

5.3 Conditional Probabilities

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Statistics AP-Thompson-Year-12462 (66479) > Activities and Due Dates > 5.3 Conditional probability and independence

1 of 19 Questions

Assignment Score: 98.2%

Resources

Give Up?

Solution

Next Question

Question 1 of 19

100% Correct

Question 2 of 19

95% Correct

Question 3 of 19

95% Correct

Question 4 of 19

100% Correct

Question 5 of 19

100% Correct

Question 6 of 19

100% Correct

Question 7 of 19

100% Correct

Question 8 of 19

100% Correct

Question 9 of 19

100% Correct

A random sample of 415 children from England and the United States who completed a survey in a recent year was selected. Each student's country of origin was recorded along with which superpower they would most like to have: the ability to fly, ability to freeze time, invisibility, superstrength, or telepathy (ability to read minds). The data are summarized in the two-way table. Suppose we randomly select one of these students. Define events E: England, T: telepathy, and S: superstrength.

		Country		
		England	U.S.	Total
Superpower	Fly	54	45	99
	Freeze time	52	44	96
	Invisibility	30	37	67
	Superstrength	20	23	43
	Telepathy	44	66	110
	Total	200	215	415

Find $P(T | E)$. Interpret this value in context.

- ☐ $P(T | E) = \frac{44}{110} = 0.40$. Given that the student selected the superpower of telepathy, there is a 0.40 probability that they are from England.
- ☐ $P(T | E) = \frac{44}{415} = 0.106$. Given that the student is from England, there is a 0.106 probability that they selected the superpower of telepathy.
- ☐ $P(T | E) = \frac{110+200-44}{415} = 0.641$. Given that the student is from England, there is a 0.641 probability that they selected the superpower of telepathy.
- ☒ $P(T | E) = \frac{44}{200} = 0.22$. Given that the student is from England, there is a 0.22 probability that they selected the superpower of telepathy.
- ☐ $P(T | E) = \frac{44}{200} = 0.22$. Given that the student selected the superpower of telepathy, there is a 0.22 probability that they are from England.