

Mr. Frye's Lambs

The Frye family has 9 ewes (female sheep) and 9 lambs in their barn. 3 of the ewes are not mothers. How many sets of twins are there?

Hint: Ewes have either twins (2 lambs) or 1 at one time.

Exemplars

Grade Levels Pre-K-2

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Context

This was a real life situation and was introduced by the family of the principal of our school. They have a daughter in the first grade, therefore, many of the students in our class have visited their farm and are familiar with sheep. The students were very enthusiastic about solving this problem.

What This Task Accomplishes

This problem has one solution, but inspires different strategies to find the solution. It makes them see the effectiveness of showing their solution with pictures. The diagrams help them check their answer with the information provided (nine ewes, nine lambs and three ewes are not mothers).

What the Student Will Do

Most students used sketches of lambs for their solutions. Some showed all the lambs and ewes while others just showed the mothers and the lambs. Some students used diagrams for the ewes and numbers to represent the lambs. Several students labeled the lambs and ewes and drew lines to match them. Some students drew nine sheep and did not specify whether they were lambs or ewes; some of these students made sets of twins out of these nine and disregarded the information about only three of the nine ewes not being mothers. Some students crossed off three ewes to show that three were not mothers. Some students will use symbols/codes for mothers, twins and ewes who are not mothers.

Time Required for Task

20 - 30 minutes

Interdisciplinary Links

This task can be linked to life science, the study of twins/development and farm studies.

Teaching Tips

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Exemplars

For students who have no experience with sheep and lambs, spend some time discussing how ewes commonly give birth to twins as well as single lambs.

Suggested Materials

Have two different manipulatives available for ewes and lambs (long and short Legos, Cuisinaire Rods/white and red), or create a chart with simple labeled pictures of ewes and lambs.

Possible Solutions

Three sets of twins and three single lambs with six mothers.

Benchmark Descriptors

Novice

This student misunderstood the problem and never takes into account that three ewes are not mothers, nor does the student take into account the nine lambs. The student merely groups the nine ewes by two and gets four sets of twins.

Apprentice

This student partially understood the problem. The student shows three ewes without babies and six with, but for some reason draws many other pictures of ewes and does not take the next step of addressing the nine lambs.

Practitioner

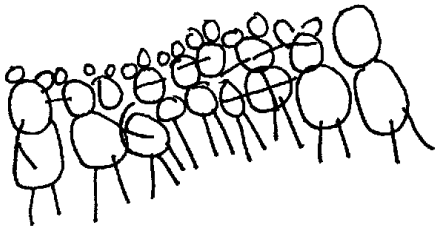
This student recognized that there were six mothers from the information presented. Initially s/he drew six mothers with a set of twins next to each mother. When asked if his/her answer was six sets of twins, this student looked back at the chart and realized s/he had disregarded some information and immediately started erasing and counting the lambs until s/he got to nine lambs. The diagram and answer are clear. The strategy used helped this student find the correct solution. This student has a broad understanding of the problem and the concepts necessary for the solution.

Expert

The solution shows a deep understanding of the problem and used an efficient, sophisticated strategy leading directly to a solution. There is a clear, effective explanation detailing how the problem is solved. All the steps are included so that the reader does not need to infer how and why decisions were made. This student applied procedures accurately to correctly solve the problem and verify the results.

Exemplars

Novice



The student never takes into consideration the lambs, and simply groups ewes by two, getting four twins with one left over.

4 sets

T: Four sets of twins because I put 9 sheep up. Then I drew a line to put them together. I counted up twins. I had the answer.

Twins

Exemplars

Apprentice



Exemplars

Practitioner

six mthry and
lahhs six + twins

Do you have six twins? No How many do
you have? ③

The student needed assistance
accurately stating the conclusion.



The student deals only with the
six mothers (right column), and
then accurately disperses the twins.

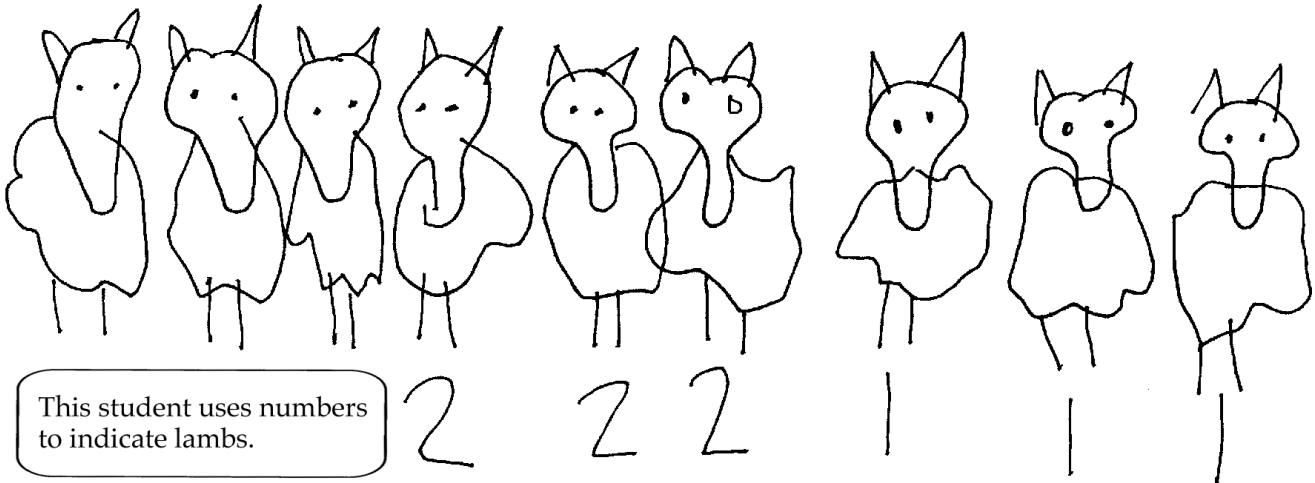
Exemplars

Expert

"Drawing sheep. Put my hand over 3 sheep. 2,4,6, I couldn't do 2 on the next because it would get to ten Three more is got 9 babies"

The student accurately and clearly communicates his/her approach and reasoning.

This student shows the three ewes who are not mothers.



This student uses numbers to indicate lambs.