Shamu Math

Objective

Students demonstrate that numbers can be used to describe various quantities and relationships between quantities. Students gain experience adding, subtracting, multiplying, and dividing —building their understanding of how numbers are put together and taken apart. Students connect what they know to symbolic representation using number sentences.

Materials

- ❑ Copies of Shamu Math funsheet, page 3 (one per cooperative learning group)
- ❑ Pencils and paper

Background

The Animal Welfare Act establishes habitat requirements for all oceanariums including SeaWorld. SeaWorld's killer whale facility exceeds these required guidelines. One of the largest zoological killer whale habitats in the world, the Shamu Stadium complex at SeaWorld San Diego holds about 26.5 million liters of continuously filtered sea water. It includes the four pools shown in the diagrams on the Shamu Math funsheet, plus a fifth breeding and research pool. Gates between the pools can be opened or closed. There are ten killer whales at SeaWorld San Diego: Corky, Orkid, Kasatka, Ulises, Takara, Splash, Nakai, Keet, Sumar, and Kohana. Each day, animal trainers feed the whales about 580 kg of fish and squid.

Action

1. Distribute Shamu Math funsheets.
2. Read the exercises below to students. Work through the problems either as a class or in cooperative learning groups. Students use the funsheet to do Exercise 1.
3. After each exercise, ask student volunteers to explain to the class how they worked out an answer.

Answers

Exercise #1

Number sentences:
0 + 6 = 6 1 + 5 = 6 2 + 4 = 6
3 + 3 = 6 4 + 2 = 6 5 + 1 = 6
6 + 0 = 6

Exercise #2

Two killer whales go into the main show pool: 6 - 2 = 4 left in holding pools
One more killer whale swims into the show pool: 2 + 1 = 3 now in the show pool
The number of killer whales left in the holding pools: 4 - 1 = 3

Exercise #3

If the same number of people are sitting in each row, 22 ÷ 2 = 11 people in each row
Orkid splashes 6x11 = 66 wet people
Ulises splashes 9x11 = 99 wet people

Exercise #4

Six buckets of fish per show, three shows per day: 6x3 = 18 buckets of fish
In kilograms, 18x14 = 252 kg during shows
Food eaten while not doing shows:
580 kg - 252 kg = 328 kg

Exercise #1

About a half-hour before the Shamu show is about to start, trainers move Nakai, Keet, Sumar, and Kohana to the research and breeding pool and all the other whales to holding pools A and B, then close the gates. How many different ways can the trainers place the six whales in pools A and B? Use X's to represent killer whales, and mark the whale pool diagrams to show all the various possibilities of where the six whales might go. How can you communicate how many killer whales are in each pool using numbers and symbols? (Show students how they can write number sentences that describe how many whales are in each pool.)

Exercise #2

To start the show, Orkid and Ulises go into the main show pool to do bows. Now how many killer whales are left in the holding pools? Next, Takara swims into the show pool to splash the audience. Now how many killer whales are in the show pool? In the holding pools? Can students create a number sentence to show each of these situations?

Exercise #3

During the Shamu show, Orkid splashed six rows, Takara splashed two

Name_____

About a half-hour before the Shamu show starts, trainers move six killer whales to holding pools A and B. How many different ways can trainers place the whales? Use X's to represent killer whales and mark the whale pool diagrams to show all the possibilities of where six whales might go.