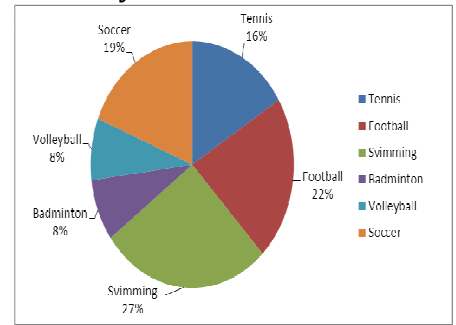


Answer all questions on a blank sheet of paper or graph paper. Full marks will only be awarded for full work – **show all your calculations!** Write your name on all pages.

[4]

1) The circle graph shows the favourite sport of grade 12 students in a high school.



a. What is the central angle of the sector representing students who prefer root beer?

$$10\% \text{ of } 360^\circ = 0.10 \times 360^\circ = 36^\circ$$

Therefore, the central angle of the sector representing students who prefer root beer is  $36^\circ$ .

b. If the school has 1375 grade 12 students in all, how many students prefer ginger ale or cola?

$$12\% \text{ of } 1375 + 42\% \text{ of } 1375 = 54\% \text{ of } 1375 = 0.54 \times 1375 = 742.5$$

Therefore, 742 students prefer ginger ale or cola (743 students is an acceptable answer as well).

[1]

2) In a stem-and-leaf plot, the leaves represent the

- a. frequency of a data category
- b. final digits of the values in a data category**
- c. initial digits of a data category
- d. average of the data values

3) A histogram is most appropriate for describing

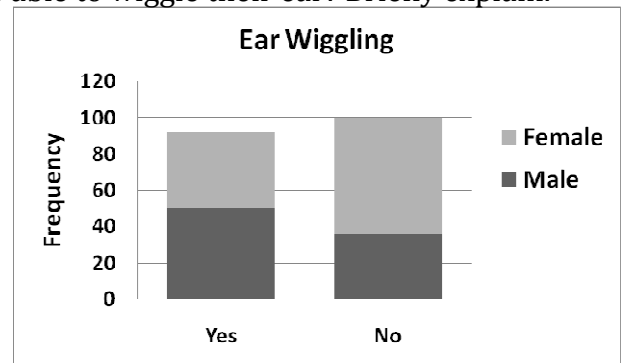
[1]

- a. the frequency distribution of discrete data
- b. the frequency distribution of continuous data**
- c. changes of data over time
- d. the median of a set of data

[3]

4) Students in Mrs. Pi's math class were asked if they can wiggle their ears. According to the results shown to the right, are males or females more likely to be able to wiggle their ear? Briefly explain.

	Ear Wiggling		Total
	Yes	No	
M	50	40	90
F	40	60	100
Total	90	100	190



$$\frac{50}{90} \times 100\% \approx 55.6\% \text{ Of males can wiggle their ears.}$$

$$\frac{40}{100} \times 100\% = 40\% \text{ Of females can wiggle their ears.}$$

OR

No, because 50 males can wiggle their ears while only 40 females can wiggle their ears. Therefore, males are more likely to wiggle their ears than females.

[6]

5) Function is 45 years old and 181cm tall. For the last 8 years, his doctor has charted Mr. Function's mass and related it to BMI (Body Mass Index). A BMI between 20 and 26 is considered healthy. The data is shown in the following table:

Mass (kg)	89	66	79	72	82	85	88	62
BMI	28	20	23	22	24	26	27	19

a. Calculate  $S_1$ ,  $S_2$ , and  $S_3$ . Do not construct a median-median line for the data.

b. Calculate the slope of the median-median line. What does the slope represent?

Solution: a. Rearrange the data first.

62	66	72	79	82	85	88	89
19	20	22	23	24	26	27	28

Mass (kg)	BMI
62	19
66	20
72	22
79	23
82	24
85	26
88	27
89	28

Red – Interval I  
 Blue – Interval II  
 Black – Interval III  
 $S_1(66, 20)$   
 $S_2(80.5, 23.5)$   
 $S_3(88, 27)$

b. Use  $S_1(66, 20)$  and  $S_3(88, 27)$  to calculate the slope,  $m$ .

$$m = \frac{27 - 20}{88 - 66} = \frac{7}{22}$$

The slope represents the increase of the BMI index as weight is gained. For every 22 kg gained, Mr. Function's BMI index increases by 7.