### PIPS

**Problem → Info → Picture/Strategy → Solution**

<table>
<thead>
<tr>
<th>Page</th>
<th>4-Square</th>
<th>Problem Solving Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Blank Template</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Model – Easy level</td>
<td>Picture (subtraction)</td>
</tr>
<tr>
<td>4</td>
<td>Model – Easy level</td>
<td>Picture (multiplication)</td>
</tr>
<tr>
<td>5</td>
<td>Student Exemplar - Easy</td>
<td>Picture (addition)</td>
</tr>
<tr>
<td>6</td>
<td>Student Exemplar - Easy</td>
<td>Picture (subtraction)</td>
</tr>
<tr>
<td>7</td>
<td>Model – Medium level</td>
<td>Pictograph (subtraction)</td>
</tr>
</tbody>
</table>
| 8 – 9| **SCIENCE** (Quarter Moons in one year) – **challenging level** | Act it out  
Make a Table  
Look for a Pattern |
|      | **SCIENCE** (comparing Mercury years to Earth years) – **challenging level** | Act it out  
Make a Table  
Look for a Pattern |

Click on a page number to visit that page.
**Problem**

(What is the question that I need to answer?)

How many videotapes does Jacob have left?

**Info**

(What information helps me to solve this problem?)

1. 6 videotapes

2. Gives 3 away

---

Jacob has 6 videotapes. He gives 3 of them to his school library. How many does he have left?

**Solution**

1. Number Sentence:
   
   $6 - 3 = 3$ videotapes

2. Word Sentence:

   Jacob has 3 videotapes left.
**Problem**

(What is the question that I need to answer?)

How many cupcakes were there in all?

---

**Info**

(What information helps me to solve this problem?)

1. 7 people
2. 3 cupcakes each

---

**Picture (or other Strategy)**

Mike had a birthday party. He invited six friends. Mike and his six friends each got 3 cupcakes. There were 9 candles on each cupcake. How many cupcakes were there in all?

---

**Solution**

1. **Number Sentence:**
   
   $$7 \times 3 = 21$$

   21 cupcakes

2. **Word Sentence:**
   
   There were 21 cupcakes in all.

---

**Key:** ☐ = 1 cupcake
Alex carried the ball for 8 yards in his football game. Then he carried it for 9 more yards. How many yards did he carry the ball in all?

1. Number Sentence:  
   \[8 + 9 = 17 \text{ yards}\]

2. Word Sentence:  
   Alex carried the ball 17 yards in all.
Zach had 15 dollars in his bank. Then he bought a new baseball for 7 dollars. How much money did he have left?

1. Number Sentence: $15 - 7 = 8$ dollars
2. Word Sentence: 
   Zach has 8 dollars left.
Problem

(What is the question that I need to answer?)

How many more catches did Billy make in the third inning than in the second inning?

Info

(What information helps me to solve this problem?)

1. 13 catches in the 3rd inning
2. 4 catches in the 2nd inning

Picture (or other Strategy)

We made a pictograph.

Billy caught the ball 4 times in the second inning of the baseball game. He caught it 13 times in the third inning. How many more catches did Billy make in the third inning than in the second inning?

Solution

1. Number Sentence:
   \[13 - 4 = 9\text{ more catches}\]

2. Word Sentence:
   Billy caught 9 more balls in the 3rd inning than in the 2nd inning.
**Problem**

(What is the question that I need to answer?)

About how many times will we be able to see a Quarter Moon in one year?

---

**Info**

(What information helps me to solve this problem?)

1. About 30 days = About 1 month for one revolution
2. 12 months in one year, so about 12 revolutions in one year.
3. 2 Quarter Moons in each revolution

It takes about 30 days for the moon to revolve around Earth one time. In one revolution, we see four phases of the moon: New moon (can’t see it), Full moon (see whole circle), First Quarter moon (see half circle), and Last Quarter moon (see half circle). About how many times will we be able to see a Quarter Moon in one year?

---

**Picture (or other Strategy)**

We acted it out.

Then we made a table, and looked for a pattern.

<table>
<thead>
<tr>
<th>Months</th>
<th>Quarter Moons</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>8</td>
</tr>
<tr>
<td>12</td>
<td>24</td>
</tr>
</tbody>
</table>

---

**Solution**

1. **Number Sentence:**
   
   \[12 \times 2 = 24\] Quarter Moons

2. **Word Sentence:**

   We will be able to see the Quarter Moon about 24 times in one year.
It takes about 30 days for the moon to revolve around Earth one time. In one revolution, we see four phases of the moon: New moon (can't see it), Full moon (see whole circle), First Quarter moon (see half circle), and Last Quarter moon (see half circle). About how many times will we be able to see a Quarter Moon in one year?

**Problem**

(What is the question that I need to answer?)

About how many times will we be able to see a Quarter Moon in one year?

**Info**

(What information helps me to solve this problem?)

1. 1 month for one revolution
2. 12 months
2 quarter moons each month

**Picture (or other Strategy)**

[Table showing months and quarter moons]

**Solution**

1. Number Sentence: $12 \times 2 = 24$ Quarter Moons
2. Word Sentence: We will be able to see the Quarter moon 24 times in one year.
Problem
(What is the question that I need to answer?)

If you could live on Mercury, how old would you be now in Mercury years?

Info
(What information helps me to solve this problem?)

1. Earth takes 12 months to revolve around the sun, and 12 months = one year on Earth
2. Mercury takes 3 months to revolve around the sun.

Picture (or other Strategy)
We acted it out. Then we made a table and looked for a pattern.

<table>
<thead>
<tr>
<th>Earth</th>
<th>Mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 months</td>
<td>1 year</td>
</tr>
<tr>
<td>6 months</td>
<td>2 years</td>
</tr>
<tr>
<td>9 months</td>
<td>3 years</td>
</tr>
<tr>
<td>12 months</td>
<td>4 years</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Earth</th>
<th>Mercury</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 year</td>
<td>4 years</td>
</tr>
<tr>
<td>2 years</td>
<td>8 years</td>
</tr>
<tr>
<td>3 years</td>
<td>12 years</td>
</tr>
</tbody>
</table>

Solution

1. Number Sentence:
   \[8 \times 4 = 32 \text{ years}\]
   \[4 + 4 + 4 + 4 + 4 + 4 + 4 + 4 = 32\]

2. Word Sentence:

   You would be 32 years old on Mercury if you are 8 years old on Earth.