



Competitive Math Assessment - Probability Practice Quiz #2

Here are some suggestions for how to practice replicating testing conditions:

- Make sure you have a quiet place to practice on your own for an extended period of time. This will help model the actual experience of a competition. When you have finished the quiz, check your solutions using the online Brilliant quiz.
- Set a timer, or at least keep an eye on the clock to learn your own pace. If you want to set a specific time goal, math competitions provide an average of about 2 minutes per problem, so you should give yourself 30-40 minutes to complete these problems. Keep in mind that the general difficulty of problems increases as you move forward.
- Some competitions allow students to use calculators while others do not. We encourage you to use a calculator only for the most in-depth calculations on this practice quiz.

1. _____

Natalie rolls a 20-sided fair die. What is the probability that she rolls a number less than or equal to 6?



A. $\frac{1}{4}$

B. $\frac{3}{10}$

C. $\frac{1}{3}$

D. $\frac{2}{5}$

2. _____

The table below shows the number of students enrolled in after-school activities. Each student is enrolled in exactly one activity. If an after-school student is selected at random, what is the percentage probability that they play a sport?

Activity	Students
Soccer	10
Sculpture	7
Math Club	8
Basketball	9
Painting	11
Science Club	5

3. _____

In a bowl of jelly beans, $\frac{1}{3}$ are red, $\frac{1}{4}$ are green, $\frac{1}{5}$ are yellow, and the rest are blue. If Jenna picks a jelly bean to eat at random, what is the probability that it is red or green?

A. $\frac{1}{2}$

B. $\frac{7}{12}$

C. $\frac{3}{5}$

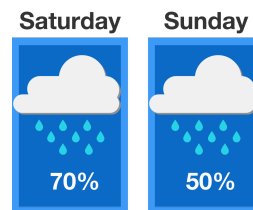
D. $\frac{13}{20}$

4. _____

Leah bought two different types of scratch-off lottery tickets. The first has a 10% chance of winning a prize. The second has a 20% chance of being a winner. What is the percent probability that both of Leah's lottery tickets are winners?

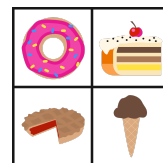
5. _____

The probability that it rains on Saturday is 70%. The probability that it rains on Sunday is 50%. What is the percent probability that it rains on at least one of the two days?



6. _____

A restaurant is designing its dessert menu. It has decided to arrange the pictures of four items (a donut, pie, cake, and ice cream) to form a square, as shown below. If the arrangement of the four images is made at random, what is the probability that the donut is placed next to the piece of cake?



A. $\frac{1}{3}$

B. $\frac{1}{2}$

C. $\frac{2}{3}$

D. $\frac{3}{4}$

7. _____ Anthony takes a science quiz made up of 4 true-false questions. To pass, he has to get at least 3 questions right. If he guesses on every question, what is the probability that he passes the quiz?

A. $\frac{1}{4}$

B. $\frac{5}{16}$

C. $\frac{3}{8}$

D. $\frac{3}{4}$

8. _____ Anne and Marco each randomly select a number between 1 and 10 inclusive. (They can select the same number.) What is the percentage probability that the product of the numbers they choose is divisible by 9?

9. _____ The middle school basketball championships are being played by the Bobcats and the Eagles. The championship is decided by a best of 3 series—the first team to win 2 games is the champion.

If the Bobcats have a $\frac{3}{5}$ chance of winning any individual game, what is the probability that they become champions?

A. $\frac{11}{25}$

B. $\frac{61}{125}$

C. $\frac{13}{25}$

D. $\frac{81}{125}$

10. _____ Ivan's sock drawer has become disorganized. In total, there were 4 pairs of socks of different colors in the drawers. If he reaches in and pulls out two socks at random, what is the probability that they will be matching colors?

A. $\frac{1}{4}$

B. $\frac{1}{5}$

C. $\frac{1}{6}$

D. $\frac{1}{7}$

11. _____

There are 8 mystery boxes, two of which contain prizes.

You can pick boxes one at a time, revealing the content of the box each time, until you get a prize.

If you get 3 chances to pick a box, what are the chances that you get a prize?

- A. $\frac{3}{8}$
- B. $\frac{2}{3}$
- C. $\frac{9}{14}$
- D. $\frac{3}{4}$

12. _____

Amy and Blake are each dealt two cards from a standard, 52-card deck. Amy's cards are known, Blake's cards are unknown. In which of these two scenarios is it *more likely* that Blake has a pair?

	Amy	Blake
Scenario 1		
Scenario 2		

- A. Scenario 1
- B. Scenario 2
- C. It is equally likely in both cases

13. _____

There are 4 seventh graders and 6 eighth graders on the school math team. If the coach randomly selects a team of three students to compete in an event, what is the probability that the team is made up entirely of eighth graders?

- A. $\frac{1}{7}$
- B. $\frac{1}{6}$
- C. $\frac{3}{10}$
- D. $\frac{1}{2}$

14. _____ Vanessa has 10 identical pieces of candy she wants to give to 4 of her friends. How many different ways are there for her to distribute the candy so that each person gets at least 1 piece?

15. _____ A new type of infectious flu is spreading through the world. Each person has a $\frac{1}{25}$ chance of getting infected.

A test is developed that can detect the disease in 100% of people that are infected, but there is also a $\frac{1}{8}$ chance that it yields a “false positive” in which it detects the disease in a person when they don't actually have it.

If you are tested and get a positive result, what is the percent probability that you have the disease?

- A.** 12.5% **B.** 25% **C.** 50%
- D.** 75% **E.** 87.5%