18-25 JUNE 2024

ST ALBANS MUSIC FESTIVAL

Eminem Guns n Roses Coldplay The Kid Laroi Special Guest Performer: Ed Sheeran - One Night Only

TICKET INFORMATION

\$175/tickets (adults and children) 25% discount on the first 100 tickets sold 15% discount if you buy more than 1 ticket

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Yr10 Applied Mathematics Project – Term 2, 2024			
Name:		Class:	
= 1 st Level of Complexity	= 2^{nd} Level of Complexity	= 3 rd Level of Complexity	

Part 1 – ORGANISING THE FESTIVAL

Organisers are currently preparing for next year's Festival. They look at data from this year's festival to see what items they should sell again next year.

A survey was sent out to people to went to the festival and 96 of them responded. They were asked what items they purchased at the festival.

• QUESTION 1 Complete the table below displaying the fraction, decimal and percent of people who purchased each item.

ITEM	FRACTION	DECIMAL	PERCENT
Pizza	$\frac{33}{96} = \frac{11}{32}$		
Burger		0.53	
Dumplings		0.03	
Fairy Floss			8%
Waffles			29%
Coke	$\frac{20}{96}$		
Water	51 96		

QUESTION 2 What was the best-selling item at last year's festival?

QUESTION 3 Based on sales from this year's festival, suggest which items should and shouldn't be ordered next year? Explain your answers.

QUESTION 4 For next year's festival, organisers decide to order water and coke in a ratio of 5 to 1. If 250 bottles of coke have been ordered, how many bottles of water have been ordered? Show your working out.

Festival organisers also have to order merchandise to sell at next year's festival. They look at information on what merchandise sold last year. Last year **1000 pieces of each of the following items were ordered.** The table below shows the proportion of each item that was sold.

ITEM	NUMBER OF AVAILABLE ITEMS SOLD
Hoodie	5 7
Beanie	1.0
Сар	29
	30
Water Bottle	0.46
Poster	22%

QUESTION 5 Based on the information above, order items from the most sold item to the least sold item.

MOST SOLD ITEM	1.
	2.
	3.
	4.
LEAST SOLD ITEM	5.

QUESTION 6 Based on the number of each item that was sold last year, suggest how many of each item sold be ordered for next year's festival. The same amount of tickets will be available as last year. Explain your thinking.

Item	Number to be	Explanation
	purchased	
Hoodie		
Beanie		
Сар		
Water Bottle		
Poster		

QUESTION 7	You are lucky enough to be	QUESTION 8	Unfortunately, you and
one of the first 1	00 people to buy a ticket.	your friend miss	out on the first 100 tickets.
How much will y	ou save after the 25%	You decide to pu	It your money together to
discount is applied?		get the discount of buying more than 1	
		ticket at a time.	How much will you each
		pay for your tick	et?

QUESTION 9 The table below shows the length (in hours) of each act's performance throughout the festival.

Main Stage	Eminem	Guns n Roses	Coldplay	The Kid Laroi	Ed Sheeran
Act					
Number of	20	31	6	9	2
Hours	20	51	U		2
Performing					

Given that you wander over to the main stage once at random during the Music Festival, calculate the probability of each act playing as you arrive. **All answers should be presented as a fraction.** Simplify all answers where possible.

Eminem	Guns n Roses	Coldplay	The Kid Laroi	Ed Sheeran

QUESTION 10 Use the probability scale below to predict the likelihood of the following event occurring while you are at the music festival. Record your results in the table below.



QUESTION 11 You are planning to go to all 6 days of the festival.

You decide to **pay extra for a VIP access-all-areas ticket for one of these days**. The days are allocated randomly.

You presume there is an equal probability of being given any of the days and decide to make a probability table showing different possible outcomes. Complete the table below.

Saturday	
Any Weekday	
Weekend	

This table below shows how a randomly selected 60 of the VIP tickets were allocated.

DATE	FREQUENCY
Thursday 5 th January	9
Friday 6 th January	11
Saturday 7 th January	20
Sunday 8 th January	2
Monday 9 th January	8
Tuesday 10 th January	10

What observations do you make about the VIP tickets available for each day of the festival?

- The day before the festival begins, organisers announce a surprise set.
- Two of the acts will go on stage and perform together.
- List all the possible combinations of performers for the double act.

The double act consists of two songs, one from each act. The duration of the double act is determined by the length of both acts' songs.

e.g., If Guns n Roses' song is 4 minutes and Coldplay's song is 13 minutes, the double act lasts 17 minutes.

This table below
shows the length of
each act's song.

ACT	DURATION OF SONG
Eminem	6
Guns n Roses	4
Coldplay	13
The Kid Laroi	8

QUESTION 13 Create a sample space showing all the possibilities of double act durations.

QUESTION 14 Your Friend says that the double act is most likely to be between 10 and 20 minutes. Are they correct? Explain your answer (

Part 3 – AFTER THE FESTIVAL

At the end of the festival, a group festival goers were surveyed about their experience at the festival.

STEM | LEAF key: 5|4=54 This Stem and Leaf Plot 1 2334446779 2 00134445888899 below shows the ages of the festival goers who 3 11356668999 were surveyed. 4 4 5 5 6 8 8 8 45779 5 114 6 7 03889 8 8

QUESTION 15 What age was the oldest person who was surveyed?

QUESTION 16 State 2 other things that you notice from this data.

1 –

2 -

USE THIS INFORMATION TO ANSWER QUESTIONS 13 & 14

The group of festival goers surveyed, were asked if they watched Ed Sheeran e questions 17 perform.

Some of the festival goers were VIP Ticket holders and some of them were Standard Ticket holders.

nplet 20		VIP Ticket Holder	Standard Ticket	Total
Use this table to cor to			Holder	
	Watched Ed Sheeran	7	16	23
	Did not watch Ed	13	19	32
	Sheeran			
	Total	20	35	

QUESTION 17 What percent of VIP Ticket holders watched Ed Sheeran perform?

QUESTION 18 If a person was selected at random, what is the probability they were a VIP Ticket holder?



QUESTION 20 Of the people surveyed, what proportion were Standard Ticket holders? Display your answer as a decimal, rounded to 3 decimal places.