

Preliminary Planning Sheet Grade 5 – Ms. Harley Rides to School

Domain(s)

Number and Operations in Base Ten

Standard(s)

5.NBT.B.7

Mathematical Practices

MP.1 MP.2 MP.3 MP.4 MP.5 MP.6 MP.7

Major Underlying Mathematical Concepts

- Operations with decimals to the hundredths place
- Comparing decimals
- Money notation

Problem Solving Strategies

- Model (manipulatives)
- Diagram/Key
- Table
- Number line

Formal Mathematical Language and Symbolic Notation

- Model
- Diagram/Key
- Table
- Number line
- Miles
- Per
- Greater than (>)/Less than (<)
- Place value (tenths, hundredths)
- Total/Sum/Product
- Distance
- Miles per hour (mph)
- Fractions ($\frac{1}{4}$, $\frac{1}{2}$, $1\frac{1}{2}$)
- Decimals (3.45 ...)
- Day, week, month
- Odd/Even
- Addition
- Multiplication
- Rule ($23 \cdot d = T$)
- Time
- Minutes
- Equivalent/Equal to
- Data
- Dime, dollar
- Money notation (\$, .)

Possible Solution(s)

Ms. Harley rides 23 total miles to school and back home in one day. Ms. Harley stays within her budget.

If the student computes the gas per distance, the total cost is \$41.60 because of rounding. If the student multiplies 23 miles by \$0.09/mile by 20 days, the total cost is \$41.40. Either total is considered correct.

Motorcycle Riding

Start Location	End Location	Miles Rode	Total Miles Rode	Cost of Gas
Greenville	Lakeland	3.45	3.45	\$0.31
Lakeland	Centerville	5.48	8.93	\$0.49
Centerville	Sunrise City	1.07	10.00	\$0.10
Sunrise City	School	1.50	11.50	\$0.14

Rule
d is day
t is total miles
$23 \cdot d = t$

$$\begin{array}{r}
 11.50 \text{ miles} \\
 + 11.50 \text{ miles} \\
 \hline
 23.00 \text{ miles}
 \end{array}
 \qquad
 \begin{array}{r}
 5 \text{ days} \\
 \times 4 \text{ weeks} \\
 \hline
 20 \text{ days}
 \end{array}
 \qquad
 \begin{array}{r}
 460 \text{ miles} \\
 \times \$0.09 \\
 \hline
 \$41.40
 \end{array}$$

$$\begin{array}{r}
 23 \text{ miles} \\
 \times \$0.09 \\
 \hline
 \$2.07
 \end{array}
 \qquad
 \begin{array}{r}
 23 \text{ miles} \\
 \times 20 \text{ days} \\
 \hline
 460 \text{ miles}
 \end{array}
 \qquad
 \begin{array}{r}
 \$2.07 \\
 \times 20 \text{ miles} \\
 \hline
 \$41.40
 \end{array}$$

Possible Connections

Below are some examples of mathematical connections. Your students may discover some that are not on this list.

- Add a column to the table to represent gas costs or equivalent decimals of miles ridden.
- Ms. Harley has \$8.40 (rounding) or \$8.60 (multiplying miles by cost per mile by number of days) left in her budget at the end of the 4 weeks, depending on how the solution is reached.
- 1.50 miles is 1 $\frac{1}{2}$ miles.
- 2 distances total an odd number of miles. 2 distances total an even number of miles.
- Ms. Harley's budget for gas is $\frac{1}{2}$ a hundred dollars.
- If the total days were 25, Ms. Harley would ride 575 miles. Use a generalized rule to solve for a variety of days traveled or to verify first strategy's answer is correct.
- Relate to a similar task and state a math link.
- Solve more than one way to verify the answer.
- Discuss mph and the time it takes to ride to school.
- 3.45 miles = 3 $\frac{45}{100}$ miles