

Making Sense of SCIENCE

The Number System: Student Work Samples and Task A for Grades 6–8

Cathy Carroll and Mardi Gale

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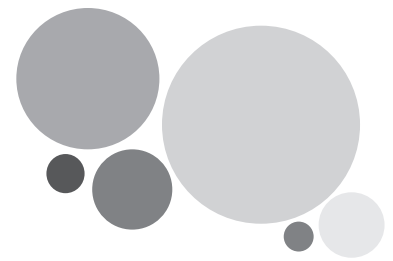
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The Number System

STUDENT WORK SAMPLES & TASK – SET 

This student work was collected for educators to use for their own professional learning. It is ideal to use with our Making Sense of Student Work protocol when teachers are unable to bring in student work from their classrooms. It can also be used with many other protocols designed to support teachers looking collaboratively at student work.

The samples in this download include ones from students with high, medium, and low levels of understanding. They show an authentic variety

of responses from a typical classroom. To protect students' identities, their names have been removed and each has been assigned an alias.

Also included in this PDF is a black line master of the task. This task is part of a larger Formative Assessment Task Bank. The full task bank and other task banks on different topics are available for download. Visit our website for more information and to purchase these items.

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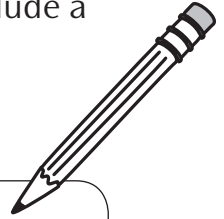
Name:

TASK

A

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

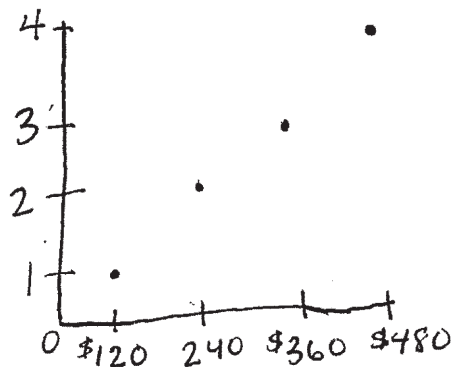


A large, empty rectangular box with rounded corners, intended for the student to write their answer and include a diagram to show their thinking.

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

David had \$480.00 before buying the bike because since \$120 is $\frac{1}{4}$ of "x" you need to multiply \$120 by 4. (to check your work you divide \$480 by 4 to get \$120)



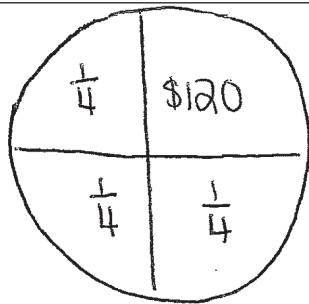
$$\begin{array}{r}
 120 \\
 +120 \\
 \hline
 240 \\
 +120 \\
 \hline
 360 \\
 +120 \\
 \hline
 480
 \end{array}$$

$$\begin{array}{r}
 120 \\
 4 \overline{)480} \\
 \underline{4} \\
 08 \\
 \underline{08} \\
 0
 \end{array}$$

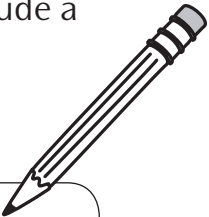
\$	#
\$120	1
\$240	2
\$360	3
\$480	4

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

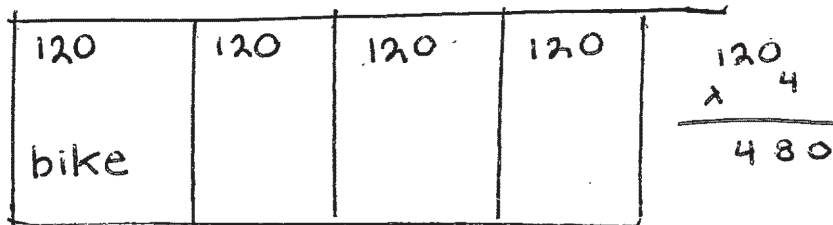


360


$$\begin{array}{r} \$120 \div \frac{1}{4} \\ \downarrow \\ 120 \times 4 \\ \downarrow \\ 480 \\ \downarrow \\ 480 - 120 = 360 \end{array}$$

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.



David had \$480 before buying the bike.

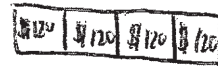
THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

$$120 = \frac{1}{4} \text{ so } 4(120) = 4\left(\frac{1}{4}\right) \rightarrow 480 = 1$$

↑ ↑
\$ before his whole
 savings

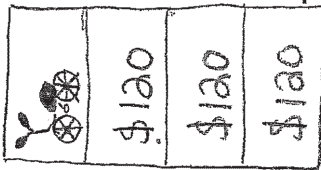
David had \$480 before buying a bike. If David's savings was $\frac{1}{4} = \$120$ then 4 of $\frac{1}{4}$ of his saving would mean all of his savings before, so if you multiply $\frac{1}{4}$ of his savings by 4 then you also have to multiply \$120 by 4 because $\frac{1}{4}$ of savings is \$120.



THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

$$\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{4}{4} = 1$$



\$120

Since the \$120 that was spent on the bicycle is $\frac{1}{4}$ of his savings,

there are 3 more \$120 parts of his savings.

In total there are 4 \$120 parts and that sums up to \$480.

His savings before he bought the bicycle was \$480.

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

Bike = \$120 $\frac{1}{4} = .25$

$$\begin{array}{r} 225428 \\ \times 5 \\ \hline 125 \\ \hline 200 \end{array}$$

$$\begin{array}{r} 120 \\ \times .25 \\ \hline 600 \\ + 240 \\ \hline 3000 \end{array}$$

$$\begin{array}{r} 120 \\ + 30 \\ \hline 150 \\ \times 30 \\ \hline 3600 \end{array}$$

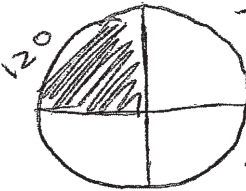
$$\begin{array}{r} 1150 \\ \times .30 \\ \hline 000 \\ + 450 \\ \hline 4500 \end{array}$$

$$\begin{array}{r} 37.5 \\ 4 \overline{)150.0} \\ \underline{12} \\ 30 \\ \underline{28} \\ 20 \end{array}$$

$$\begin{array}{r} 410 \\ 180 \\ - 45 \\ \hline 105 \end{array}$$

~~$$\begin{array}{r} 125 \\ \times 17000 \\ \hline 200 \\ 200 \\ \hline 200 \end{array}$$~~

~~$$\begin{array}{r} 3 \\ \times 3600 \\ \hline 12000 \\ + 7200 \\ \hline 65000 \end{array}$$~~

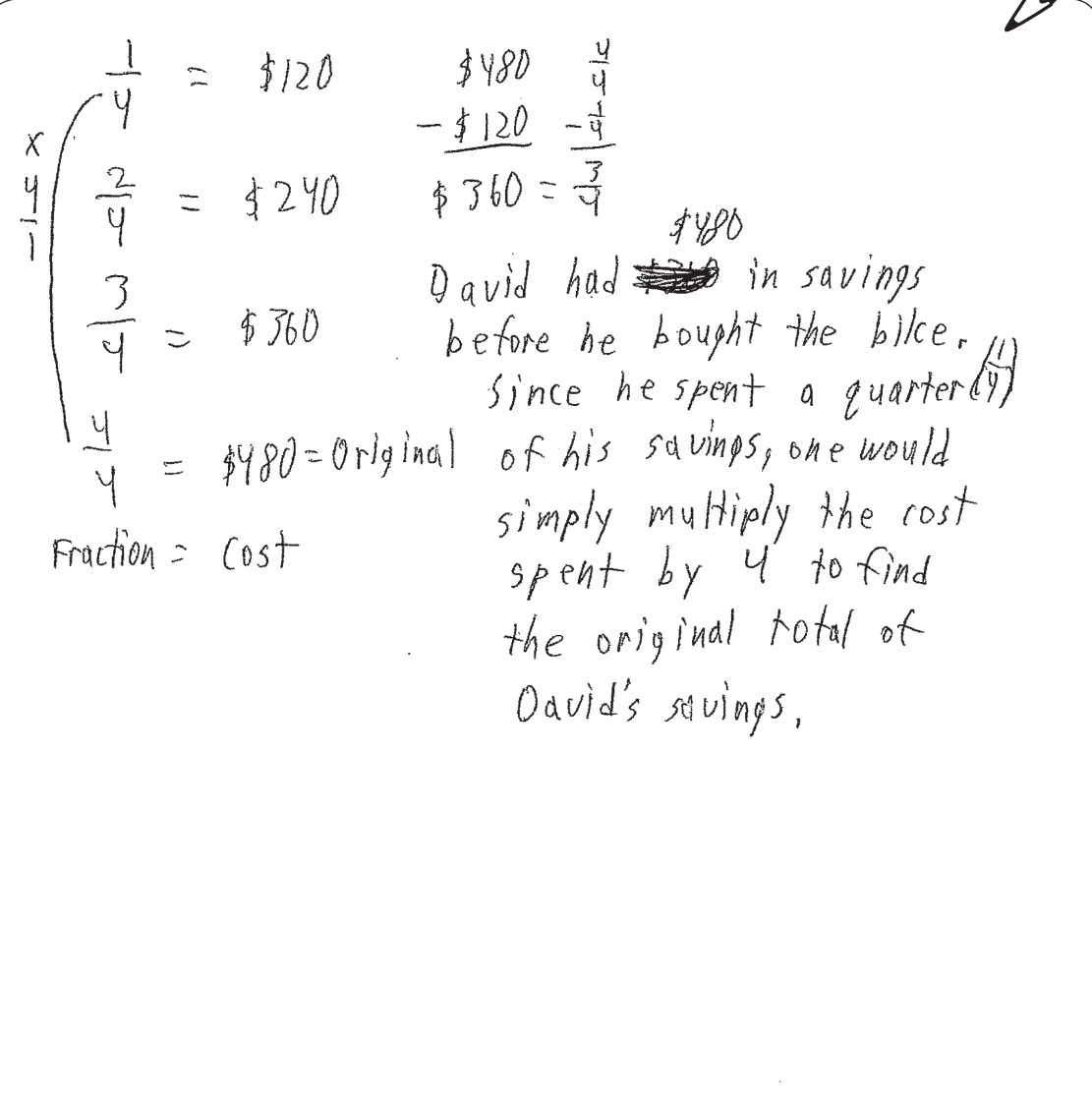


total savings

His total savings before the bike were \$150.

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.



$\frac{1}{4} = \$120$
 $\frac{2}{4} = \$240$
 $\frac{3}{4} = \$360$
 $\frac{4}{4} = \$480 = \text{Original}$
 Fraction = Cost

$\$480$
 $-\$120$
 $\$360 = \frac{3}{4}$

David had ~~\$360~~ $\$480$ in savings before he bought the bike. Since he spent a quarter ($\frac{1}{4}$) of his savings, one would simply multiply the cost spent by 4 to find the original total of David's savings.

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

$$\frac{\$120.00}{1} = \frac{1}{4}$$

$$\begin{array}{r} 30 \\ 4 \overline{)120} \\ \underline{-12} \\ 0 \\ \underline{-0} \\ 0 \end{array}$$

He saved \$30 before David bought the bike.

I got \$30 by making \$120.00 to a fraction, then I divided 120 to 4, to get \$30.

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

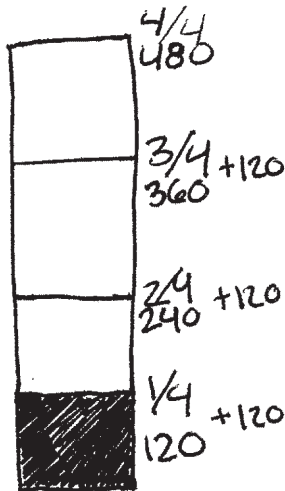
The student's work is shown in a rounded rectangle. On the left, there is a division problem: $.25 \overline{) 120.00}$. The student has written 4.80 above the line and has crossed out the entire problem with a large 'X'. In the center, there is a multiplication problem: $\begin{array}{r} + \\ 120 \\ \times .25 \\ \hline 600 \\ 2400 \\ \hline 30.00 \end{array}$. This problem is circled. To the right of the multiplication problem is a bar model. The bar is divided into four equal sections. The left side of the bar is labeled with $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, and 1 . The right side is labeled with 0, 25, 50, 75, and 100. The bottom section, representing $\frac{1}{4}$ of the total, is shaded with diagonal lines.

THE NUMBER SYSTEM

1. David bought a bike that cost \$120.00. This was $\frac{1}{4}$ of his savings. How much savings did he have before buying the bike? Explain your answer. Include a diagram to show your thinking.

$$\begin{array}{r} 120 \\ \times 4 \\ \hline 480 \end{array}$$

David had \$480 before buying the bike.



If David had spent $\frac{1}{4}$ of his money which is \$120.00 he would have $\frac{3}{4}$ left. So what you would do is multiply 120 by 4 because that is his denominator and get 480. So David had \$480.00 before buying the bike.