Exposed to Risk Past Paper Questions

January 2021 Q4

The guard, sometimes called the train manager, on a passenger train travelling from London to Manchester has two tasks. The first is to count the total number of passengers who get on and off the train at each station, and the second is to issue penalty fines of £50 to each passenger without a valid ticket.

The table below gives the time the train stops at each station and the number of passengers counted.

Time	Station	Passengers getting on	Passengers getting off
09:20	London	139	0
09:50	Milton Keynes	33	29
10:48	Stoke-on-Trent	17	3
11:16	Stockport	7	2
11:27	Manchester	0	162

(a) On arrival at Manchester the guard has collected £200 in penalty fines. Calculate the rate of issuing penalties per person hour on this train journey. [12]
(b) What assumptions have you made in this calculation? [3]

May 2019 Q5

To reach the top of a certain mountain a group of 50 tourists need to take a bus and then transfer to a ski-lift for the rest of the journey. On arrival at the ski-lift centre, people wait in a line for the next chair up the mountain. Each chair carries one person and ski-lift chairs depart continuously at a rate of one chair every 12 seconds. Whilst people wait in line, they are offered a hot drink. If 28 of the tourists choose to have a hot drink, calculate the rate of accepting drinks per person-hour stating any assumptions you make. [8]

IFoA past paper April 2015 Q5

(i) State the principle of correspondence as it applies to death rates. [1]

A nightclub opens at 10.00 p.m. and closes at 2.00 a.m. It admits only people aged over 21 years on the production of an identity card giving date of birth.
The table below shows the number of people entering in various intervals between 10.00 p.m. and 2.00 a.m. on 30 June 2013. No-one was admitted after 1.00 a.m., and you may assume that all those who enter the premises stay until 2.00 a.m.

Year of birth	*10.00–11.30 pm*	*11.30–12.00 pm*	*12.00 –1.00 am*
1989	100	300	200
1990	200	400	350
1991	150	400	300
1992	100	250	200

During the period of opening, 40 people aged 22 last birthday required medical attention for heat exhaustion.

(ii) Calculate the rate per person-hour at which those attending the night club aged 22 last birthday required medical attention for heat exhaustion, stating any assumptions you make. [6]