

# Probability Jeopardy

Basic Probability	Binomial Probability	Joint Probability	Conditional Probability	More Probability	Hodge Podge
100	100	100	100	100	100
200	200	200	200	200	200
300	300	300	300	300	300
400	400	400	400	400	400
500	500	500	500	500	500
600	600	600	600	600	600

## Basic Probability - 100

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling a 5 or 6.

Answer

## Basic Probability - 200

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling an odd number.

Answer

## Basic Probability - 300

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling a number greater than 3.

Answer

## Basic Probability - 400

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of not rolling a 2.

Answer

## Basic Probability - 500

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling an even number or a number greater than 3.

Answer

## Basic Probability - 600

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling an even number and a number greater than 3.

Answer

## Basic Probability – 100 Answer

Suppose we have a loaded (weighted die) that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling a 5 or 6.

**ANS: 0.2**



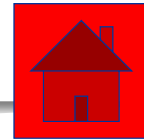
## Basic Probability – 200 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling an odd number.

**ANS: 0.5**



## Basic Probability – 300 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling a number greater than 3.

**ANS: 0.4**



## Basic Probability – 400 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of not rolling a 2.

**ANS: 0.8**



## Basic Probability – 500 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling an even number or a number greater than 3.

**ANS: 0.6**



## Basic Probability – 600 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1-6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Find the probability of rolling an even number and a number greater than 3.

**ANS: 0.3**



## Binomial Probability - 100

On multiple choice question with 5 choices what is the probability of answering a question incorrectly?

Answer

## Binomial Probability - 200

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find  $P(\text{no questions answered correctly})$

Answer

## Binomial Probability - 300

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find  $P(9 \text{ questions answered correctly})$

Answer

## Binomial Probability - 400

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find  $P(10 \text{ questions answered correctly})$

Answer

## Binomial Probability - 500

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find  $P(\text{at least } 9 \text{ questions answered correctly})$

Answer

## Binomial Probability - 600

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find  $P$ ( no more than 8 questions answered correctly)

Answer

## Binomial Probability-100 Answer

On multiple choice question with 5 choices what is the probability of answering a question incorrectly?

**ANS: 0.8**



## Binomial Probability-200 Answer

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find P(no questions answered correctly)

**ANS:  $(0.8)^{10}=0.10737$**



## Binomial Probability-300 Answer

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find P(9 questions answered correctly)

**ANS:  $10(.2)^9(.8)^1=0.0000041$**



## Binomial Probability-400 Answer

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find P(10 questions answered correctly)

**ANS:  $1(.2)^{10}(.8)^0=0.000000102$**



## Binomial Probability-500 Answer

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find P(at least 9 questions answered correctly)

**ANS: 0.0000042**



## Binomial Probability-600 Answer

A multiple choice quiz has 10 multiple choice questions, each with 5 choices. Find P( no more than 8 questions answered correctly)

**ANS:  $1 - P(\text{at least 9 correct}) = 0.9999958$**



## Disjoint Probabilities-100

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$P(\text{Cal}) = 55\% \quad P(\text{MIT}) = 45\% \quad P(\text{NYU}) = 60\%$$

$$P(\text{Cal and MIT}) = 20\% \quad P(\text{MIT and NYU}) = 20\%$$

$$P(\text{all three}) = 5\% \quad P(\text{only NYU}) = 10\%$$

What is the probability that May will be admitted to none?

Answer



## Disjoint Probabilities-200

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May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{array}{ll} P(\text{Cal}) = 55\% & P(\text{MIT}) = 45\% \\ P(\text{Cal and MIT}) = 20\% & P(\text{MIT and NYU}) = 20\% \\ P(\text{all three}) = 5\% & P(\text{only NYU}) = 10\% \end{array}$$

What is the probability that May will be admitted to only Cal?

Answer



## Disjoint Probabilities-300

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May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{array}{ll} P(\text{Cal}) = 55\% & P(\text{MIT}) = 45\% \\ P(\text{Cal and MIT}) = 20\% & P(\text{MIT and NYU}) = 20\% \\ P(\text{all three}) = 5\% & P(\text{only NYU}) = 10\% \end{array}$$

What is the probability that May will be admitted to Cal or MIT but not NYU?

Answer



## Disjoint Probabilities-400

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May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

What is the probability that May will be admitted to at least one of the schools?

Answer



## Disjoint Probabilities-500

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May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

Given that May is admitted to MIT, what is the probability that she will be admitted to NYU?

Answer

## Disjoint Probabilities-600

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

Given that May is admitted to Cal, what is the probability that she will be admitted to MIT but not NYU?

Answer

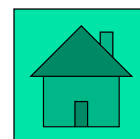
## Disjoint Probabilities-100 Answer

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

What is the probability that May will be admitted to none?

**ANS: 10%**



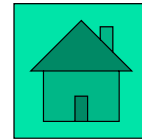
## Disjoint Probabilities-200 Answer

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

What is the probability that May will be admitted to only Cal?

**ANS: 5%**



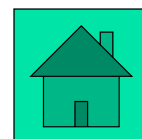
## Disjoint Probabilities-300 Answer

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

What is the probability that May will be admitted to Cal or MIT but not NYU?

**ANS: 30%**



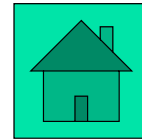
## Disjoint Probabilities-400 Answer

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

What is the probability that May will be admitted to at least one of the schools?

**ANS: 90%**



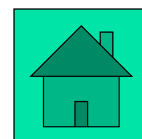
## Disjoint Probabilities-500 Answer

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

Given that May is admitted to MIT, what is the probability that she will be admitted to NYU?

**ANS:  $0.2/0.45=0.4444$**



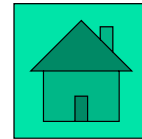
## Disjoint Probabilities-600 Answer

May has applied to Cal, MIT, and NYU. She believes her chances of getting in to these schools are as follows:

$$\begin{aligned} P(\text{Cal}) &= 55\% & P(\text{MIT}) &= 45\% & P(\text{NYU}) &= 60\% \\ P(\text{Cal and MIT}) &= 20\% & P(\text{MIT and NYU}) &= 20\% \\ P(\text{all three}) &= 5\% & P(\text{only NYU}) &= 10\% \end{aligned}$$

Given that May is admitted to Cal, what is the probability that she will be admitted to MIT but not NYU?

**ANS:  $0.15/0.55=0.2727$**



## Conditional Probability-100

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Find the probability that a randomly chosen person has a positive test result.

Answer

## Conditional Probability-200

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Find the probability that a person actually has heart disease given that he has a positive test result.

Answer

## Conditional Probability-300

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Are the events of having heart disease and a positive test result independent? Justify your answer using a rule of probability.

Answer

## Conditional Probability-400

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Are the events of having heart disease and a positive test result independent? Justify your answer using a rule of probability.

Answer

## Conditional Probability-500

Given below is a two-way table showing the survival rate at a hospital following two different types of surgery performed on critically ill patients. "Survived" means the patient lived at least 6 weeks following the surgery.

	Surgery Type A	Surgery Type B
Died	.023	.005
Survived	.702	.270

Given a patient had surgery B, what is the probability they survived?

Answer

## Conditional Probability-600

Given below is a two-way table showing the survival rate at a hospital following two different types of surgery performed on critically ill patients. "Survived" means the patient lived at least 6 weeks following the surgery.

	Surgery Type A	Surgery Type B
Died	.023	.005
Survived	.702	.270

Using a rule of probability, show that the events  $A = \{\text{a patient survived at least 6 weeks}\}$  and  $B = \{\text{a patient had surgery type B}\}$  are not independent.

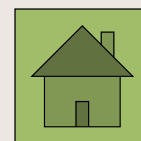
Answer

## Conditional Probability-100 Answer

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Find the probability that a randomly chosen person has a positive test result.

**ANS:  $(.8)(.96)+(.92)(.07)=0.1412$**

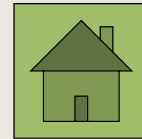


## Conditional Probability-200 Answer

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Find the probability that a person actually has heart disease given that he has a positive test result.

**ANS:  $0.0768/0.1412=0.5439$**

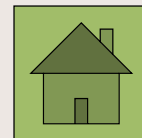


## Conditional Probability-300 Answer

Heart disease is the #1 killer today. Suppose that 8% of the patients in a small town are known to have heart disease. And suppose that a test is available that is positive in 96% of the patients with heart disease, but is also positive in 7% of patients who do not have heart disease.

Are the events of having heart disease and a positive test result independent? Justify your answer using a rule of probability.

**ANS: NO,  $P(\text{HD}) \neq P(\text{HD}|+)$   
 $0.08 \neq 0.5439$**



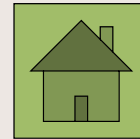
## Conditional Probability-400 Answer

Given below is a two-way table showing the survival rate at a hospital following two different types of surgery performed on critically ill patients. "Survived" means the patient lived at least 6 weeks following the surgery.

	Surgery Type A	Surgery Type B
Died	.023	.005
Survived	.702	.270

What is the probability that a patient survived?

**ANS: 0.972**



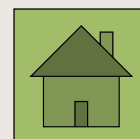
## Conditional Probability-500 Answer

Given below is a two-way table showing the survival rate at a hospital following two different types of surgery performed on critically ill patients. "Survived" means the patient lived at least 6 weeks following the surgery.

	Surgery Type A	Surgery Type B
Died	.023	.005
Survived	.702	.270

Given a patient had surgery B, what is the probability they survived?

**ANS:  $0.270/0.275=0.9818$**



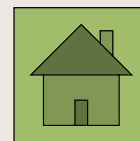
## Conditional Probability-600 Answer

Given below is a two-way table showing the survival rate at a hospital following two different types of surgery performed on critically ill patients. "Survived" means the patient lived at least 6 weeks following the surgery.

	Surgery Type A	Surgery Type B
Died	.023	.005
Survived	.702	.270

Using a rule of probability, show that the events  $A = \{\text{a patient survived at least 6 weeks}\}$  and  $B = \{\text{a patient had surgery type B}\}$  are not independent.

$$\text{ANS: } P(A) \neq P(A|B) \\ 0.972 \neq 0.9818$$



## More Probability - 100

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

$A$  = the couple has an even number of girls

$B$  = the couple has 3 or more girls

$C$  = the couple has less than 2 girls.

$D$  = the couple has at least 1 girl.

Find  $P(B)$ .

Answer



## More Probability - 200

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

A = the couple has an even number of girls

B = the couple has 3 or more girls

C = the couple has less than 2 girls.

D = the couple has at least 1 girl.

Find  $P(B^C)$ .

Answer



## More Probability - 300

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

A = the couple has an even number of girls

B = the couple has 3 or more girls

C = the couple has less than 2 girls.

D = the couple has at least 1 girl.

Find  $(B \cup C)$ .

Answer



## More Probability - 400

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

A = the couple has an even number of girls

B = the couple has 3 or more girls

C = the couple has less than 2 girls.

D = the couple has at least 1 girl.

Find  $P(A \cap D)$ .

Answer



## More Probability - 500

If  $P(A)=0.2$  and  $P(B)=0.6$  and A and B are independent, find  $P(A \text{ or } B)$ .

Answer



## More Probability - 600

If  $P(A) = 0.3$ ,  $P(A \text{ or } B) = 0.65$ , and  $A$  and  $B$  are independent, what is  $P(A \text{ and } B)$ ?

Answer



## More Probability - 100 Answer

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

$A$  = the couple has an even number of girls

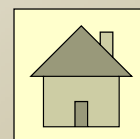
$B$  = the couple has 3 or more girls

$C$  = the couple has less than 2 girls.

$D$  = the couple has at least 1 girl.

Find  $P(B)$ .

**ANS: 0.3125**





## More Probability - 200 Answer

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

A = the couple has an even number of girls

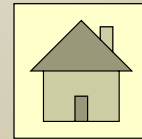
B = the couple has 3 or more girls

C = the couple has less than 2 girls.

D = the couple has at least 1 girl.

Find  $P(B^C)$ .

**ANS: 0.6875**



## More Probability - 300 Answer

A couple plans to have 4 children. Let  $X$  be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

A = the couple has an even number of girls

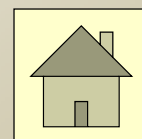
B = the couple has 3 or more girls

C = the couple has less than 2 girls.

D = the couple has at least 1 girl.

Find  $P(B \cup C)$ .

**ANS: 0.625**





## More Probability - 400 Answer

A couple plans to have 4 children. Let X be the number of girls the family has. The probability distribution is

# of girls	0	1	2	3	4
Probability	.0625	.2500	.3750	.2500	.0625

A = the couple has an even number of girls

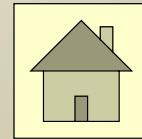
B = the couple has 3 or more girls

C = the couple has less than 2 girls.

D = the couple has at least 1 girl.

Find  $P(A \cap D)$ .

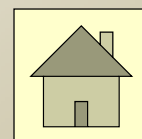
**ANS: 0.4375**



## More Probability - 500 Answer

If  $P(A)=0.2$  and  $P(B)=0.6$  and A and B are independent, find  $P(A \text{ or } B)$ .

**ANS:  $0.2+0.6-(0.2)(0.6)=0.68$**

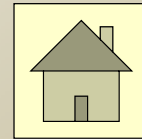




## More Probability - 600 Answer

If  $P(A) = 0.3$ ,  $P(A \text{ or } B) = 0.65$ , and  $A$  and  $B$  are independent, what is  $P(A \text{ and } B)$ ?

**ANS: 0.5**



## Hodge Podge-100

Suppose we roll a red die and a green die. Let  $A$  be the event that the number of spots showing on the red die is 3 or less and  $B$  be the event that the number of spots showing on the green die is more than 3. The events  $A$  and  $B$  are:

- |                |                |
|----------------|----------------|
| A) Disjoint    | B) Complements |
| C) Independent | D) Reciprocals |

Answer

## Hodge Podge-200

Suppose we have a loaded (weighted) die that gives the outcomes 1–6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Let  $A$  be the event rolling an odd number.

Let  $B$  be the event rolling an even number.

Let  $C$  be the event rolling a number greater than 3.

Are the events  $A$  and  $B$  disjoint?

Answer

## Hodge Podge-300

Suppose we have a loaded (weighted) die that gives the outcomes 1–6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Let  $A$  be the event rolling an odd number.

Let  $B$  be the event rolling an even number.

Let  $C$  be the event rolling a number greater than 3.

Find  $P(B \text{ and } C^c)$

Answer

## Hodge Podge-400

Suppose we have a loaded (weighted) die that gives the outcomes 1–6 according to the following probability distribution:

$X$	1	2	3	4	5	6
$P(X)$	0.1	0.2	0.3	0.2	0.1	0.1

Let  $A$  be the event rolling an odd number.

Let  $B$  be the event rolling an even number.

Let  $C$  be the event rolling a number greater than 3.

Find  $P(B|C)$

Answer

## Hodge Podge-500

Fire departments often respond to medical emergency calls in addition to fire emergency calls. Suppose that 15% of medical emergency calls end up being false alarms and that 6% of fire emergency calls end up being false alarms. Also, suppose that 35% of all calls are medical emergency calls.

Find the probability that a call is a false alarm.

Answer

## Hodge Podge-600

Fire departments often respond to medical emergency calls in addition to fire emergency calls. Suppose that 15% of medical emergency calls end up being false alarms and that 6% of fire emergency calls end up being false alarms. Also, suppose that 35% of all calls are medical emergency calls.

Find the probability that a call was a medical emergency given that it was a false alarm.

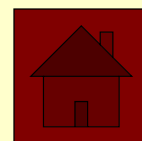
Answer

## Hodge Podge-100 Answer

Suppose we roll a red die and a green die. Let A be the event that the number of spots showing on the red die is 3 or less and B be the event that the number of spots showing on the green die is more than 3. The events A and B are:

- |                |                |
|----------------|----------------|
| A) Disjoint    | B) Complements |
| C) Independent | D) Reciprocals |

ANS: C



## Hodge Podge-200 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1–6 according to the following probability distribution:

<u>X</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
P(X)	0.1	0.2	0.3	0.2	0.1	0.1

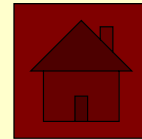
Let A be the event rolling an odd number.

Let B be the event rolling an even number.

Let C be the event rolling a number greater than 3.

Are the events A and B disjoint?

**ANS: Yes**



## Hodge Podge-300 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1–6 according to the following probability distribution:

<u>X</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
P(X)	0.1	0.2	0.3	0.2	0.1	0.1

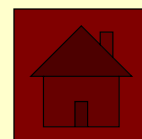
Let A be the event rolling an odd number.

Let B be the event rolling an even number.

Let C be the event rolling a number greater than 3.

Find  $P(B \text{ and } C^c)$

**ANS: 0.2**



## Hodge Podge-400 Answer

Suppose we have a loaded (weighted) die that gives the outcomes 1–6 according to the following probability distribution:

<u>X</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>6</u>
P(X)	0.1	0.2	0.3	0.2	0.1	0.1

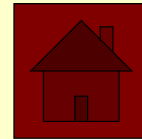
Let A be the event rolling an odd number.

Let B be the event rolling an even number.

Let C be the event rolling a number greater than 3.

Find  $P(B|C)$

**ANS:  $0.3/0.4=0.75$**

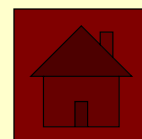


## Hodge Podge-500 Answer

Fire departments often respond to medical emergency calls in addition to fire emergency calls. Suppose that 15% of medical emergency calls end up being false alarms and that 6% of fire emergency calls end up being false alarms. Also, suppose that 35% of all calls are medical emergency calls.

Find the probability that a call is a false alarm.

**ANS:  $(0.35)(0.15)+(0.65)(0.06)=0.915$**

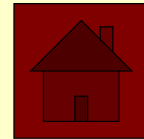


## Hodge Podge-600 Answer

Fire departments often respond to medical emergency calls in addition to fire emergency calls. Suppose that 15% of medical emergency calls end up being false alarms and that 6% of fire emergency calls end up being false alarms. Also, suppose that 35% of all calls are medical emergency calls.

Find the probability that a call was a medical emergency given that it was a false alarm.

**ANS:  $((0.35)(0.15))/(0.0915)=0.5738$**



**Have a paper out  
Jeopardy for participation points**

**Put your roster # on – paper counts as  
roll...**

**The more you earn as a  
class, the more everyone  
will earn for their grades...**