



Math • AP®/College Statistics • Probability
• Conditional probability

Conditional probability using two-way tables

AP.STATS: VAR-4 (EU), VAR-4.D (LO), VAR-4.D.1 (EK)

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Researchers surveyed 100 students on which superpower they would most like to have. This two-way table displays data for the sample of students who responded to the survey:

Superpower	Male	Female	TOTAL
Fly	26	12	38
Invisibility	12	32	44
Other	10	8	18
TOTAL	48	52	100

A student will be chosen at random.

PROBLEM 1

Find the probability that the student chose to fly as their superpower.

$$P(\text{fly}) = \boxed{38/100}$$

[Check](#)[Explain](#)

PROBLEM 2

Find the probability that the student was male.

$$P(\text{male}) = \frac{48}{100}$$

[Check](#)[Explain](#)

PROBLEM 3

Find the probability that the student was male, given the student chose to fly as their superpower.

$$P(\text{male} \mid \text{fly}) = \frac{26}{38}$$

[Check](#)[Explain](#)

PROBLEM 4

Find the probability that the student chose to fly, given the student was male.

$$P(\text{fly} \mid \text{male}) = \frac{26}{48}$$

[Check](#)[Explain](#)

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Conditional probability
Conditional probability



Conditional probability
and independence



Conditional probability
with Bayes' Theorem



Practice: Calculating
conditional probability



Conditional probability
using two-way tables



Conditional probability
and independence



Conditional probability
tree diagram example



Tree diagrams and
conditional probability

PROBLEM 5

Is this statement about conditional probability true or false?

"In general, $P(A | B) = P(B | A)$. You can reverse the order and the probability is the same either way."

Choose 1 answer:

☐ True

☒ False

CORRECT (SELECTED)

Check

Explain

PROBLEM 6

Let I represent the event where the student chose invisibility as their superpower, and F represent the event where the student was female.

Interpret the meaning of $P(I | F) \approx 0.62$.

Choose 1 answer:

☒ About 62% of females chose invisibility as their superpower.

CORRECT (SELECTED)

B

About 62% of people who chose invisibility as their superpower were female.

[Check](#)
[Explain](#)

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Mike Wallace 5 years ago

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How did you get your answer that 62% of females chose invisibility as their superpower. I saw up above, it was 44.

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fabvene 5 years ago


[mo...](#)

Out of 52 Females there are 32 who chose Invisibility, therefore $32/52 = 0.61538...$ or (about) 62%.

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