

The frequency table below shows the results of a survey of students regarding whether they play sports and instruments. Use the table to answer # 1 - 6

	Plays Team Sport	Does Not Play Team Sport	Total
Plays Instrument	8	3	11
Does Not Play Instrument	2	7	9
Total	10	10	20

1. What is the probability that a student selected at random does not play an instrument?

$$\frac{9}{20}$$

2. What is the probability that a student selected at random plays a team sport and plays an instrument?

$$\frac{8}{20} = \frac{2}{5}$$

3. What is the probability that a student selected at random plays a team sport?

$$\frac{10}{20} = \frac{1}{2}$$

4. Given that a student does not play an instrument, what is the probability that the student plays a team sport?

$$\frac{2}{9}$$

5. Given that a student plays a team sport, what is the probability that the student does not play an instrument?

$$\frac{2}{10} = \frac{1}{5}$$

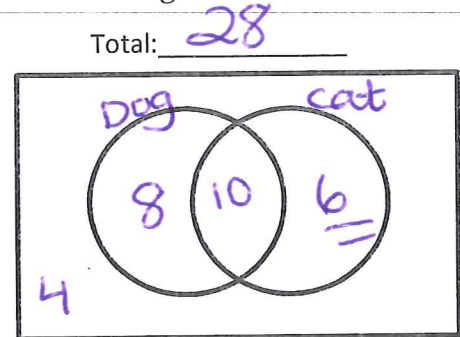
6. Given that a student does not play a team sport, what is the probability that the student does not play an instrument?

$$\frac{7}{10}$$

Use the situation described below to answer questions #7 - 12.

A class of 28 students were surveyed and asked if they ever had dogs or cats for pets at home. 8 students said they had only ever had a dog. 10 students said they'd had a dog and a cat. 4 students said they'd never had a dog nor a cat.

7. Fill in the Venn Diagram with the appropriate numbers.



8. How many students have had a cat?

9. P (had a cat)

10. P (have had both)

11. P (have had neither)

12. P (have had only dogs)

$$\frac{16}{28} = \frac{4}{7}$$

$$\frac{10}{28} = \frac{5}{14}$$

$$\frac{4}{28} = \frac{1}{7}$$

$$\frac{8}{28} = \frac{4}{14}$$

13. A container of Legos comes in 5 colors as shown in the table below. When you choose one Lego at random, what are the probabilities of the following outcomes?

Color	Yellow	Red	Blue	Green	Brown
Number of Legos	12	13	12	15	8

a) $P(\text{Green}) = \frac{15}{60} = \frac{1}{4}$

b) $P(\text{Red or Brown}) = \frac{21}{60} = \frac{7}{20}$

c) $P(\text{Color that begins with a "B"}) = \frac{20}{60} = \frac{1}{3}$

14. The Smiths are planning a trip. There are 15 destination options. They can travel by car, train, or plane. They could take this trip by themselves or with a tourist group. How many different possible trips are there?

$$15 \cdot 3 \cdot 2 = \boxed{90}$$

15. Your local breakfast restaurant has bagels on the menu. You can get plain, wheat, or blueberry. You can get regular, reduced-fat or veggie cream cheese, or no cream cheese. You can get the bagel toasted or untoasted. How many different ways can you order a bagel?

$$3 \cdot 4 \cdot 2 = \boxed{24}$$

16. A clown has a collection of hats in a box that stores his 3 red hats, 4 purple hats, and 3 green hats from which he will select at random. Find the probability of the following outcomes. Assume separate events.

Total 10

a) $P(\text{Purple, Purple, \& then Red with replacement})$

$$\frac{4}{10} \cdot \frac{4}{10} \cdot \frac{3}{10} = \frac{48}{1000}$$

b) $P(\text{Red, Purple \& then Green without replacement})$

$$\frac{3}{10} \cdot \frac{4}{9} \cdot \frac{3}{8} = \frac{36}{720}$$

c) $P(\text{3 Red Hats without replacement})$

$$\frac{3}{10} \cdot \frac{2}{9} \cdot \frac{1}{8} = \frac{6}{720}$$

17. How many possible passwords can be created if the password must be exactly 5 characters consisting of letters (A-Z) and numbers (0-9), with the first space being a letter and the last four spaces being numbers **with repeats allowed**?

$$26 \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} \cdot \underline{10} = 260,000$$

18. How many possible passwords can be created if the password must be exactly 5 characters consisting of letters (A-Z) and numbers (0-9), with the first 3 spaces being letters and the last 2 spaces being numbers **with repeats not allowed**?

$$\underline{26} \cdot \underline{25} \cdot \underline{24} \cdot \underline{10} \cdot \underline{9} = 1,404,000$$

Questions # 19 – 21, identify whether the question can be answered using a permutation (P) or a combination (C). Then answer the question.

19. A baseball team has 11 players on their roster. In how many different ways can you choose a starting lineup to fill the 9 positions of pitcher, catcher, first baseman, second baseman, etc.

$$11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3$$

Permutation / Combination (Circle one)

Number of ways: 1,995,840

20. You just bought 8 new books to read. You want to take two of them with you on vacation. In how many ways can you choose two books to take with you?

$$\frac{8 \cdot 7}{2 \cdot 1} = \frac{56}{2}$$

Permutation / Combination (Circle one)

Number of ways: 28

21. Randy has to pick 4 people to work with out of 15 people. In how many different ways can he pick the 4 people?

$$\frac{15 \cdot 14 \cdot 13 \cdot 12}{4 \cdot 3 \cdot 2 \cdot 1} = \frac{32760}{24}$$

Permutation / Combination (Circle one)

Number of ways: 1365

