Warm Up

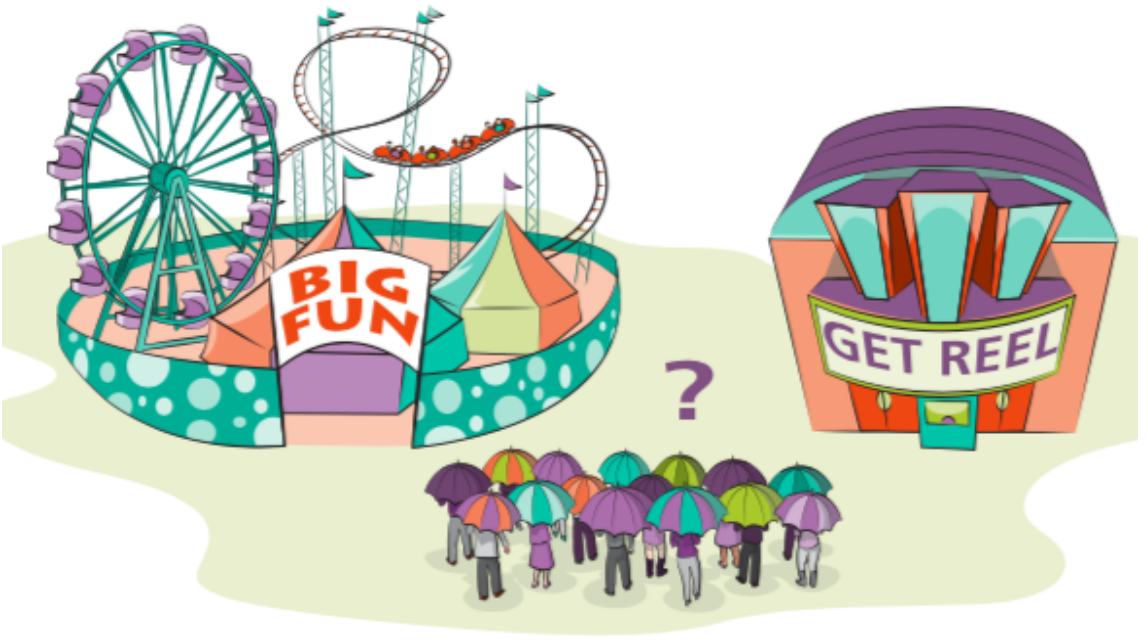
10/10

Upload pictures of your Big Race Finals work from yesterday. This should include the large graph and questions answered.

2.5 Amusement Park or Movies

Intersecting Linear Models

A company owns two attractions in a resort area—the Big Fun amusement park and the Get Reel movie multiplex. At each attraction, the number of visitors on a given day is related to the probability of rain. The company wants to be able to predict Saturday attendance at each attraction in order to assign its workers efficiently.



This table gives attendance and rain-forecast data for several recent 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

- What equations model the relationships of Big Fun and Get Reel attendance to the probability of rain?
- For what probability of rain will one attraction be more popular than the other?

Problem 2.5

A Use the table to find linear functions relating the probability of rain p to the following quantities.

1. Saturday attendance F at Big Fun
2. Saturday attendance R at Get Reel

Saturday Resort Attendance

A

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

This table is really 2 tables combined to make 1.

1.

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250

2.

Probability of Rain (%)	0	20	40	60	80	100
Get Reel Attendance	300	340	380	420	460	500

Problem 2.5

A Use the table to find linear functions relating the probability of rain p to the following quantities.

1. Saturday attendance F at Big Fun

Saturday Resort Attendance

Probability of Rain (%)	0	20	40	60	80	100
Big Fun Attendance	1,000	850	700	550	400	250

+20 +20 +20 +20 +20

-150 -150 -150 -150 -150

P

A

$\frac{\Delta y}{\Delta x} = \frac{-150}{20} = -7.5$

$A = -7.5p + 1000$

probability of rain

When there is 0% chance of rain 1000 people will attend.

# of people attending for probability of rain = 'p'

OR

for 'p' probability of rain

7.5 people do not attend for every 1% increase in probability of rain.

Problem 2.5

A Use the table to find linear functions relating the probability of rain p to the following quantities.

2. Saturday attendance R at Get Reel

Saturday Resort Attendance

Probability of Rain (%)	0	20	40	60	80	100
Get Reel Attendance	300	340	380	420	460	500

+20 +20 +20 +20 +20

+40 +40 +40 +40 +40

$\frac{\Delta y}{\Delta x} = \frac{40}{20} = 2$

probability of rain

$A = 2p + 300$

Attendance for 'p' probability of rain

For every 1% chance of rain increase, 2 more people will go

300 people attend when 0% probability of rain.

B Use your functions 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?
2. Suppose 475 people visited Big Fun one Saturday. Estimate the probability of rain on that day.
3. What probability of rain gives 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?
5. For what probability of rain is attendance at Big Fun likely to be greater than at Get Reel?
6. For what probability of rain is attendance at Big Fun likely to be less than at Get Reel?

Big Fun Attendance

#A $A = -7.5p + 1000$

Get Real Attnd.

$A = 2p + 300$

Attendance Big Fun $=$ Attendance Get Real

$-7.5p + 1000 = 2p + 300$

Now, solve for p

Homework

Finish classwork