DOINGWHATWORKS

SAMPLE MATERIAL

Frank's Problem

Madison Elementary School, Washington

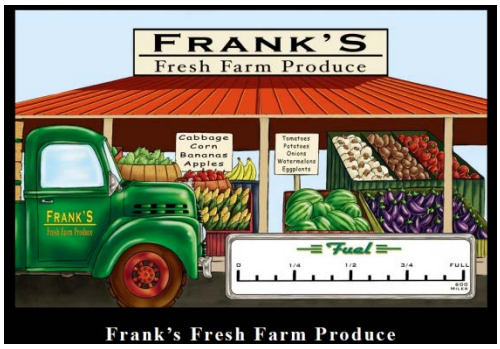
Topic: Improving Mathematical Problem Solving in Grades 4 Through 8

Practice: Problem-Solving Instruction

Madison Elementary School sixth graders work in groups and use visual representations to present their solutions to this math problem about Frank's Fresh Farm Produce. In addition to the problem statement, this sample material includes the work completed by four different groups.

This project has been funded at least in part with Federal funds from the U.S. Department of Education under contract number ED-PEP-11-C-0068. The content of this publication does not necessarily reflect the views or policies of the U.S. Department of Education nor does mention of trade names, commercial products, or organizations imply endorsement by the U.S. Government.

Frank's Problem

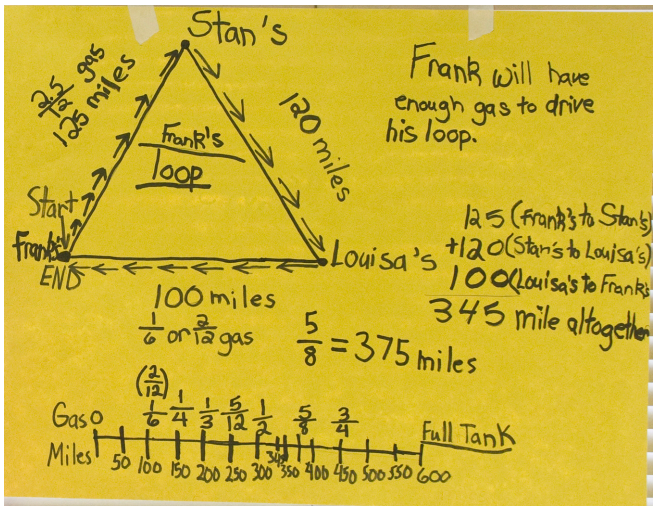


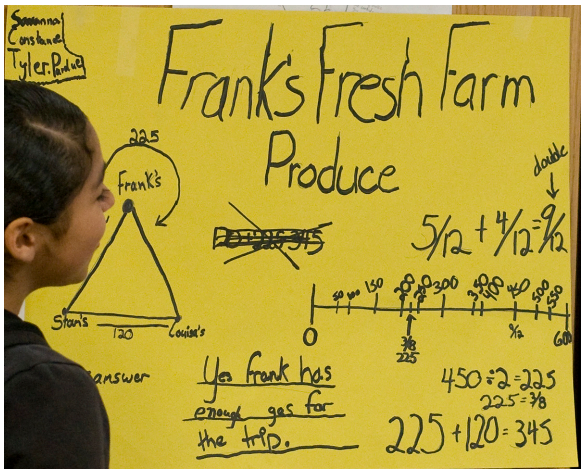
Frank's Fresh Farm Produce

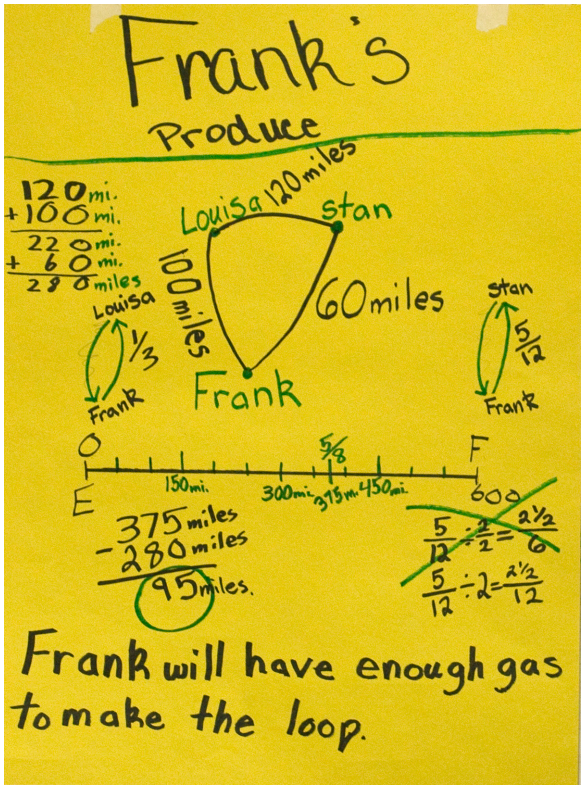
Frank runs a business called Frank's Fresh Farm Produce. Once a week he drives north of the city to farms where he buys the best possible fresh produce for his customers. Frank can travel 600 miles on a full tank of gas. His truck has a fancy, accurate fuel gauge.

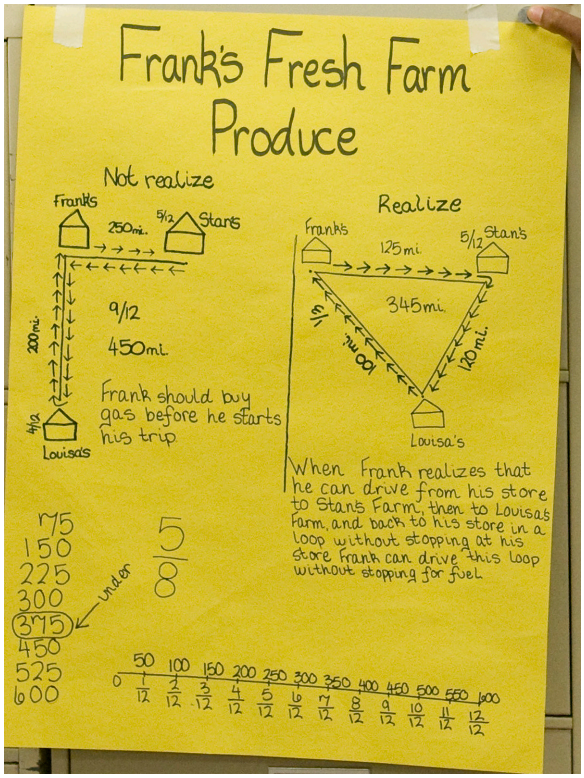
Usually Frank has time to visit only one farm on each trip, but this week he decides to visit both Stan's and Louisa's farms. When Frank drives from his store to Stan's farm and back, he knows he uses 5/12 of a tank of gas. When he drives to Louisa's farm and back, he uses 1/3 of a tank. From a map of the area, he learns that there is a road from Stan's farm to Louisa's farm that is 120 miles long. He realizes that he can drive from his store to Stan's farm, then to Louisa's farm, and then back to his store in one loop.

Frank can tell by looking at the fuel gauge that he has 5/8 of a tank of gas. Can he drive this loop without having to stop for fuel? Or should he buy gas before he starts his trip?


Stan's
Frank will have enough gas to drive his loop.
Frank's loop
120 miles
Start
Frank's END
Louisa's
125 (Frank's to Stan's)
+120 (Stan's to Louisa's)
100 (Louisa's to Frank's)
345 mile altogether
100 miles
1/6 or 2/12 gas
5/8 = 375 miles
Gas
Miles
Full Tank


Frank's Fresh Farm Produce
Frank's
Stan's
Louisa's
120
double
5/12 + 4/12 = 9/12
Yes Frank has enough gas for the trip.
450 ÷ 2 = 225
225 + 120 = 345


Frank's Produce
120 mi. + 100 mi. = 220 mi. + 60 mi. = 280 miles
Louisa
120 miles
stan
100 miles
60 miles
1/3
5/12
Frank
E
F
150 mi.
300 mi.
375 mi.
450 mi.
600
375 miles - 280 miles = 95 miles.
Frank will have enough gas to make the loop.


Frank's Fresh Farm Produce
Not realize
Frank's
Stan's
250 mi.
5/12
9/12
450 mi.
200 mi.
4/12
Louisa's
Frank should buy gas before he starts his trip
Realize
125 mi.
345 mi.
120 mi.
When Frank realizes that he can drive from his store to Stan's Farm, then to Louisa's Farm and back to his store in a loop without stopping at his store Frank can drive this loop without stopping for fuel.
75
150
225
300
375
450
525
600
under
5/8