Farm in winter 1

A Numicon addition and subtraction activity

What you will need

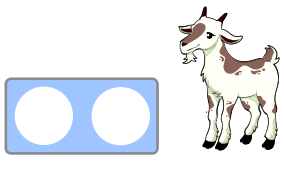
- One copy of this sheet per pair
  (**please note**: this is an A3 document and needs to be printed at 100%)
- Numicon 2-shape × 7
- Numicon 4-shape × 4
- Numicon 6-shape × 3
- Feely bag
- Small pictures of animals to put on the Shapes (optional)

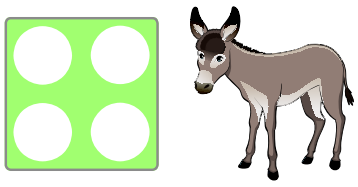
What to do

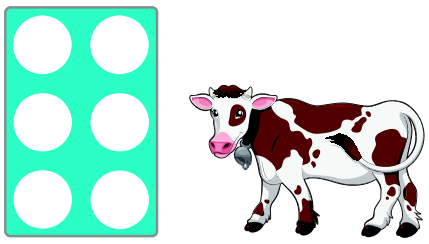
- The farmer has a field and a barn. Some animals can come into the barn in cold weather.
- Each animal takes up space in the barn. Goat = 2 spaces, Donkey = 4 spaces, Cow = 6 spaces. There are 12 spaces in the barn altogether.
- Arrange the animals/Shapes in the field around the barn.
- The children take it in turns to bring an animal/Shape in from the field and to tell an addition story. e.g. *"The barn was empty so the farmer brought in a goat that took up 2 spaces. Then there were 10 spaces to fill."*
- Repeat until the barn is full.
- Then the children take it in turns to remove an animal/Shape from the barn and tell a subtraction story.

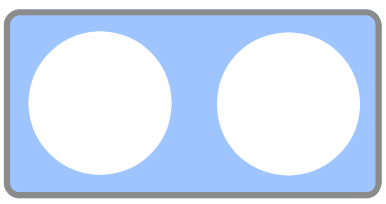
Extensions and questions

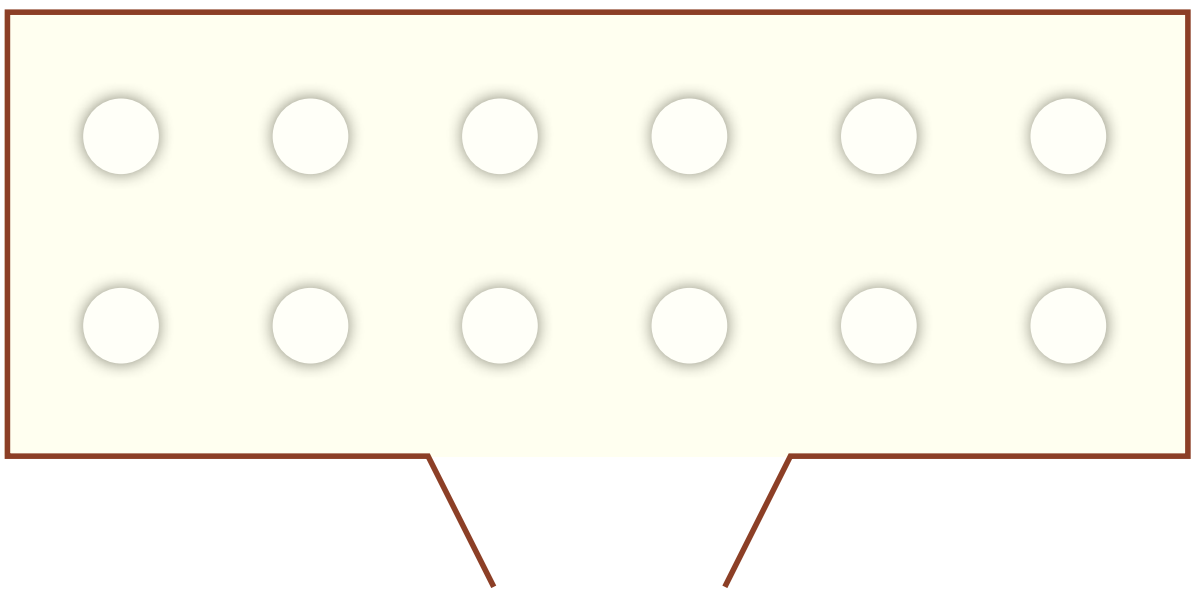
- Put all the Numicon Shapes into the Feely Bag. Ask the children to take out 3 Shapes.
- Ask them if the animals/Shapes will fit exactly in the barn with no room left over. If not, encourage the children to find the difference between the space these 3 animals need and the size of the barn. Is the barn too small or too large?
- Repeat with another 3 Shapes pulled from the bag.
- If only one type of animal could go in the barn, how many of each would fit?
- If the farmer wanted to make the barn bigger, how many more spaces would need to be added to fit in all the goats, donkeys or cows?

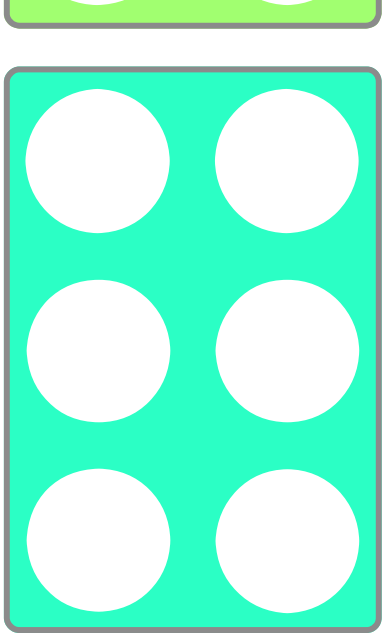












Farm in winter 2

A Numicon "Find all possibilities" activity

What you will need

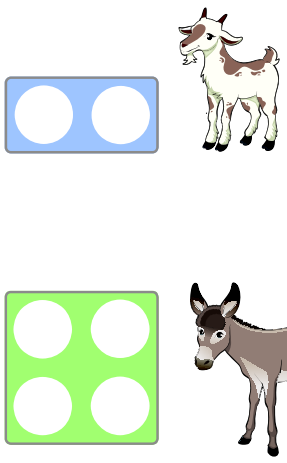
- One copy of this sheet per pair
  (**please note**: this is an A3 document and needs to be printed at 100%)
- Numicon 2-shape × 13
- Numicon 4-shape × 7
- Numicon 6-shape × 5
- Feely bag
- Small pictures of animals to put on the Shapes (optional)

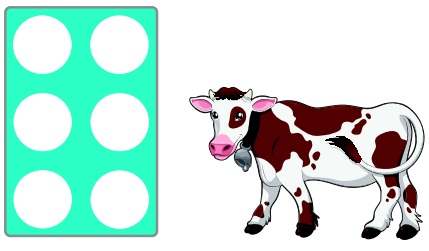
What to do

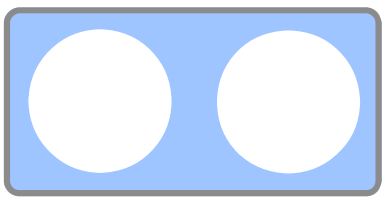
- The farmer has a field and a barn. Some animals can come into the barn in cold weather. Each animal takes up space in the barn. Goat = 2, Donkey = 4, Cow = 6. There are 24 spaces in the barn.
- Ask the children to find out how many goats will fit in the barn to fill all the available space.
- Encourage them to put goats/2-shapes in the barn and to think about number facts to help. E.g. 24 ÷ 12 = 2 and 12 × 2 = 24.
- Repeat with donkeys and cows.
- Now the farmer has decided to put 2 types of animal in the barn at the same time. E.g. goats and donkeys or cows and goats.
- All spaces must be filled.
- Encourage the children to use the Numicon Shapes and work together in a systematic way to look for all the different possibilities. E.g. 1 cow needs 6 spaces, 24 – 6 = 18, leaving space for 9 goats. Then 2 cows need...

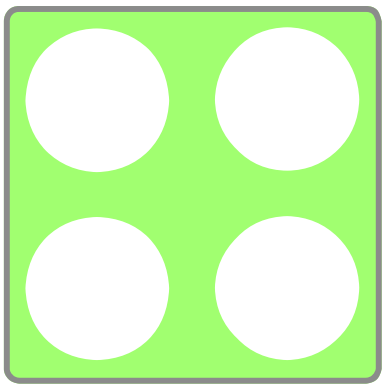
Extensions and questions

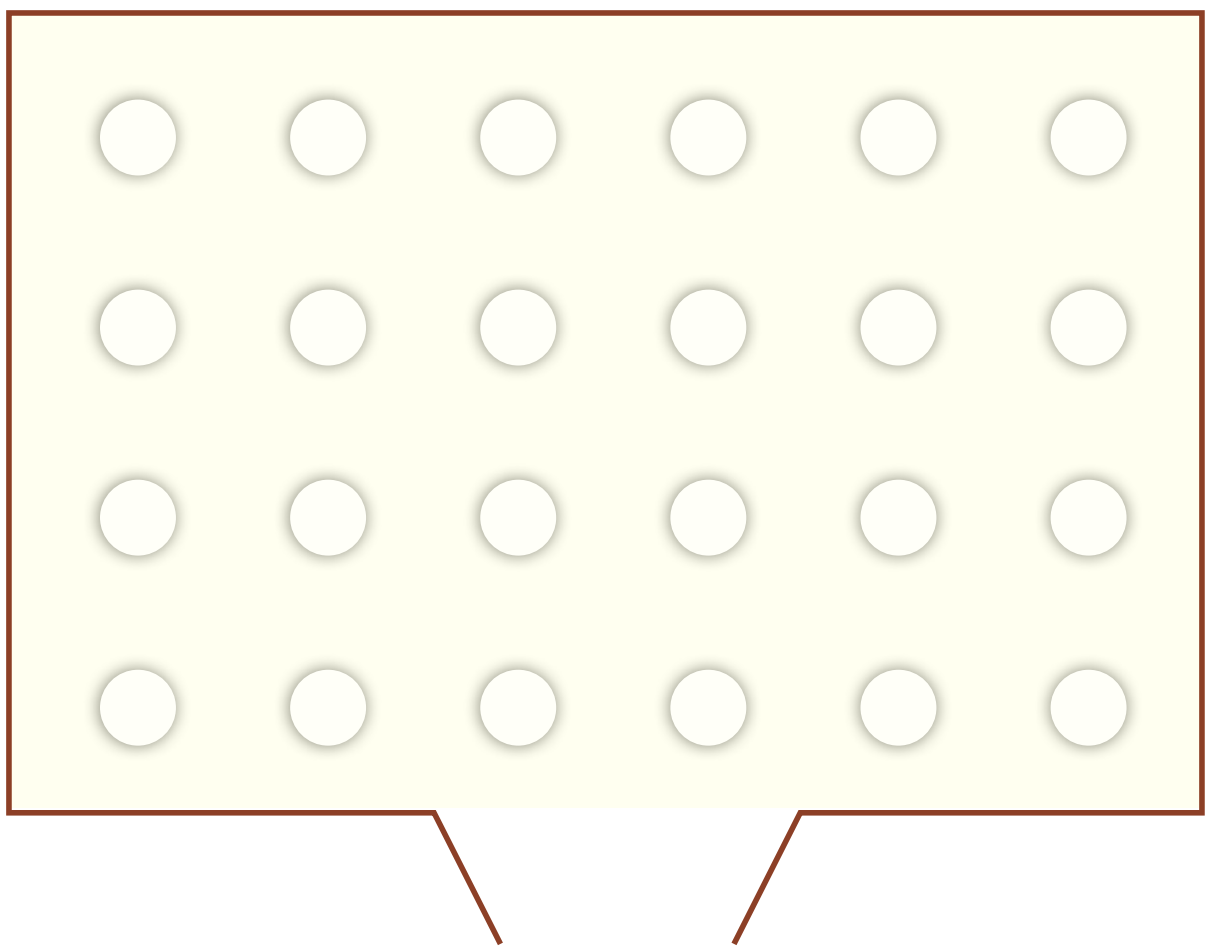
- Ask the children to use Numicon Shapes to show you the fraction of the space in the barn that has been taken by cows? E.g. 2 cows take up 12 out of 24 spaces. Some children will be able to recognize this as equivalent to ½.
- The farmer has decided to put all 3 types of animal in the barn at the same time. Encourage the children to use the Shapes and work together in a systematic way to look for all the different possibilities.
  E.g. 1 cow needs 6 spaces, 24 – 6 = 18, 1 donkey needs 4 spaces, 18 – 4 = 14, leaving space for 7 goats. Then 1 cow and 2 donkeys…











Farm in winter 3

A Numicon shape and space activity

What you will need

- One copy of this sheet per pair (**please note**: this is an A3 document and needs to be printed at 100%)
- Numicon 2-shape × 4
- Numicon 3-shape × 4
- Numicon 4-shape × 4
- Numicon 6-shape × 4
- Squared paper for recording

What to do

- The farmer has a field and a barn. Some animals can come into the barn in cold weather.
- Each animal takes up space in the barn. Goat = 2, Sheep = 3, Donkey = 4, Cow = 6. There are 36 spaces in the barn (in a 6 × 6 layout).
- The farmer needs to put fencing inside the barn to separate each type of animal.
- Each area to be fenced must be rectangular (including square).
- There must be at least one of each type of animal in the barn.
- There can be no more than 4 of a particular animal in the barn.
- All spaces must be filled.
- Encourage the children to use the Numicon Shapes and work together in a systematic way to look for all the different possibilities. E.g. 4 cows can go in a 6 × 4 rectangle, leaving space for 1 donkey, 2 sheep and 1 goat, all in rectangular areas.
- Show the children how to record their different plans for the fences on squared paper.

Extensions and questions

- What is the largest/smallest number of animals that fit in the barn?
- Ask the children to show you the fraction of the space in the barn that has been taken by cows? E.g. 2 cows take up 12 out of 36 spaces. Encourage them to see this as equivalent to $^1/_3$.
- The farmer has decided that there can be up to 6 of any type of animal in the barn. The animals still need to be fenced off in rectangular areas and there must still be at least one of each type in the barn. Challenge the children to find further fenced arrangements for the animals in the barn.