

## 65. How to calculate probability from a two way table



### Scenario Questions:

1. The two way table compares the methods of travel to work from two different cities.

- What is the probability that a participant was from London?
- What is the probability a participant from Birmingham took the train?

		Commuting method			
		Car	Bus	Train	Total
City	Birmingham	38	20	12	70
	London	11	26	73	110
	Total	49	46	85	180

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### Scenario Questions:

2. The two-way table shows the results from a test taken at a college by students in either year 1 and year 2 of their course.

- What is the probability that someone in year 1 failed?
- What is the probability that of the people who passed they were in their first year?

		Exam		
		Pass	Fail	Total
College	Year 1	4	5	9
	Year 2	5	6	11
	Total	9	11	20

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### Scenario Questions:

3. The two way table shows the results of students who took both maths and English exams.

- a. What is the probability someone failed both exams?
- b. What is the probability that someone who passed English failed Maths?

		Maths		
		Pass	Fail	Total
English	Pass	17	12	29
	Fail	3	8	11
	Total	20	20	40

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### Scenario Questions:

4. The two way table compares forms of exercise used by people in their 20's compared to people in their 30's.

- What is the probability that a random participant was under 30 and liked to cycle?
- What is the probability a participant in their 30's didn't like to cycle?

		Exercise			
		Run	Swim	Cycle	Total
Age	18 - 30	31	8	11	50
	30 - 40	18	28	4	50
	Total	49	36	15	100

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### Scenario Questions:

5. Barry made 60 predictions on if football team was going to win or lose. The two way table shows the outcomes of those predictions.

- How many games did Barry predict the football team would lose?
- What is the probability that a game Barry predicted as a win would turn out to be a loss?

		Result		
		Win	Lose	Total
Prediction	Win	28	13	41
	Lose	12	7	19
	Total	40	20	60

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### Scenario Questions:

6. A poll was conducted at a local park amongst adults and children as to if they preferred cats or dogs.

- a. What is the probability someone chosen at random was an adult that preferred dogs?
- b. What is the probability that a child preferred cats?

		Preference		
		Cats	Dogs	Total
Age	Adult	18	6	24
	Child	17	39	56
	Total	35	45	80

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### Scenario Questions:

7. The two way table shows the results of a chess tournament

- A. What is the probability that a participant chosen at random was under 60 and lost?
- B. What is the probability a participant who lost was under 60?

		Score			
		Win	Lose	Draw	Total
Age	Under 60	3	10	9	22
	Over 60	23	16	19	58
	Total	26	26	28	80

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### Scenario Questions:

8. The two-way table shows the holiday destinations of a group adults and whether or not they went on holiday with children.

- What is the probability someone chosen at random had holiday at home with no children?
- What is the probability that someone went abroad?

		Holiday type		
		Home	Abroad	Total
Children	Yes	8	12	20
	No	9	11	20
	Total	17	23	40



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### Scenario Questions:

9. The two way table shows how many hours of driving lessons a person has had and whether or not they passed their driving test

- What is the probability someone chosen at random passed with over 20 hours of lessons?
- What is the probability that some one from the table passed?

		Driving test		
		Pass	Fail	Total
Hours of lessons	Under 20	17	12	29
	Over 20	3	8	11
	Total	20	20	40

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## Scenario Questions: **Answers**

1. The two way table compares the methods of travel to work from two different cities.

- a. What is the probability that a participant was from London?
- b. What is the probability a participant from Birmingham took the train?

**1. a.  $110/180$ . b.  $12/70$ .**

2. The two-way table shows the results from a test taken at a college by students in either year 1 and year 2 of their course.

- a. What is the probability that someone in year 1 failed?
- b. What is the probability that of the people who passed they were in their first year?

**2. a.  $5/9$ . b.  $4/9$**

3. The two way table shows the results of students who took both maths and English exams.

- a. What is the probability someone failed both exams?
- b. What is the probability that someone who passed English failed Maths?

**3. a.  $8/40$ . b.  $12/29$**

		Commuting method			
		Car	Bus	Train	Total
City	Birmingham	38	20	12	70
	London	11	26	73	110
	Total	49	46	85	180

		Exam Result		
		Pass	Fail	Total
College Group	Year 1	4	5	9
	Year 2	5	6	11
	Total	9	11	20

		Maths		
		Pass	Fail	Total
English	Pass	17	12	29
	Fail	3	8	11
	Total	20	20	40

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## Scenario Questions: **Answers**

4. The two way table compares forms of exercise used by people in their 20's compared to people in their 30's.

- a. What is the probability that a participant chosen at random was under 30 and liked to cycle?
- b. What is the probability a participant in their 30's didn't like to cycle?

**4. a.  $\frac{11}{100}$ . b.  $\frac{46}{50}$ .**

5. Barry made 60 predictions on if football team was going to win or lose. The two way table shows the outcomes of those predictions.

- a. How many games did Barry predict the football team would lose?
- b. What is the probability that a game Barry predicted as a win would turn out to be a loss?

**5. a. 19 games. b.  $\frac{13}{41}$**

6. A poll was conducted at a local park amongst adults and children as to if they preferred cats or dogs.

- a. What is the probability someone chosen at random was an adult that preferred dogs?
- b. What is the probability that a child preferred cats?

**6. a.  $\frac{6}{80}$ . b.  $\frac{17}{56}$ .**

		Exercise			
		Run	Swim	Cycle	Total
Age	18 - 30	31	8	11	50
	30 - 40	18	28	4	50
	Total	49	36	15	100

		Result		
		Win	Lose	Total
Prediction	Win	28	13	41
	Lose	12	7	19
	Total	40	20	60

		Preference		
		Cats	Dogs	Total
Age	Adult	18	6	24
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### Scenario Questions: **Answers**

7. The two way table shows the results of a chess tournament

- a. What is the probability that a participant chosen at random was under 60 and lost?
- b. What is the probability a participant who lost was under 60?

**7. a. 10/80. b. 10/26.**

8. The two-way table shows the holiday destinations of a group adults and whether or not they went on holiday with children.

- a. What is the probability that someone chosen at random had a holiday at home with no children?
- b. What is the probability that someone went abroad?

**8. a. 9/40. b. 23/40**

9. The two way table shows how many hours of driving lessons a person has had and whether or not they passed their driving test

- a. What is the probability someone chosen at random passed their test and had over 20 hours of lessons?
- b. What is the probability that some one from the table passed?

**9. a. 3/40. b. 20/40**

		Score			
		Win	Lose	Draw	Total
Age	Under 60	3	10	9	22
	Over 60	23	16	19	58
	Total	26	26	28	80

		Holiday type		
		Home	Abroad	Total
Children	Yes	8	12	20
	No	9	11	20
	Total	17	23	40

		Driving test		
		Pass	Fail	Total
Hours of lessons	Under 20	17	12	29
	Over 20	3	8	11
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