Programa de Educación Humanitaria del
Colegio de Médicos Veterinarios de P.R.

Pets Can't Do Math

Grade: 4th - 6th grade
Topic: Pet overpopulation
Duration: 60 minutes
Related Subjects: Science, Math and STEM.

Objectives

Practice math skills such as addition and multiplication to understand how cats and dogs reproduce quickly, which leads to overpopulation. Understand the importance of spay and neutering pets, pet adoption, as well as TNR programs. Consider compassionate solutions for pet overpopulation. Reflect on the responsibility pet guardians have to spay and neuter to save lives and promote animal welfare in general.

Materials

- Pom poms or cotton balls
- Two dice (can be digital)
- Space on large table or floor
- Wooden popsicle sticks
- Small whiteboards and whiteboard markers or paper and pencils.
- Worksheet (attached) optional
- Guide (attached)

Opening

- Ask students if their cats and/or dogs have had babies. If so, how many?
- You could also ask, what happened after they where born. Where they given away? Sold? Taken to a shelter? Abandoned? Discuss briefly.
- Talk about homeless dogs and cats. Have they seen any? How do they look? Healthy and happy? This may lead to talk about abandoned pets and how having kittens and puppies without someone to care for them leads to a life of suffering. *This can vary depending on the region. Some places have more severe pet overpopulation.*
- This conversation should lead to talk about the causes of pet overpopulation and how it leads to cats and dogs being euthanized in shelters or suffering on the streets.
- Do not mention solutions, particularly spay and neutering since we want them to consider this and reflect on these options on their own after the main activity is done.

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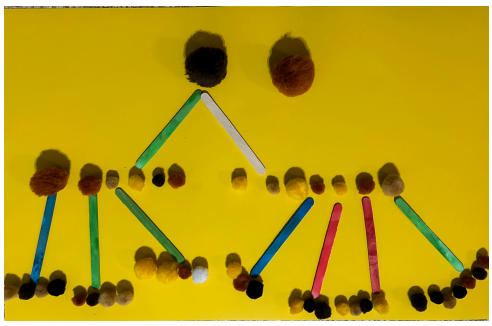
Activity

- Determine what animal you will be working with, cat or dog.
- Form small groups of 2 or 3 students.
- Share some facts about how often cats and dogs can reproduce, from what age and how many can they have in each litter. Also, how many litters they can have each year.
- Explain that they will be receiving a couple of dogs/cats, one male and one female. These will be the pom poms or cotton balls. They can decide if they are pets with homes or abandoned. They can name them.
- If playing with dogs, use two dice so the total can be a maximum of 12 puppies. For cats use only one dice to determine the size of the litter of kittens.
- Every roll of the dice represents the number of puppies or kittens born in the litter. To determine the sex simply say that half is male and the other half is female. Have the students do that simple calculation. If the number is odd, the majority should be female.
- You can be the dice roller or select a different student for each round. But all groups will use the same number shown on the dice.
- Use the popsicle sticks to create a connection between each female and their offspring.
- If your pom poms are dogs, they each need to have two litters since female dogs can have two litters every year. For cats, they should have three litters.
- During each round there can be many dice rolls since this depends on how many cats or dogs will be having litters.
- Each round represents a year. Use the guide (attached).
- Have them use the whiteboards or paper to add up each cat or dog at the end of the activity. Encourage them to create the equation not only count them all. Have them use the worksheet provided.
- It is suggested to do three rounds but you can have as many as you want.
- Complete the worksheet.



This example only has one litter per female because it was adapted to a younger child.

Closing

- Discuss the totals and explain the time frame of the results and have them imagine how many it would be among the entire population.
- Ask and discuss the following questions:
  - What are we going to do with so many cats or dogs? (Remember that some are house pets others abandoned.)
  - Are there enough homes for so many?
  - What could be a solution to this problem?
- Sometimes they will suggest unrealistic solutions. In this case we can guide them and suggest otherwise. For example, "Take them all home.".
- Suggested simple solutions can be; Choose to Adopt, Spay/Neuter and Never Abandon a Pet.

Suggestions

The level of difficulty can be adjusted according to the group you are working with. For example, they can create more complex equations by combining addition and multiplication, practice the properties of multiplication or even basic algebra to find out how many were born in a missing litter. For more ideas you can reach out to the math teacher and maybe have a collaborative activity with them.
An extension may involve a visit to a local animal shelter to see first hand abandoned animals or organize a donation drive. This will provide further understanding of the need to address pet overpopulation.
Although the suggested level grades is 4th to 6th, some students from lower grades can complete this lesson.

Graphic provided by The Humane Society of Greenwood

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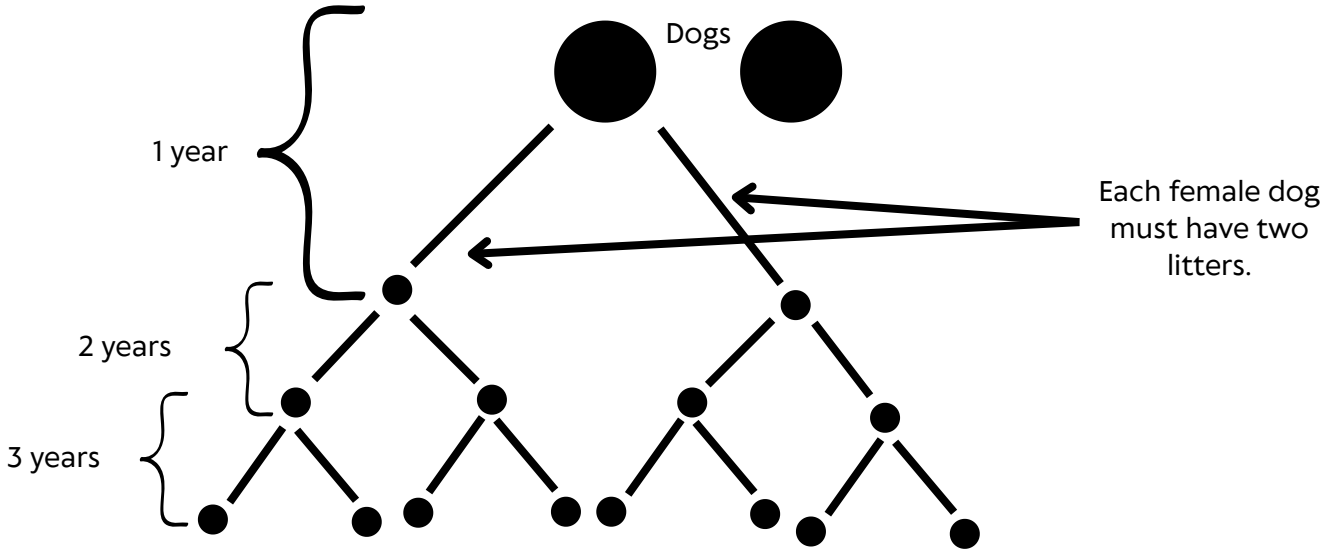
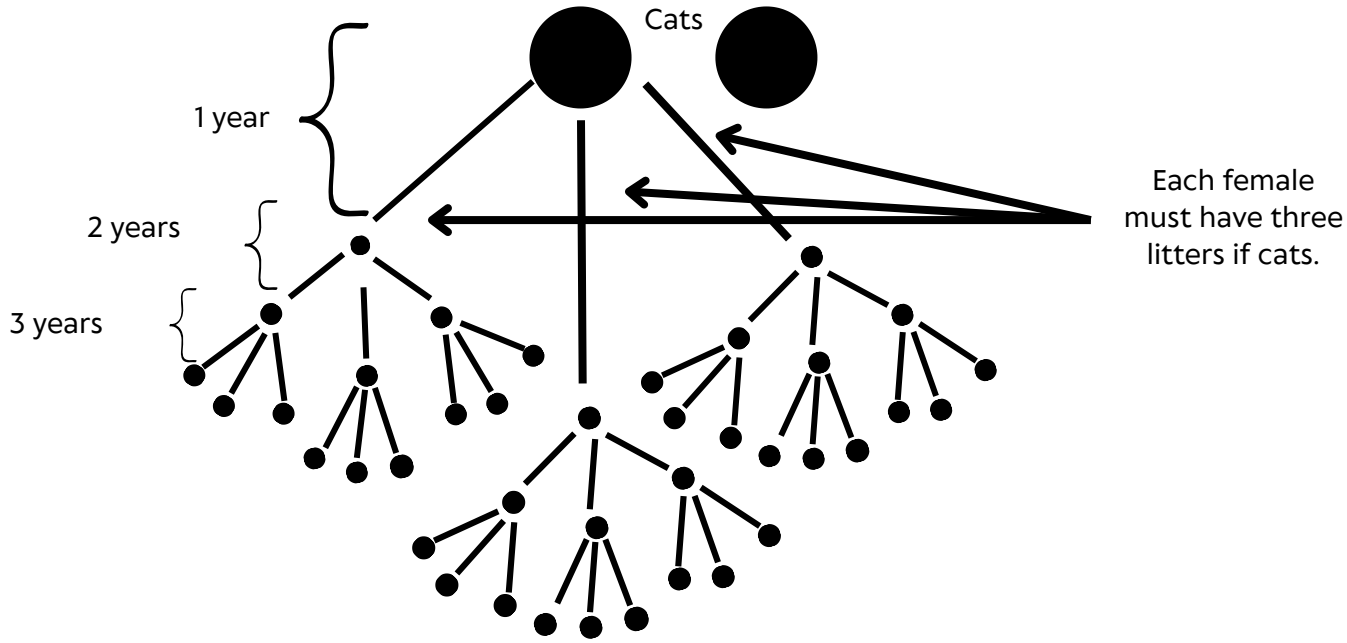
Guide





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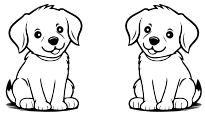
Worksheet



How many puppies where born during the first year? ___ + ___= ____

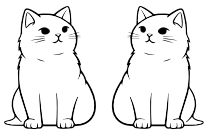
How many puppies where born during the second year? Create the equation.

How many puppies where born during the third year? Create the equation.

How many puppies where born in three years total? ___ + ___ + ___ = ____

Multiply the total above by the amount of groups in the class? ___ x ___ = ____

Create an equation to calculate an estimate of how many could be born in 10 years using the results you obtained.



How many kittens where born during the first year? ___ + ___+ ____ = ____

How many kittens where born during the second year? Create the equation.

How many kittens where born during the third year? Create the equation.

How many kittens where born in three years total? ___ + ___ + ___ = ____

Multiply the total above by the amount of groups in the class? ___ x ___ = ____

Create an equation to calculate an estimate of how many could be born in 10 years using the results you obtained.