Name: _____ 611 Linear Models

A resort area has two main attractions—the Big Fun amusement park and the Get Reel movie multiplex. The number of visitors on a given day is related to the probability of rain. This table gives attendance and rain-forecast data for several Saturdays.

Saturday Resort Attendance

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250
Get Reel Attendance	300	340	380	420	460	500

An equation that describes the attendance(a) of Big Fun given the probability of rain (p) is $a = 1000 - 7.5p$

1. Explain what each part of the equation represents. Be very specific.

1000 → attendance no rain
-7.5 people 1% ↑ chance rain

2. Write an equation that can be used to predict the attendance at Get Reel. Don't forget to identify your variables.

$a = 300 + 2x$

x 1% ↑ prop
a attend

3. Suppose there is a 50% probability of rain this Saturday. What is the expected attendance at each attraction? Use your equations.

$1000 - 7.5(50) = 625$

$300 + 2(50) = 400$

625 people at Big Fun
400 people at Get Reel

4. Suppose 475 people visited Big Fun one Saturday. Estimate the probability of rain on that day.

$475 = 1000 - 7.5p$
$-525 = -7.5p$
$70\% \approx p$

70% chance of rain

5. What is the probability of rain for which the predicted attendance is the same for both attractions? Show your work. Make certain that your answer makes sense.

$300 + 2x = 1000 - 7.5x$
$9.5x = 700$
$x \approx 75\%$ chance ≈ 437 people

6. For what probability of rain is attendance for Big Fun likely to be greater than Get Reel? Explain.

75% or less

7. For what probability of rain is attendance for Big Fun likely to be less than at Get Reel? Explain.

> 75%