Sticky Situations ~
Investigating and Understanding the Common Computation Situations Tables

NCTM Annual Conference 2018

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By the time students leave 2nd grade they need to be familiar with all the subtypes of the Common Addition and Subtraction Situations AND be able to understand and solve two-step problems.
# Common Addition and Subtraction Situations

<table>
<thead>
<tr>
<th>Situation Type</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Add to</strong></td>
<td>Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before?</td>
</tr>
<tr>
<td></td>
<td>2 + 3 = 5</td>
</tr>
<tr>
<td></td>
<td>Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat?</td>
</tr>
<tr>
<td></td>
<td>5 - 2 = 3</td>
</tr>
<tr>
<td><strong>Taken from</strong></td>
<td>Three red apples and two green apples are on the table. How many apples are on the table?</td>
</tr>
<tr>
<td></td>
<td>3 + 2 = 5</td>
</tr>
<tr>
<td><strong>Put Together/Take Apart</strong></td>
<td>Five apples are on the table. Three are red and the rest are green. How many apples are green?</td>
</tr>
<tr>
<td></td>
<td>3 + 2 = 5</td>
</tr>
<tr>
<td><strong>Compare</strong></td>
<td>(“How many more?” version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy?</td>
</tr>
<tr>
<td></td>
<td>(“How many fewer?” version): Lucy has five apples. Julie has two apples. How many fewer apples does Lucy have than Julie?</td>
</tr>
<tr>
<td></td>
<td>Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Lucy have?</td>
</tr>
<tr>
<td></td>
<td>Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have?</td>
</tr>
</tbody>
</table>

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**Shading taken from OA progression**

**Start Unknown**

- Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? 
  7 - 3 = 5
- Some apples were on the table. I ate some apples. Then there were three apples. How many apples were on the table before? 
  7 - 2 = 5
- Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 
  5 - 0 = 5, 5 - 5 = 0
  5 + 1 = 4, 5 + 4 = 1
  5 - 2 + 3, 5 - 3 + 2
- Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? 
  (Julie has three more apples than Lucy, Julie has five apples. How many apples does Lucy have?)
- Lucy has 3 fewer apples than Julie. Lucy has five apples. How many apples does Lucy have? 
  (Version with “fewer”): Lucy has 3 fewer apples than Julie. Lucy has five apples. How many apples does Lucy have? 
  5 - 3 = 2, 7 + 3 = 5

**Addend Unknown**

- Five apples are on the table. Three are red and the rest are green. How many apples are green? 
  3 + 2 = 5

**Both Addends Unknown**

- Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? 
  5 - 0 = 5, 5 - 5 = 0
  5 + 1 = 4, 5 + 4 = 1
  5 - 2 + 3, 5 - 3 + 2
There are 32 students in Ying’s class eating lunch. Then, more students joined Ying’s class.

Since the first day of school, 4 students have left Sam’s class.

Molly’s class has 3 fewer students than Sam’s class.

There are 16 girls in Mrs.

David’s book has 26 more pages than Elam’s book. There are 48 pages in David’s book. Choose two equations that you can use to find the number of pages in Elam’s book.

<table>
<thead>
<tr>
<th>Result Unknown</th>
<th>Change Unknown</th>
<th>Start Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now?</td>
<td>Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two?</td>
<td>Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before?</td>
</tr>
<tr>
<td>[2 + 3 = ?]</td>
<td>[? + 3 = 5]</td>
<td>[? - 2 = 3]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Unknown</th>
<th>Addend Unknown</th>
<th>Both Addends Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three red apples and two green apples are on the table. How many apples are on the table? [3 + 2 = ?]</td>
<td>Five apples are on the table. Three are red and the rest are green. How many apples are green? [3 + 2 = 5, 5 - 3 = ?]</td>
<td>Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? [5 = 0 + 5, 5 = 5 + 0]</td>
</tr>
<tr>
<td>[\text{Difference Unknown}]</td>
<td>[\text{Bigger Unknown}]</td>
<td>[\text{Smaller Unknown}]</td>
</tr>
<tr>
<td>(“How many more?” version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? [2 + 3 = 5, 5 - 2 = ?]</td>
<td>(“Version with “more”:): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? [\text{(Version with “more”:)}]</td>
<td>(“Version with “more”:): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? [\text{(Version with “fewer”:)}]</td>
</tr>
<tr>
<td>[\text{Compare}^3]</td>
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</tr>
<tr>
<td>(“How many fewer?” version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? [2 + 3 = 5, 5 - 2 = ?]</td>
<td>(“Version with “fewer”:): Lucy has three fewer apples than Julie. Lucy has two apples. How many apples does Julie have? [\text{(Version with “fewer”:)}]</td>
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\[\text{Difference Unknown}\] | \[\text{Bigger Unknown}\] | \[\text{Smaller Unknown}\] |
| (“How many more?” version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? \[2 + 3 = 5, 5 - 2 = ?\]| (“Version with “more”:): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? \[\text{(Version with “more”:)}\] | (“Version with “more”:): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? \[\text{(Version with “more”:)}\] |

\[\text{Compare}^3\] | \[\text{Compare}^3\] | \[\text{Compare}^3\] |
| (“How many fewer?” version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? \[2 + 3 = 5, 5 - 2 = ?\]| (“Version with “fewer”:): Lucy has three fewer apples than Julie. Lucy has two apples. How many apples does Julie have? \[\text{(Version with “fewer”:)}\] | (“Version with “fewer”:): Lucy has three fewer apples than Julie. Julie has five apples. How many apples does Lucy have? \[\text{(Version with “fewer”:)}\] |
Keyword Trap

https://www.youtube.com/watch?v=A82qR0980e0
What words represent the following symbols ...

4
÷
+ 
×
\%
\π
\sqrt{}
{[()]}

Math Practice 4
What is the unknown?

<table>
<thead>
<tr>
<th>Start</th>
<th>Change</th>
<th>Result</th>
</tr>
</thead>
</table>

Action
Two dogs were drinking from the pond. Some other dogs ran to the water. Now there are five dogs. How many dogs ran over to the first two?

\[
\begin{array}{|c|c|c|}
\hline
\text{Start} & \text{Change} & \text{Result} \\
\hline
2 & + & 5 \\
\hline
\end{array}
\]
A clown gave me balloons at a party. Two of them blew out of my hand. I am now holding three balloons. How many did the clown give me?
Think of the clown problem we just completed. Where would it be on table 1?
There are twelve purple grapes and green grapes in the bowl. I counted seven purple grapes. How many green grapes are there?

<table>
<thead>
<tr>
<th>Whole/Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part</th>
<th>Part</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
You have six pencils. Your partner has four pencils. How many fewer pencils does your partner have?
On her birthday Maria had $10 from her mom and dad and then got $15 from her grandma. Her brother bragged that he has $5 more than she has. How much money does her brother have?

What do we know about the situation?

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$15 + $10 = $25
On her birthday Maria had $10 from her mom and dad and then got $15 from her grandma. Her brother bragged that he has $5 more than she has. How much money does her brother have?
\$25 + \$5 = ?
On her birthday Maria had $10 from her mom and dad and then got $15 from her grandma. Her brother bragged that he has $5 more than she does. How much money does her brother have?
$10 + $15 = ?
$25 + $5 = ?
$(10 + 15) + 5 = ?

When does the last equation need to be expected of students?
### Common Multiplication and Division Situations

#### Equal Groups

**Unknown Product**
- \(3 	imes 6 = ?\)
  - There are 3 bags with 6 plums in each bag. How many plums are there in all?
  - Measurement example: You need 3 lengths of string, each 6 inches long. How much string will you need altogether?
  - Area example: What is the area of a 3 cm by 6 cm rectangle?

**Group Size Unknown**
- \(3 	imes 2 = 18; 18 + 3 = ?\)
  - If 18 plums are shared equally into 3 bags, then how many plums will be in each bag?
  - Measurement example: You have 18 inches of string, which you will cut into 3 equal pieces. How long will each piece of string be?
  - Area example: A rectangle has an area of 18 square centimeters. If one side is 3 cm long, how long is the side next to it?

**Number of Groups Unknown**
- \(? 	imes 6 = 18; 18 ÷ 6 = ?\)
  - If 18 apples are arranged into equal rows of 6 apples, how many rows will there be?
  - Measurement example: A rubber band was 6 cm long. How many times as long is the rubber band now as it was at first?
  - Area example: A rubber band was stretched to be 18 cm long and then 3 cm as long as it was at first. How long was the rubber band at first?

#### Arrays, Area

**Unknown Product**
- A blue hat costs $5. A red hat costs $3, which is 3 times as much as the blue hat. How much does the red hat cost?

**Group Size Unknown**
- Measurement example: A rubber band was 6 cm long. How long will the rubber band be when it is stretched 3 times as long?

**Number of Groups Unknown**
- \(x \times 3 = p; p = a \div 2\)
  - Measurement example: A rubber band was stretched to be 18 cm long and then 3 cm as long as it was at first. How long was the rubber band at first?

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Read over these situations and discuss areas of struggle.
What type of situations are represented with this mat?
There are four highlighters in a package. How many highlighters in three packages?

<table>
<thead>
<tr>
<th>Group(s)</th>
<th>Group Size</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
If twelve plums are to be packed four to a bag, then how many bags are needed?

<table>
<thead>
<tr>
<th>Group(s)</th>
<th>Group Size</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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</table>
## Common Multiplication and Division Situations (pg 89 in CCSS)

Grade level identification of introduction of problems taken from OA progression

<table>
<thead>
<tr>
<th>Unknown Product</th>
<th>Group Size Unknown</th>
<th>Number of Groups Unknown</th>
</tr>
</thead>
<tbody>
<tr>
<td>$3 \times 6 = 18$</td>
<td>$3 \times 2 = 18; 18 + 3 = 21$</td>
<td>$? \times 6 = 18; 18 + 6 = ?$</td>
</tr>
</tbody>
</table>

### Equal Groups
- **Measurement example.** You need 3 lengths of string, each 6 inches long. How much string will you need altogether?
- **Equal Groups.** There are 3 bags with 6 plums in each bag. How many plums are there in all?

### Arrays, Area
- **Area example.** What is the area of a 3 cm by 6 cm rectangle?
- **Arrays.** There are 3 rows of apples with 6 apples in each row. How many apples are there?

### Compare
- **Measurement example.** A rubber band is 6 cm long. How long will the rubber band be when it is stretched to be 3 times as long?
- **Compare.** A blue hat costs $6. A red hat costs 3 times as much as the blue hat. How much does the red hat cost?

### General
- **General.** $a \times b = ?$ $a \times ? = p$, and $p + a = ?$ $? \times b = p$, and $p + b = ?$

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Multiplicative compare problems appear first in Grade 4 (green), with whole number values and with the “times as much” language from the table. In Grade 5, unit fraction language such as “one third as much” may be used. Multiplying and unit language change the subject of the comparing sentence (“A red hat costs n times as much as the blue hat” results in the same comparison as “A blue hat is 1/n times as much as the red hat” but has a different subject.)
Mom bought two adult tickets for $7 each and three kid tickets for $5 each. How much did Mom spend on the tickets?
Great adaptive, personalized learning program that develops procedural fluency by building from conceptual understanding.

Sample Lesson

You don't have enough gumballs to pack another full bag of 18. How many gumballs remain?

292 ÷ 18 = ?
180 ÷ 18 = 10
90 ÷ 18 = 5
18 ÷ 18 = 1

Remainder: 4

18 + 10 + 5 + 1 = 24

5.NBT.4
## Directions

1. Select the word problem OPERATION.

2. Select the type of PROBLEM.

3. Choose which variable is UNKNOWN.

4. Choose HOW MANY problems to generate.

5. Specify the largest number’s RANGE.

6. Click GENERATE to create your problem!
Frogs on a Log

Pre-K-2
Students learn their first basic addition facts as they make the connection between counting and finding one more than a number. Students will manipulate frogs on a number line to represent adding 1 to a number.

Get the Picture—Get the Story

3-5
In the following lesson, students act as reporters at the Super Bowl. Students study four pictures of things that they would typically find at a football game: players, a scoreboard, a crowd, and a concession stand. Students are asked to create problem situations that correspond to their interpretation of each of the pictures.
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