

## Probability Test Review

1. A yogurt shop offers 6 different flavors of frozen yogurt and 12 different toppings. How many choices are possible for a single serving of frozen yogurt with one topping?

$$6(12) = 72$$

2. In how many ways can 12 basketball players be listed in a program?

$$12! = 479,001,600$$

3. Evaluate  ${}_9P_4$ .

$$3024$$

4. There are 10 students participating in a spelling bee. In how many ways can the students who go first and second in the bee be chosen?

$${}_{10}P_2 = 90$$

5. Evaluate  ${}_7C_6$ .

$$= 7$$

6. In how many ways can 3 singers be selected from 5 who came to an audition?

$${}_5C_3 = 10$$

7. Lynn and Dawn tossed a coin 60 times and got heads 33 times. What is the experimental probability of tossing heads using Lynn and Dawn's results?

$$\frac{33}{60} = \frac{11}{20}$$

8. A bag contains 6 red marbles, 6 white marbles, and 4 blue marbles. Find  $P(\text{red or blue})$ .

$$\frac{6}{16} + \frac{4}{16} = \frac{10}{16} = \frac{5}{8}$$

9. A bag contains 5 red marbles, 6 white marbles, and 5 blue marbles. Find  $P(\text{red and blue})$ .

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10. Teesha is in the French club. There are 21 students in the club. The French teacher will pick two students at random to guide visiting students from France. What is the probability that Teesha will not be picked as a guide?

$$\frac{19}{21}$$

11. What is the theoretical probability of being dealt exactly three 4's in a 5-card hand from a standard 52-card deck?

$$\frac{(4^C 3)(48^C 2)}{(52^C 5)} \quad \frac{4(1128)}{2598960}$$

12. Suppose  $Q$  and  $R$  are independent events. Find  $P(Q \text{ and } R)$ .  
 $P(Q) = 0.39$ ,  $P(R) = 0.85$

$$\frac{1128}{649740} = \frac{564}{324870} = \frac{94}{54145}$$

$$(.39)(.85) = .3315$$

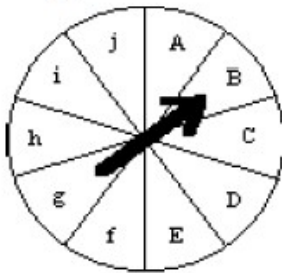
13. Two urns contain white balls and yellow balls. The first urn contains 9 white balls and 9 yellow balls and the second urn contains 8 white balls and 3 yellow balls. A ball is drawn at random from each urn. What is the probability that both balls are white?

$$\frac{9}{18} \cdot \frac{8}{11} = \frac{72}{198} = \frac{8}{22} = \frac{4}{11}$$

Suppose  $S$  and  $T$  are mutually exclusive events. Find  $P(S \text{ or } T)$ .

14.  $P(S) = 20\%$ ,  $P(T) = 22\%$       $20 + 22 = 42\%$

15. If all possible results are equally likely, what is the probability that a spin of the spinner will land on an upper case letter or a consonant?



$$\frac{5}{10} + \frac{7}{10} = \frac{12}{10} - \frac{3}{10} = \boxed{\frac{9}{10}}$$

16. Joey's sock drawer is unorganized and contains 7 black dress socks, 7 black ankle socks, 6 brown dress socks, and 2 brown ankle socks. What is the probability that Joey will blindly reach into his sock drawer and pull out a sock that is brown or a dress sock?

$$\frac{8}{22} + \frac{13}{22} - \frac{6}{22} = \frac{15}{22}$$

17. Each person in a group of students was identified by year and asked when he or she preferred taking classes: in the morning, afternoon, or evening. The results are shown in the contingency table. Find the probability that the student preferred afternoon classes given he or she is a junior. Round to the nearest thousandth.

When Do You Prefer to Take Classes?

	Freshman	Sophomore	Junior	Senior
Morning	19	2	6	16
Afternoon	17	3	13	15
Evening	8	14	9	7

$$\frac{13}{28} = 0.464$$

18. The probability that a city bus is ready for service when needed is 85%. The probability that a city bus is ready for service and has a working radio is 67%. Find the probability that a bus chosen at random has a working radio given that it is ready for service. Round to the nearest tenth of a percent.

$$\frac{.67}{.85} = 78.8\%$$

19. The probability that a student at certain high school likes art is 36%. The probability that a student who likes art also likes science is 21%. Find the probability that a student chosen at random likes science given that he or she likes art. Round to the nearest tenth of a percent.

$$\frac{.21}{.36} = 58.3\%$$

20. The probability that a dessert sold at a certain cafe contains chocolate is 86%. The probability that a dessert containing chocolate also contains nuts is 30%. Find the probability that a dessert chosen at random contains nuts given that it contains chocolate. Round to the nearest tenth of a percent.

$$\frac{.30}{.86} = 34.9\%$$



21. An airline has 90% of its flights depart on schedule. It has 71% of its flights depart and arrive on schedule. Find the probability that a flight that departs on schedule also arrives on schedule.

$$\frac{.71}{.9} = 78.9\%$$

22. On St. Patrick's Day, you took note of who was coming into your restaurant wearing green. What is the probability that someone was wearing green given that the customer is female?

	Wearing Green	Not Wearing Green
Male	56	70
Female	29	83

112

$$\frac{29}{112} = 25.9\%$$

