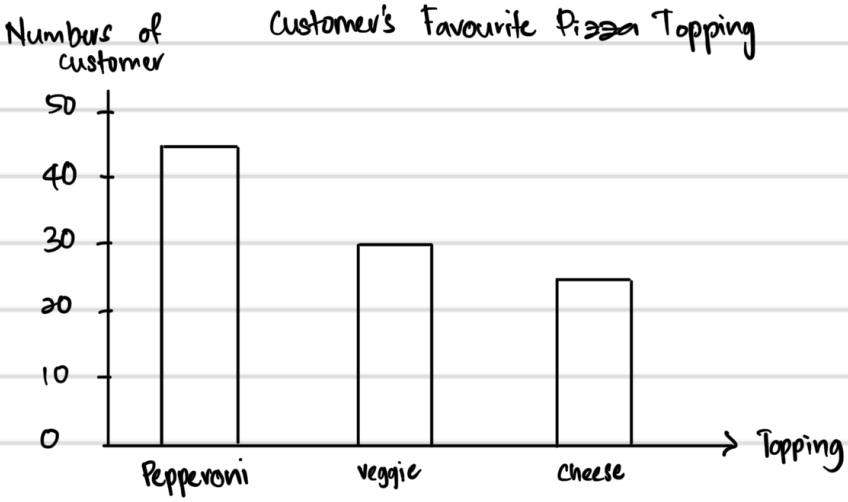
Level of measurement	Data	Justifications
Nominal	• Customer name	• Labels to identify customer (e.g. Ford Cash)
	• Favourite pizza topping	• No inherent ranking/order (e.g. Cheese only)
Ordinal	• Age group	• Ordered categories but the differences are not precisely measurable (Child < Teen < Adult < Senior)
	• Rating of services	• Ranked (1–5 stars) but interval are not equal
Ratio	• Number of slices ordered	• Has meaningful zero value (e.g. 0 slices = none)
	• Total bill amount (RM)	• Can compare amount (e.g. RM 20 is twice as RM 10)
	• Time spent eating (minutes)	• measurable with true zero (e.g. 0 minutes)

Question 2

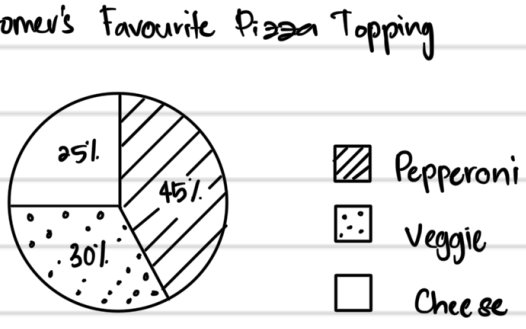
a)

Topping	Frequency	Relative Frequency	Percentage
Pepperoni	45	0.45	45%
Veggie	30	0.30	30%
Cheese	25	0.25	25%
Total	100	1.00	100%

b) Bar chart



Pie chart



c) The slices in pie chart will become smaller and less distinguishable, make it cluttered and hard to interpret.

Question 3

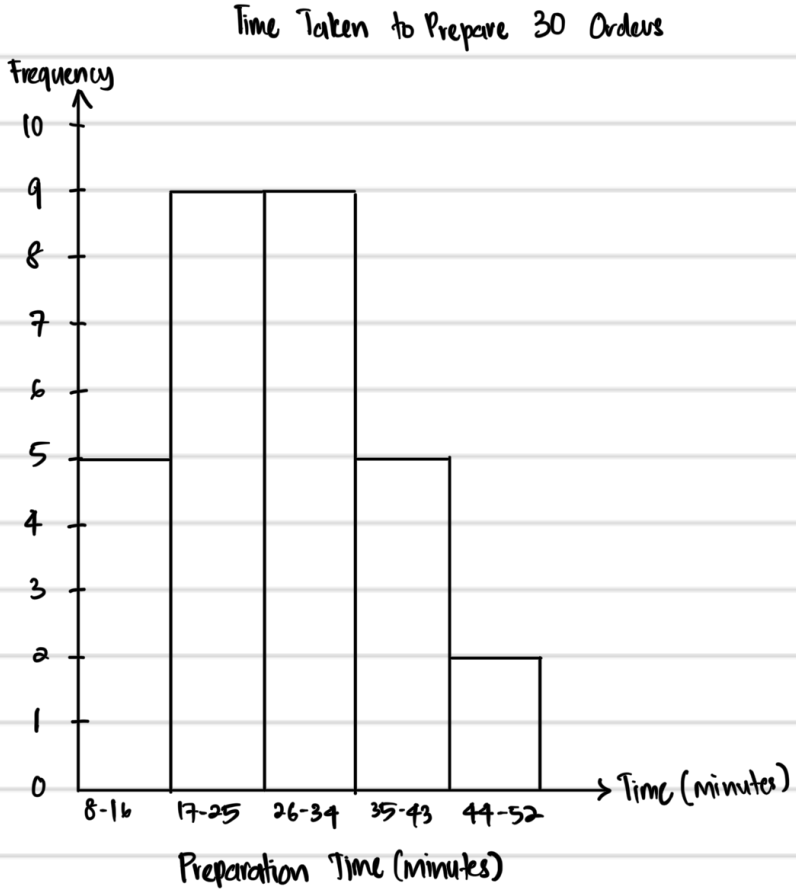
a) Min = 8

Max = 50

Range = 50 - 8 = 42

Cell interval = 42/5 = 8.4 @ 9

Bin range	Tabulation	Frequency
8 - 16	𝍸	5
17 - 25	𝍸 IIII	9
26 - 34	𝍸 IIII	9
35 - 43	𝍸	5
44 - 52	II	2
Total		30



b) 8, 10, 12, 15, 16, 18, 19, 20, 21, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 38, 40, 42, 45, 50

i) Minimum = 8 minutes ✱

ii) First Quartile (Q1)

$N = 30$, $P = 25$; $i = \frac{25 \times 30}{100} = 7.5$, $k = 8$

$Y[8] = 20$; $Q1 = 20$ minutes #

iii) Median = $\frac{26 + 27}{2} = 26.5$ minutes ✱

iv) Third Quartile (Q3)

$N = 30$, $P = 75$; $i = \frac{75 \times 30}{100} = 22.5$, $k = 23$

$Y[23] = 34$; $Q3 = 34$ minutes

v) Maximum = 50 minutes ✱

c) IQR = 34 − 20 = 14 minutes #

d) Lower bound = 20 − (1.5 × 14) = −1

Upper bound = 34 + (1.5 × 14) = 55

∴ No outliers since all values (8 − 50) are within −1 − 55 #

e)