Galaxy of Problems #3
Build an arrow road from 53 to 19 using $-10$ and $-1$ arrows. Fill in the box for the gray arrow.

Write a calculation shown by the gray arrow.
Color one-third of each shape.
Complete.

5 \times 2 = \_

5 \times 4 = \_

5 \times 8 = \_

5 \times 10 = \_

5 \times 20 = \_
Fill in the box for each arrow.
Complete.

\[
\begin{align*}
10 - 5 &= \square \\
9 - 4 &= \square \\
8 - \square &= 5 \\
\square - 2 &= 5 \\
5 - 4 &= \square \\
6 - 4 &= \square \\
7 - \square &= 3 \\
\square - 4 &= 4 \\
15 - 5 &= \square \\
15 - 6 &= \square \\
\square - 7 &= 8 \\
15 - \square &= 7 \\
12 - 2 &= \square \\
14 - 4 &= \square \\
16 - \square &= 10 \\
\square - 8 &= 10
\end{align*}
\]
Label the dots. Draw all the missing +4 arrows in gray.

There should be nine gray arrows.
Zap is a secret number.

Zap can be put on this Minicomputer by removing one checker.

Zap could be ______, ______, ______, or ______.

Zap is in this string picture.

Who is Zap? _________
Share 38 cards fairly between Tony and Juan.

<table>
<thead>
<tr>
<th>For Tony</th>
<th>For Juan</th>
</tr>
</thead>
</table>

Write a number sentence about this sharing.

Share 42 bows fairly among Linda, Yvette, and Erin.

<table>
<thead>
<tr>
<th>For Linda</th>
<th>For Yvette</th>
<th>For Erin</th>
</tr>
</thead>
</table>

Write a number sentence about this sharing.
Complete.

\[
\begin{array}{cccccccc}
-7 & -3 & 3 & 8 & 5 & 4 & 3 \\
-3 & -7 & -5 & -8 & -3 & -4 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
10 & -7 & 7 & 12 & 9 & 10 & 13 \\
-7 & -10 & -9 & -12 & -13 & -10 \\
\end{array}
\]

\[
\begin{array}{cccccccc}
6 & -5 & 1 & 11 & 8 & 12 \\
-4 & -9 & -3 & -8 & -10 & -4 \\
\end{array}
\]
Label the dots and complete the multiplication facts.

\[ 2 \times \quad 3 \times \]

\[ 6 \times 7 = \_\_\_ \quad 4 \times 12 = \_\_\_ \]

\[ 6 \times 15 = \_\_\_ \quad 9 \times 4 = \_\_\_ \]
Label the dots in this string picture.
Many solutions are possible.
Several children gave estimates of how many pennies were in a jar. Here are their estimates.

<table>
<thead>
<tr>
<th></th>
<th>Estimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gus</td>
<td>300</td>
</tr>
<tr>
<td>Jamaal</td>
<td>268</td>
</tr>
<tr>
<td>Laura</td>
<td>331</td>
</tr>
<tr>
<td>Carly</td>
<td>350</td>
</tr>
<tr>
<td>Ivan</td>
<td>275</td>
</tr>
</tbody>
</table>

After counting, the children found there were exactly 316 pennies in the jar.

Who had the closest estimate? _____________

How close was each child to the actual number of pennies?

Gus _____________
Jamaal _____________
Laura _____________
Carly _____________
Ivan _____________
Build an arrow road from 6 to 60 using 2x and +1 arrows. Try to use as few arrows as possible.

6

2x

+1

60
Connect the dots with a zigzag path, but do not go through the building. Try to make your zigzag path shorter than 20 cm.

Length of zigzag path = _________ cm
Is the length of your zigzag path less than 20 cm? ________
Label the dots. Fill in the box for the gray arrows.

\[ 2 \times \quad +4 \quad + \square \]
What number is on the Minicomputer?

\[
30 - 21 = \_
\]

\[
50 - 44 = \_
\]

\[
79 - 68 = \_
\]

\[
31 - 15 = \_
\]

\[
22 - 63 = \_
\]
Color one-half of each shape red. In each case, write another name for $\frac{1}{2}$ as suggested by the picture.

Example

\[ \frac{1}{2} = \frac{3}{6} \]

\[ \frac{1}{2} = \quad \frac{1}{2} = \quad \frac{1}{2} = \]

\[ \frac{1}{2} = \quad \frac{1}{2} = \quad \frac{1}{2} = \]
A gremlin wrote too many numbers in these problems. Cross out one number in each problem to make the addition correct.

\[
63 + 78 + 43 = 121
\]

\[
84 + 64 + 56 = 140
\]

\[
35 + 47 + 45 = 82
\]

\[
\begin{array}{ccc}
184 & 246 & 527 \\
435 & 236 & 487 \\
+245 & +326 & +387 \\
429 & 562 & 914 \\
\end{array}
\]
Build an arrow road from 9 to 109. Try to use as few arrows as possible.
Dana buys two models and spends exactly $3.
Draw one string around the prices of these two models.

$0.95  $1.50  $2.35
$1.70  $2.05  $0.85

Alex buys two kits and spends exactly $4.
Draw one string around the prices of these two kits.

$2.81  $1.53  $3.97
$0.29  $1.34  $2.66
Ten number friends—0, 1, 2, 3, 4, 5, 6, 7, 8, 9—are playing the \( \oplus 9 \) game. Put these numbers in the picture.

Complete these number sentences about addition with the ten number friends.

\[
\begin{align*}
6 \oplus 6 &= \quad \phantom{3} \\
\phantom{6} \oplus 8 &= 3 \\
9 \oplus \phantom{6} &= 4 \\
2 \oplus 4 \oplus 6 \oplus 8 &= \phantom{3} \\
5 \oplus \phantom{6} \oplus 9 &= 1
\end{align*}
\]
Jon wants to weigh his dog Trapper, but Trapper won’t stand still on the scale. Jon gets on the scale holding Trapper. Together they weigh 192 pounds. Jon weighs 118 pounds. How much does Trapper weigh? __________

Ellen has 50 jellybeans. She gives 5 jellybeans to each of her 3 friends. How many jellybeans does Ellen have left? __________

Will works for seven hours. Each hour he earns $5.00 and each hour he spends $1.00. How much money does he get? __________

Alice went shopping. She spent half her money on lunch. Then she bought a hat for $3.00. Now she has $2.00. How much did Alice have to start with? __________
Put these numbers in this arrow picture.

35  44  53  70  79  106  115  158

+9  2×
Put parentheses in these number sentences to make them TRUE.

\[ 3 + 5 \times 4 = 23 \]

\[ 3 \times 5 - 4 = 11 \]

\[ 3 \times 5 + 4 = 19 \]

\[ 3 + 5 \times 4 = 32 \]

\[ 3 \times 4 + 5 = 27 \]
Find the area of each shape.

Color a shape that has area 21 cm\(^2\).
Label the dots. Fill in the box for the gray arrows.

\[
\frac{1}{2} \times +10 + \boxed{} 
\]
Use the clues to find Lou’s house. Write Lou’s name next to a dot for his house.

**Clue 1**
Lou lives seven blocks (taxi-distance) from school.

**Clue 2**
Lou lives four blocks (taxi-distance) from the theater.

**Clue 3**
Lou lives closer to the library than to school.
Label the dots.

Complete.

\[
\frac{1}{3} \times 66 = \____ \quad \frac{1}{3} \times 45 = \____ \quad \frac{1}{3} \times 90 = \____
\]

\[
66 \div 3 = \____ \quad 45 \div 3 = \____ \quad 90 \div 3 = \____
\]
Put these numbers in the string picture.

\[
\begin{array}{ccc}
15 & 4 \times 9 & 2 \times 11 \\
4 \times 21 & 5 \times 13 & 4 \times 35
\end{array}
\]
What number is on the Minicomputer?

\[ \begin{array}{cccc} \cdot & \cdot & \cdot \cdot & \cdot \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array} = \ ____ \]

Put these numbers on the Minicomputer by moving exactly one of these checkers.

46 = \[ \begin{array}{cccc} \cdot & \cdot & \cdot \cdot & \cdot \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array} \]

42 = \[ \begin{array}{cccc} \cdot & \cdot & \cdot \cdot & \cdot \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array} \]

65 = \[ \begin{array}{cccc} \cdot & \cdot & \cdot \cdot & \cdot \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array} \]

26 = \[ \begin{array}{cccc} \cdot & \cdot & \cdot \cdot & \cdot \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \end{array} \]
The red string is for one of these:

<table>
<thead>
<tr>
<th>RED</th>
<th>YELLOW</th>
<th>GREEN</th>
<th>BLUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT RED</td>
<td>NOT YELLOW</td>
<td>NOT GREEN</td>
<td>NOT BLUE</td>
</tr>
<tr>
<td>○</td>
<td>△</td>
<td>□</td>
<td>BIG</td>
</tr>
<tr>
<td>NOT ○</td>
<td>NOT △</td>
<td>NOT □</td>
<td>LITTLE</td>
</tr>
</tbody>
</table>

The blue string is for one of these:

<table>
<thead>
<tr>
<th>RED</th>
<th>YELLOW</th>
<th>GREEN</th>
<th>BLUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT RED</td>
<td>NOT YELLOW</td>
<td>NOT GREEN</td>
<td>NOT BLUE</td>
</tr>
<tr>
<td>○</td>
<td>△</td>
<td>□</td>
<td>BIG</td>
</tr>
<tr>
<td>NOT ○</td>
<td>NOT △</td>
<td>NOT □</td>
<td>LITTLE</td>
</tr>
</tbody>
</table>

Label the strings.