Playground Fun

Mr. Andrews was trying to decide what types of balls to order for all the 4th and 5th grade students to share on the playground. He asked each student to write down what ball s/he would use the most on the playground.

He totaled up what the students wrote down and this is what he learned:

39 students liked to use a soccer ball on the playground.

37 students liked to use a basketball on the playground.

16 of those students liked to use both a soccer ball and a basketball on the playground.

Mr. Andrews knew that he could spend 50 cents per student when ordering balls. He knew that soccer balls cost \$7.95 each and basketballs cost \$5.95 each. Mr. Andrews has to decide the fairest way to order the soccer balls and basketballs and how much he will spend.

Help Mr. Andrews decide what to do using your mathematical thinking.

Grade Levels 3 - 5

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Context

This task was given to a group of fifth graders early in the school year.

What This Task Accomplishes

This task allows students to use a Venn Diagram as a problem-solving approach. It also goes a step beyond and requires students to solve a fairness issue.

Time Required for Task

45 minutes

Interdisciplinary Links

This task could link to a study of playgrounds and recreation. Students could also call around to see who offers the best prices on sporting equipment.

Teaching Tips

To make the task more or less complicated, you can change the numbers presented in the task. Students could also conduct their own survey to determine which ball is most popular in their



class.

Suggested Materials

- Paper
- Pencil
- Calculators

Possible Solutions

Sixty students took part in the survey. At 50 cents per student, Mr. Andrews has \$30 to spend. The distribution of students liking soccer and basketball are about equal, so a reasonable solution would be to purchase two of each ball: $7.95 \times 2 = 15.90$, $5.95 \times 2 = 11.90$ with \$2.20 left over.

Benchmark Descriptors

Novice

Little or no understanding of the task is demonstrated. Little correct reasoning is demonstrated. Little or no math language is used. No graphs, charts or diagrams are attempted.

Apprentice

A correct solution is achieved for part of the problem. Math representations are attempted, but lack labels. Some parts are unclear. Some math language is used.

Practitioner

All parts of the task are addressed and are correct. An accurate math representation is used as a problem solving strategy. Appropriate math language is used to communicate the solution. All work is shown.

Expert

An accurate math representation is used to find part of the solution. Correct math language and notation are used throughout. All work is shown and organized. Mathematically relevant observations or connections are made.

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you have to Find all the students and what balls to Math representations Math representations to by are attempted, but lack labels. 93 23 6 d It is unclear what the student is 50a is half is half a dullar 30 studat doing here. The student achieves a correct solution for part of the problem. ond/ basketpall x509 5 45

Practitioner

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I have to find how many kids first. I am going to make a venn diagram A= Succer B= BasketBall a+b+c=T a = Soccer 37 b= basket ball -16 C= both soccer + basketbell 21 t= total Accurate math answer is 60 kids language and notation are used throughout. D=21 An accurate representation is used to find a solution. C=16

Expert

60 Kids Total \$,50 a Kio \$30,00 29 60 Rids 60 3,000 \$ 30.00 almost the same amount of kids like soccer and basketball so you can bey the same see. Divide 16 in half to keep it fair spent \$ 27.80 and bought Us and 2 basketballs. He 2 socier talls Mathematically relevant 7.95 5.95 observations are made. × 2 × 2 \$15.90 \$11.90 All work is shown \$ 15.90 11.90 He has \$2.20 left over. 127,80 38.00 A correct solution is achieved.