

Discrete Probability Distributions

Use the complete labeled probability table. Check that probabilities sum to 1, and show exact fraction work for events, expectation, and population variance.

1. Find the expected value E(X).

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	23	25	27	29	31
P(X=x)	1/10	1/10	3/20	1/4	2/5

2. Find the population variance Var(X).

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	15	17	19
P(X=x)	1/5	7/20	9/20

Discrete Probability Distributions

Use the complete labeled probability table. Check that probabilities sum to 1, and show exact fraction work for events, expectation, and population variance.

3. Find the missing probability $P(X = 59)$.

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	57	59	61
$P(X=x)$	$\frac{1}{5}$	?	$\frac{9}{20}$

4. Find $P(X \text{ is one of } \{60, 64\})$.

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	60	62	64
$P(X=x)$	$\frac{1}{5}$	$\frac{7}{20}$	$\frac{9}{20}$

Discrete Probability Distributions

Use the complete labeled probability table. Check that probabilities sum to 1, and show exact fraction work for events, expectation, and population variance.

5. Find $P(X \text{ is one of } \{46\})$.

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	45	46	47
$P(X=x)$	$\frac{1}{5}$	$\frac{7}{20}$	$\frac{9}{20}$

6. Find the expected value $E(X)$.

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	78	79	80
$P(X=x)$	$\frac{1}{5}$	$\frac{7}{20}$	$\frac{9}{20}$

Discrete Probability Distributions

Use the complete labeled probability table. Check that probabilities sum to 1, and show exact fraction work for events, expectation, and population variance.

7. Find the missing probability $P(X = -11)$.

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	-12	-11	-10
$P(X=x)$	$\frac{1}{5}$	?	$\frac{9}{20}$

8. Find the population variance $\text{Var}(X)$.

Assumptions: X has exactly the finite integer support shown; every listed probability is nonnegative and the complete table totals 1.

x	44	45	46	47	48
$P(X=x)$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{3}{20}$	$\frac{1}{4}$	$\frac{2}{5}$