

Science Fair

This task assesses your **problem-solving** ability.

STUDENTS:

Your response will be scored using the **Solves Problems** Scoring Guide. Show your best work by:

- thoroughly investigating the situation;
- using all appropriate information;
- using appropriate mathematical concepts and procedures;
- being clear and complete.

Three middle schools are going to have a science fair. The science fair will be in a gymnasium. The amount of space given to each school is based on the number of students. Jefferson Middle School has about 1,000 students. Pierce Middle School has about 600 students, and Kennedy Middle School has about 400 students.

The rectangle below represents the gymnasium. **Divide the rectangle to show the amount of space each school should get based on the number of students. Label the sections “J” for Jefferson, “P” for Pierce, and “K” for Kennedy.**



What fraction of the space should each school get based on their total number of students? Show and explain all steps to your solution.

Jefferson Middle School:

Pierce Middle School:

Kennedy Middle School:

Science Fair continued ...

If the schools share the cost of the science fair based on number of students, what percent of the cost should each school pay? Show and explain all steps to your solution.

Jefferson Middle School:

Pierce Middle School:

Kennedy Middle School:

If the cost of the science fair is \$300, how much should each school pay based on the number of students? Show and explain all steps to your solution.

Jefferson Middle School:

Pierce Middle School:

Kennedy Middle School:

Reflections

My response is good because I ...

- thoroughly investigated the situation;
- used all appropriate information;
- used appropriate mathematical concepts and procedures;
- clearly and completely describe how I solved this problem.

'99 Math Power Scoring Guide: Science Fair • Solves Problems • Grade 7

	Criteria	4 Points <i>very fine work</i>	3 Points <i>fully acceptable work</i>	2 Points <i>partially acceptable</i>	1 Point <i>response attempted</i>	0 Points <i>none or insufficient</i>
Concepts	<ul style="list-style-type: none"> Are fractional representations accurate? 	<ul style="list-style-type: none"> correctly partitions and labels the floor to reflect the proportional number of students from each of the three schools; AND 	<ul style="list-style-type: none"> correctly partitions and labels the floor to reflect the proportional number of students from each of the three schools with minor errors in division of space; AND 	<ul style="list-style-type: none"> partitioning of the floor does not precisely reflect the proportional number of students from each of the three schools and may or may not be labeled; AND 	<ul style="list-style-type: none"> may or may not correctly partition or label the floor to reflect the proportional number of students from each of the three schools; AND 	<ul style="list-style-type: none"> shows an attempt to answer some part of the questions, but all responses have major errors, or provides no new information; OR
Solutions	<ul style="list-style-type: none"> Are solutions identified and correct? 	<ul style="list-style-type: none"> all solutions are correct, fractions may or may not be in simplest form, and the percent sign (%) is used correctly; AND 	<ul style="list-style-type: none"> a minor error in interpretation or calculation may exist in one section of the problem; or a minor error in calculation is “accurately” carried into another section; or one fraction may or may not be simplified correctly (eg., $2/10 = 2/5$); or the percent sign may not be used correctly; AND 	<ul style="list-style-type: none"> errors exist in more than one section; or two or more fractions may not be simplified correctly (eg., $2/10 = 2/5$); or the percent sign may not be used correctly; AND 	<ul style="list-style-type: none"> major errors exist in some or all sections; or if sections are not attempted there is evidence of understanding; AND 	<ul style="list-style-type: none"> may or may not attempt to solve the problem; OR
Process	<ul style="list-style-type: none"> Is the problem solving process thoroughly explained? 	<ul style="list-style-type: none"> description of the problem solving process is clear, complete, and accurate. 	<ul style="list-style-type: none"> describes the process used to arrive at a correct answer, but may lack some organization or clarity. 	<ul style="list-style-type: none"> description of the process used to arrive at an answer lacks organization and/or is flawed. 	<ul style="list-style-type: none"> description of the process used to arrive at an answer may include comparisons (e.g., the most, the least, larger), is incomplete, or contains major flaws; or description is not included. 	<ul style="list-style-type: none"> restates the problem or not enough information is given to evaluate.

Numerical part of answer:

Jefferson Middle School: $1/2$ of the space; 50% of the cost; \$150

Pierce Middle School: $3/10$ of the space; 30% of the cost; \$90

Kennedy Middle School: $2/10$ ($1/5$) of the space; 20% of the cost; \$60