Practical Applications: Operations with Whole Numbers

STRAND: Computation and Estimation

STRAND CONCEPT: Practical Applications-Rational Numbers and Proportional Reasoning

SOL 5.4

Remediation Plan Summary

Students will solve real life practical problems with whole numbers using multiplication, division, addition and subtraction.

Common Misconceptions

Students have a difficult time understanding what math procedure needs to be used to solve problems. They do not know when to add, subtract, multiply or divide when solving a math word problem.

Materials

- Number Search worksheet
- Who'll Paint the Hotel? Worksheet
- Highlighters
- Calculators

Introductory Activity

 Students should realize that all numbers in a word problem are not always needed for solving. Have students complete the "Number Search" worksheet by choosing the appropriate numbers from each set to answer the questions.

Ask the class to explain the relevance of this warm-up activity. Accept all reasonable responses. Ask students what they learned from having many given numbers but not using all of them in each word problem. Give students a chance to explain and share their opinions with each other.

Plan for Instruction

1. Tell the class that they will be solving real-life word problems involving numbers that may or may not be needed for solving the problems. Distribute the "Who'll Paint the Hotel?" worksheet, and go over the proposal data with the class, encouraging questions about painting and the information in the proposals.

2. Allow students to work in pairs to solve the word problems. Have each student circle or underline the essential parts of each word problem and the numbers they will use to solve it. Encourage discussions, monitor the students' work carefully, and answer any questions they may have.

3. When students have finished, ask them to share their solutions and describe the strategies they used to solve the problems. Encourage all students to respond, as a discussion on different approaches to solving word problems will be helpful to all.

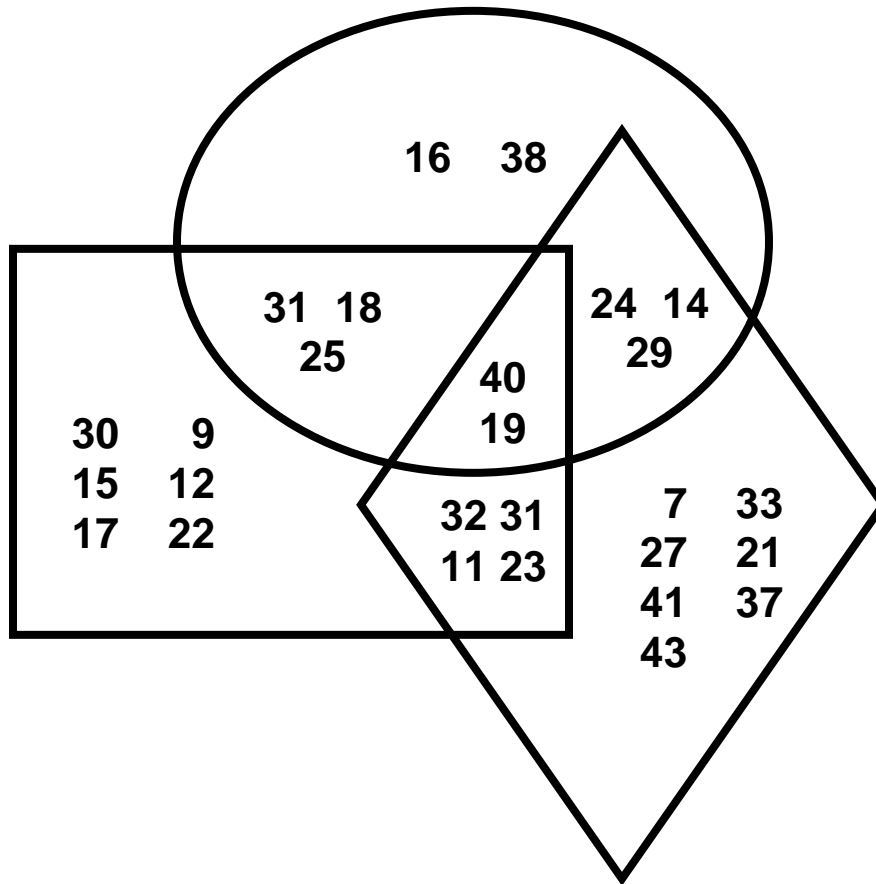### *Pulling It All Together (Reflection)*

Have students complete the "Reflection" worksheet individually.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Virginia Department of Education 2018

Name:

Number Search

16   38

31 18
25

24 14
29

40
19

30   9
15   12
17   22

32 31
11 23

7   33
27   21
41   37
43

1.   Which numbers are in the oval and the rectangle? _____

2.   Which numbers are in the rectangle and the rhombus? _____

3.   What is the sum of the numbers in only the rhombus? _____

4.   Which numbers are in the oval but not in the rectangle? _____

5.   Which numbers are in the rectangle but not in the rhombus? _____

6.   Which numbers are in only the oval? _____

7.   Which numbers are in the oval and rhombus but not in the rectangle? _____

8.   Which numbers are in all three shapes? _____

Name:

Who'll Paint the Hotel?

The City Hotel has 30 rooms that need to be painted. The hotel manager is considering two painting companies for the job. He has gotten proposals from both companies, and now he's comparing the information in the proposals. Here's the data he's comparing:

PAINT SPECIALISTS	PRO PAINTERS
Proposal to paint 30 rooms at The City Hotel:	**Proposal to paint 30 rooms at The City Hotel:**
• Crew of 3 painters	• Crew of 4 painters
• Each painter can paint 300 square feet per hour.	• Each painter can paint 250 square feet per hour.
• Each room has 720 square feet of surface area to paint.	• Each room has 720 square feet of surface area to paint.
• We buy paint for $16 a gallon.	• We buy paint for $14 a gallon.
• One gallon of our paint covers 400 square feet.	• One gallon of our paint covers 350 square feet.

Answer the following questions:

Paint Specialists	Pro Painters
1. How many gallons of paint will be needed to paint the 30 rooms in the City Hotel?	1. How many gallons of paint will be needed to paint the 30 rooms in the City Hotel?
2. How much will it cost to buy the paint?	2. How much will it cost to buy the paint?
3. Can the crew of 3 painters finish the job in 2 days if each person works 7 hours a day?	3. Can the crew of 4 painters finish the job in 2 days if each person works 7 hours a day?
4. If not, how many days would it take to finish the job?	4. If not, how many days would it take to finish the job?
5. If each painter makes $8 an hour and works 26 hours, how much money would the entire crew get?	5. If each painter makes $9 an hour and works 22 hours, how much money would the entire crew get?
6. How much will it cost City Hotel to paint the rooms if Paint Specialists does the job?	6. How much will it cost City Hotel to paint the rooms if Pro Painters does the job?
7. City Hotel also needs its lobby painted. Its surface is 25 times greater than one hotel room. What is the amount of surface area to be painted? How much would it cost to buy the paint?	7. City Hotel also needs its lobby painted. Its surface is 25 times greater than one hotel room. What is the amount of surface area to be painted? How much would it cost to buy the paint?

8. Based only on this data, which company should the manager of City Hotel choose to paint the hotel? Explain why.

Name:

Reflection

Was this activity easy or difficult? _____ Why?

_____

_____

_____

What did you learn from this activity?

_____

_____

_____