

Probability ACT Practice

A game's card set is made up of 6 blue cards and 9 red cards. If a player randomly selects one of these cards, what is the probability the selected card will be blue?

- (A) $\frac{1}{15}$
- (B) $\frac{1}{6}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{5}$
- (E) $\frac{2}{3}$

A retailer's website allows shoppers to customize the shoes they order. Customers may select one of three different colors, one of two types of laces, and one of eight special logos. With these choices, how many different shoe designs are possible?

- (A) 14
- (B) 16
- (C) 36
- (D) 48
- (E) 52

There are twice as many red pens as there are blue pens in a desk. If a pen is randomly selected, what is the probability it is blue?

- (A) $\frac{1}{4}$
- (B) $\frac{1}{3}$
- (C) $\frac{2}{3}$
- (D) $\frac{1}{2}$
- (E) Cannot be determined from the given information

The probabilities for five events are listed in the following table. Which event is the LEAST likely to occur?

Event	Probability
Event 1	0.25
Event 2	0.35
Event 3	0.47
Event 4	0.40
Event 5	0.29

- (A) Event 1
- (B) Event 2
- (C) Event 3
- (D) Event 4
- (E) Event 5

The probability of randomly selecting a green marble from a bag is $\frac{4}{5}$. If there are 110 marbles in the bag, how many are NOT green?

- (A) 20
- (B) 22
- (C) 36
- (D) 80
- (E) 88

Which of the following statements is true of $P(A)$, that is, the probability of A , for any event A ?

- I. If A is very likely to occur, $P(A) > 1$
- II. $P(A) = 1 - P(A \text{ not occurring})$
- III. $P(A) \geq 0$

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) II and III only

How many different arrangements of the letters A , D , G , and F are possible?

- (A) 10
- (B) 16
- (C) 24
- (D) 256
- (E) 325

A fair coin is flipped five times, and each flip results in tails. What is the probability the coin will land on tails on the sixth flip?

- (A) $\frac{1}{64}$
- (B) $\frac{1}{10}$
- (C) $\frac{1}{7}$
- (D) $\frac{1}{6}$
- (E) $\frac{1}{2}$

A number is randomly selected from all integers between 1 and 25 inclusive. What is the probability the selected number is prime?

- (A) $\frac{1}{10}$
- (B) $\frac{1}{9}$
- (C) $\frac{9}{25}$
- (D) $\frac{2}{5}$
- (E) $\frac{12}{25}$

Two contest winners are chosen by having their names drawn out of a hat one at a time. Once a name is drawn, it is not replaced, and each person is allowed only one entry. In total, seven people entered the contest. If Sara's name was not chosen on the first draw, what is the probability it will be chosen on the second?

- (A) $\frac{1}{7}$
- (B) $\frac{1}{6}$
- (C) $\frac{2}{7}$
- (D) $\frac{2}{5}$
- (E) $\frac{5}{6}$

In a game, a complete set of cards consists of one situational card, one power card, and one level card. If Blake holds five situational cards, four power cards, and ten level cards, how many different complete sets of cards does he have?

- (A) 9
- (B) 19
- (C) 30
- (D) 131
- (E) 200

Hanna and Jake are hoping to get selected as the host of this year's talent show. The committee chooses a host by random selection, and this year only 29 students entered their name into the drawing. What is the probability either Hanna or Jake is selected as the host this year?

- (A) $\frac{1}{841}$
- (B) $\frac{2}{841}$
- (C) $\frac{1}{58}$
- (D) $\frac{1}{29}$
- (E) $\frac{2}{29}$

A set of numbers contains m numbers, one of which is even. If a number is randomly selected from the set, what is the probability it is NOT even?

- (A) $\frac{1}{m}$
- (B) $\frac{1}{m-1}$
- (C) $\frac{1}{m+1}$
- (D) $\frac{m-1}{m}$
- (E) $\frac{m}{m+1}$

A governing committee of three is chosen out of 30 people. The committee consists of a president, a treasurer, and a vice president. Only one person may be selected for any given position. Which of the following expressions represents the number of possible combinations of people who could serve in the three positions on the governing committee?

- (A) 3×30
- (B) 30^3
- (C) $30^3 \times 29^2 \times 28$
- (D) $30 \times 29 \times 28$
- (E) $30 + 29 + 28$

Three telephones in a shipment of eight are known to be defective. A randomly selected telephone is removed from the shipment and tested. It is found not to be defective. If a second telephone is randomly selected from those remaining, what is the probability of it NOT being defective?

- (A) $\frac{1}{4}$
- (B) $\frac{4}{7}$
- (C) $\frac{1}{3}$
- (D) $\frac{3}{8}$
- (E) $\frac{3}{7}$

An urn contains five white marbles and six green marbles. Which of the following would INCREASE the probability of randomly selecting a white marble from this urn?

- I. Increasing the number of white marbles only
- II. Increasing the number of green marbles only
- III. Decreasing the number of white marbles and green marbles by the same amount

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) I and III only

A coin is selected from a box containing two different types of coins. The probability of selecting the first type of coin is three times the probability of selecting the second type. If there are 240 coins of the first type, how many coins of the second type are in the box?

- (A) 80
- (B) 110
- (C) 243
- (D) 720
- (E) 832

How many distinct arrangements of four letters (without repeats) from the set {A, B, C, D, E} are possible?

- (A) 15
- (B) 20
- (C) 25
- (D) 120
- (E) 625

If $x = 7$, what is the probability a randomly selected number from the set $\{x - 5, 2x + 4, -x, x + 5, x + 3\}$ will be even?

- (A) 0
- (B) $\frac{1}{5}$
- (C) $\frac{2}{5}$
- (D) $\frac{3}{5}$
- (E) $\frac{4}{5}$

How many three-digit numbers have an odd number as a tens digit?

- (A) 25
- (B) 200
- (C) 450
- (D) 500
- (E) 620

If the probability of event A occurring is 0.4 and the probability of event B occurring is 0.2, which of the following probabilities must be greater than 0.5? Assume that events A and B cannot occur at the same time.

- I. The probability of event A not occurring
- II. The probability of event B not occurring
- III. The probability of either event A or event B occurring

- (A) I only
- (B) II only
- (C) III only
- (D) I and II only
- (E) I, II, and III

Aiden's work schedule for the week is represented in the following table. If this schedule remains the same for 4 weeks, and if a day from the 4-week schedule is selected at random, what is the probability that the day selected is a day when Aiden is scheduled to work?

Day	Schedule
Monday	Off duty
Tuesday	8 A.M.–12 noon
Wednesday	8 A.M.–12 noon
Thursday	Off duty
Friday	Off duty
Saturday	4 P.M.–8 P.M.
Sunday	4 P.M.–8 P.M.

- (A) $\frac{1}{28}$
- (B) $\frac{1}{7}$
- (C) $\frac{3}{7}$
- (D) $\frac{4}{7}$
- (E) $\frac{5}{7}$

On an exam, students must select one short-answer question and one essay question to complete. If the exam has five short-answer and three essay questions, how many distinct combinations of questions can students select?

- (A) 2
- (B) 7
- (C) 8
- (D) 15
- (E) 45

A box contains red and black cards. The probability of selecting a red card is half the probability of selecting a black card. What is the probability of selecting a black card?

- (A) $\frac{1}{4}$
- (B) $\frac{1}{3}$
- (C) $\frac{1}{2}$
- (D) $\frac{2}{3}$
- (E) $\frac{3}{4}$

Which of the following could NOT represent the probability of an event occurring?

- (A) $\frac{1}{1056}$
- (B) $\frac{5}{18}$
- (C) $\frac{59}{61}$
- (D) $\frac{57}{41}$
- (E) $\frac{6}{257}$

In a department store, there are x items on sale at a discount. If a total of 171 items are on sale at the store and the probability an item is not on sale at a discount is $\frac{2}{3}$, what is the value of x ?

- (A) 55
- (B) 57
- (C) 112
- (D) 114
- (E) 118

Hunter has collected 35 science books over the last two years, and 5 of these science books cover biology. What is the probability a randomly selected science book in his collection covers biology?

- (A) $\frac{1}{35}$
- (B) $\frac{1}{30}$
- (C) $\frac{1}{7}$
- (D) $\frac{1}{6}$
- (E) $\frac{1}{5}$

If the probability of selecting a gray hat from a bin containing gray and black hats is x , which of the following probabilities MUST have a value of $1 - x$?

- (A) The probability of selecting two gray hats
- (B) The probability of selecting a black hat
- (C) The probability of selecting two black hats
- (D) The probability of selecting a black hat followed by a gray hat
- (E) The probability of selecting a gray hat followed by a black hat

The results of a career interest survey of students in a statewide mathematics club are provided in the following table. If a student is randomly selected from this group, what is the probability the student indicated interest in an aviation career?

Career	Number of Students
Medical (doctor, nurse, etc.)	82
Aviation	18
Engineering	22
Computer science and technology	48
Other	30

- (A) $\frac{1}{200}$
- (B) $\frac{1}{182}$
- (C) $\frac{1}{18}$
- (D) $\frac{9}{100}$
- (E) $\frac{41}{100}$