

ORANGE JUICE TASK

Every year the seventh grade students at Langston Hughes School go to an outdoor education camp. During the week-long trip, the students study nature and participate in recreational activities. Everyone pitches in to help with the cooking and cleanup.

Ari and Maria are in charge of making orange juice for all the campers. They make the juice by mixing water and orange juice concentrate. To find the mix that tastes best, Ari and Maria decided to test some recipes on a few of their friends.

Ari and Maria tested four juice mixes.

Mix A
2 cups concentrate
3 cups cold water

Mix B
1 cup concentrate
4 cups cold water

Mix C
4 cups concentrate
8 cups cold water

Mix D
3 cups concentrate
5 cups cold water

1. Which recipe will make the juice that is most “orangey”? Explain your answer
2. Which recipe will make the juice that is the least “orangey”? Explain your answer.
3. Assume that each camper will get half a cup of juice. For each recipe, how much concentrate and how much water are needed to make juice for 240 campers? Explain your answer.

*Lappin et al, Connected Mathematics Project, 1998**

* Adapted with permission from a task presented by Glenda Lappin, Michigan State University to AAMT Conference 1997.

SCORING RUBRIC FOR ORANGE JUICE TASK

Task 1 and 2

0	Little or no attempt to answer question.
1	Correct choice, little/no explanation offered.
2	Correct choice, explanation offered but no reference to proportion, no obvious comparison of measures, relies on number of cups
3	Correct choice with adequate explanation based on comparison of measures expressed as fractions, % or appropriate representations eg drawings and diagrams.
4	Correct choice with explanation based on ratio

Task 3

0	Little or no response that is meaningful or appropriate.
1	Attempts to calculate amount of juice. Incorrect/incomplete solution, little/no explanation.
2	More informed attempt to calculate quantities, appreciates different proportions and/or quantities involved eg Mix A and B makes 5 cups and Mix C makes 12 cups and Mix D makes 8 cups. Partial solution, little/no explanation
3	Correct solution, partial explanation.
4	Correct solution with complete explanation

Di Siemon and Margarita Breed, 2004