

PROBABILITY AND STATISTICS DRILL

If a particular pet store has five dogs, four cats, and 12 guinea pigs available for purchase (and no other pets for sale), what is the probability that a randomly purchased pet will be a cat?

	Write Using Cursive	Write Using Print	Total
Teachers	12	4	16
Students	40	280	320
Total	52	284	336

Consider the table above that portrays the teachers and students at a particular high school and their preferred writing styles.

What is the probability that a randomly selected teacher prefers to write using print?

What is the probability that a randomly selected person at the school prefers to write using cursive?

At the school cafeteria, there are three main courses and four desserts from which to choose. What is the total number of possible meals that a student can choose, assuming he or she wants both a main course and a dessert?

In Kim's closet, she has eight different dresses. She is packing for a three-day trip; she wants to wear a different dress on each day of the trip. What is the total number of combinations of dresses Kim could pack?

Consider the set of numbers $\{3, 4, 7, 11\}$. What positive number could be added to the set to double the set's range?

If someone added the number 20 to the set of numbers $\{1, 2, 4, 5, 12\}$, would that increase or decrease the standard deviation of the set?

Which of these approaches would give the best indication of how a particular town is planning on voting on an issue in an election?

Interviewing 100 political activists in the town as to their predictions

Taking a phone survey of 500 randomly selected likely voters

Having 500 pedestrians in the main city park complete a survey

Solutions

Total the number of pets:

$$5 + 4 + 12 = 21$$

Then divide the number of cats (4) by the number of total pets (21) to get the probability that a randomly purchased pet will be a cat:

$$\frac{4}{21}$$

There are 16 total teachers, and 4 of them prefer to write using print. So divide 4 by 16 to get the probability:

$$\frac{4}{16} = \frac{1}{4}$$

This is the same as 0.25 if you want to express the answer as a decimal.

There are 336 total people in the school, and 52 of them prefer to write using cursive. So divide 52 by 336. Your answer can be expressed as a reduced fraction or as a decimal:

$$\frac{52}{336} = \frac{13}{84} \text{ or } 0.155$$

Multiply the number of main courses by the number of desserts to find the total number of possible meals:

$$3 \times 4 = 12$$

After Kim wears one dress, she does not want to wear it again. Therefore, the number of dress options each day decreases by 1. Calculate the total number of combinations as follows:

$$8 \times 7 \times 6 = 336 \text{ total possible combinations}$$

The range of the set {3, 4, 7, 11} is currently $11 - 3 = 8$. Double the current range to find the new range:

$$8 \times 2 = 16$$

Since the smallest number in the set is 3, add 16 to 3 to find the number that would need to be added to make the range of the set 16:

$$3 + 16 = 19$$

So the new set would be {3, 4, 7, 11, 19} with 19 as the added number. It would have a range of 16, twice the original range of 8.

If 20 was added to this set, the new set would be {1, 2, 4, 5, 12, 20}. The average deviation from the mean would increase since the spread of the numbers would increase. Therefore, the standard deviation would increase.

Interviewing the political activists and the park pedestrians would not be ideal since the sample set would not be randomized. Performing a phone survey of the randomly selected voters would ensure that the sample was randomized, giving much better results.

PSAT Resource Links

PSAT Online Practice Tests: <https://www.crackpsat.net/psat/>

❖ PSAT Reading Practice Tests:

<https://www.crackpsat.net/psat/reading/>

❖ PSAT Writing and Language Tests:

<https://www.crackpsat.net/psat/writing-language/>

❖ PSAT Math Practice Tests:

<https://www.crackpsat.net/psat/math/>

PSAT Real Past Papers Download:

<https://www.crackpsat.net/psat-downloads/>

New SAT Practice Tests:

<https://www.cracksat.net>

ACT Practice Tests:

<https://www.crackacc.com>

AP Exams Practice Tests:

<https://www.crackap.com>

Please visit <https://www.crackpsat.net> for more PSAT exam information and resource.

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