

Problem 2.4 – Intersecting Linear Models



A resort area has two main attractions—the Big Fun Amusement Park and the Get Reel movie multiplex. The number of visitors to each attraction on a given day is related to the probability of rain.



This table gives the attendance and rain-forecast data for several Saturdays.

Saturday Resort Attendance

Probability of Rain	0	20	40	60	80	100
Big Fun Attendance	1000	850	700	550	400	250
Get Reel Attendance	300	340	380	420	460	500

The same company owns both businesses. The managers want to be able to predict Saturday attendance at each attraction so they can assign their workers efficiently.

A) Use the table to find a linear equation relating the probability of rain (p) to:

1) Saturday attendance (A_B) at Big Fun.

2) Saturday attendance (A_G) at Get Reel.

B) Use your calculations from Question A to answer these questions.
Show your calculations and **explain** your reasoning.

1) Suppose there is a **50% probability** of rain this Saturday. What is the expected attendance at each attraction?

Show your work using the equation!

a) Big Fun - _____

b) Get Reel - _____

2) Suppose **460 people** visited Big Fun on Saturday. Estimate the probability of rain on that day.

3) What probability of rain would give a predicted Saturday attendance of at least **360 people** at Get Reel?

4) Is there a probability of rain for which the predicted attendance is the same at both attractions? **Explain.**