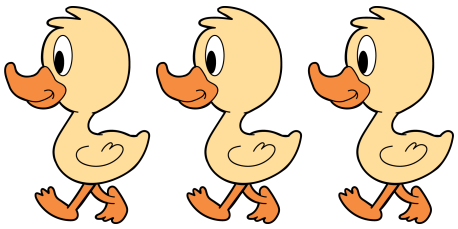
Every IM K–5 lesson starts with an invitation to the mathematics. This invitation is an engaging, brief activity called a *warm-up routine*. Each warm-up routine is designed to get students thinking and talking about math in ways that make sense to them.

There are 10 different warm-up routines that your child might see throughout the year. This guide can help you know what to expect and how to participate.

<table>
<tr><th colspan="2">Act it Out</th></tr>
<tr><td>Purpose</td><td>This routine is for kindergarten and first grade students. It encourages young children to understand the relationship between words and numbers. It provides opportunities for students to make sense of story problems.</td></tr>
<tr><td>Summary</td><td>Students listen to a story problem and act it out though movement, using their fingers, or objects to represent the action in the story.</td></tr>
<tr><td rowspan="2">Example</td><td>Kindergarten</td></tr>
<tr><td> 
Three (3) little ducks went out one day,
Over the hill and far away.
Mother duck said, “Quack, quack, quack.”
Then the three (3) little ducks came back.</td></tr>
<tr><td>Questions to ask</td><td>• What is the story about?
• Can you act it out?
• Can you use your fingers to show what happened in the story?
• Can you use cubes to show what happened in the story?</td></tr>
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<table>
<tr><th colspan="3">Choral Count</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine encourages students to make predictions and think about patterns. It also provides opportunities for students to justify their reasoning.</td></tr>
<tr><td>Summary</td><td colspan="2">Students count aloud starting from a given number. The count might be forwards or backwards. The teacher records the numbers on a chart as students say them. Students then stop and look at the written numbers to make predictions and look for patterns.</td></tr>
<tr><td rowspan="2">Example</td><td>Grade 1</td><td>Grade 3</td></tr>
<tr><td>Count by ones starting at 50.

50 51 52 53 54 55 56 57 58 59

60 61 62 63 64 65 66 67 68 69

70 71 72 73 74 75 76 77 78 79</td><td>Count by $\frac{1}{4}$, starting at $\frac{1}{4}$.

$\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ $\frac{4}{4}$
$\frac{5}{4}$ $\frac{6}{4}$ $\frac{7}{4}$ $\frac{8}{4}$
$\frac{9}{4}$ $\frac{10}{4}$ $\frac{11}{4}$ $\frac{12}{4}$
$\frac{13}{4}$ $\frac{14}{4}$</td></tr>
<tr><td>Questions to ask</td><td colspan="2">• What do you think will come next? How do you know?
• What do you notice? What do you wonder?
• What patterns do you see?
• What number will be written next in the column/row?</td></tr>
</table>

<table>
<tr><th colspan="3">Estimation Exploration</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine encourages students to use their own experiences and what they already know to make good estimates and justify their reasoning.</td></tr>
<tr><td>Summary</td><td colspan="2">Students make estimates in response to a question about an image. They first think about estimates that would be sensible, but too high or too low. Then they make a reasonable estimate and discuss why their estimate makes sense.</td></tr>
<tr><td rowspan="2">Examples</td><td>Grade 2</td><td>Grade 5</td></tr>
<tr><td>How tall is the man in inches?
  </td><td>How many people would fit in the big red wagon?
  </td></tr>
<tr><td>Questions to ask</td><td colspan="2">• What does it mean to estimate?
• What is an estimate that’s too high? Too low? About right?
• Based on this discussion, does anyone want to revise their estimate?
• What would help you make a closer estimate?
• Does that make sense?
• Which estimates would have been unreasonable?
• Based on this discussion, does anyone want to revise their estimate?
• Can we make any generalizations based on the statements?</td></tr>
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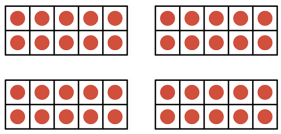
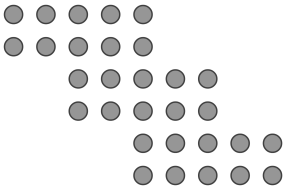
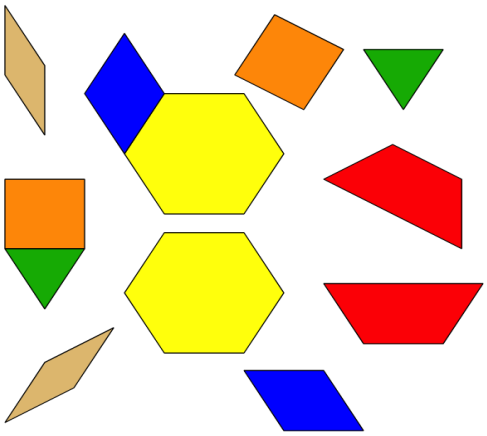
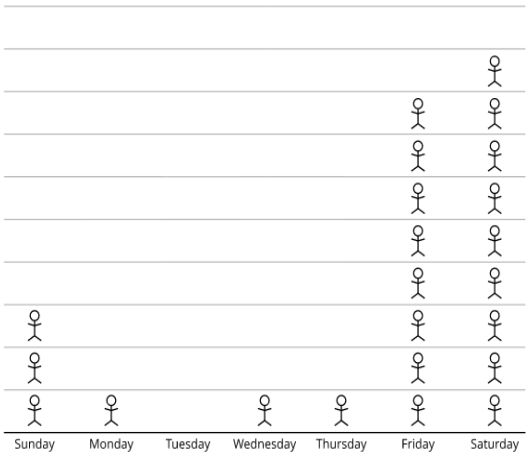
<table>
<tr><th colspan="3">How Many Do You See?</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine encourages students to see groups when counting. Being able to see groups of objects in an organized way helps them visualize quantities and improves their ability to do mental computation.</td></tr>
<tr><td>Summary</td><td colspan="2">Students look at an image, which is typically an arrangement of dots or other shapes. Then students state how many dots or shapes they see. Also included in the discussion will be comments about the way they saw them or determined how many there were. This encourages students to see groups and patterns rather than count each item one by one.</td></tr>
<tr><td rowspan="2">Examples</td><td>Grade 1</td><td>Grade 3</td></tr>
<tr><td>How many do you see? How do you see them?
  </td><td>How many do you see? How do you see them?
  </td></tr>
<tr><td>Questions to ask</td><td colspan="2">• How many do you see and how do you see them?
• Could you count them in a different way?
• What was helpful in finding the total number of dots?"
• How many dots would there be if there was another group of them?</td></tr>
</table>

<table>
<tr><th colspan="3">Notice and Wonder</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine provides an opportunity for students to bring their understandings and experiences to a problem. They share their ideas and ask questions without any pressure to answer or solve a problem. This routine reinforces the importance of making sense of situations before solving a problem.</td></tr>
<tr><td>Summary</td><td colspan="2">Students look at an image related to the topic of the lesson and are asked, “What do you notice?” The teacher writes all comments on a chart. They are then asked, “What do you wonder?”, and their questions are also recorded on the chart.</td></tr>
<tr><td rowspan="2">Examples</td><th>Kindergarten</th><th>Grade 3</th></tr>
<tr><td>What do you notice? What do you wonder?
  </td><td>What do you notice? What do you wonder?
 
</td></tr>
<tr><td>Questions to ask</td><td colspan="2">• What do you notice?
• What do you wonder?
• What questions could you answer using the image?
• What other questions do you have?</td></tr>
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<table>
<tr><th colspan="3">Number Talk</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine provides an opportunity for students to practice mental math. It helps them solve problems and think about numbers in flexible ways. They not only justify their own reasoning, but critique the reasoning of others as they make sense of methods for solving problems.</td></tr>
<tr><td>Summary</td><td colspan="2">A series of problems are presented one at a time. Students solve the problem in their head and signal when they have an answer. The teacher takes notes as they justify their answer and explain their method for solving.</td></tr>
<tr><td rowspan="2">Examples</td><th>Grade 1</th><th>Grade 5</th></tr>
<tr><td>Find the value of each expression mentally.

27 + 3

27 + 5

25 + 7

35 + 7</td><td>Find the value of each expression mentally.

50 x 6

50 x 60

50 x 600

60 x 500</td></tr>
<tr><td>Questions to ask</td><td colspan="2">• How did you solve the problem?
• Why did you choose that strategy?
• Did one one problem help you solve another problem? How?
• What other problem would you add to this string? Why?</td></tr>
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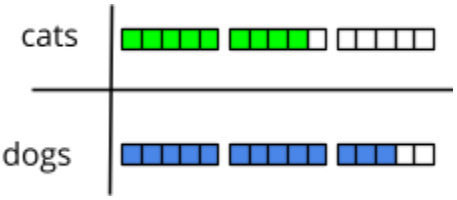
<table>
<tr><th colspan="3">Questions About Us</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine is used with kindergarten students. It provides them opportunities to learn more about their classmates and gives them practice asking questions, organizing quantities, counting, and analyzing data.</td></tr>
<tr><td>Summary</td><td colspan="2">Students ask their classmates a question with two choices. They keep track of the answers and count the responses. The teacher then asks follow up questions that students answer using the data that they collected.</td></tr>
<tr><td rowspan="2">Examples</td><td colspan="2">Kindergarten</td></tr>
<tr><td>Would you rather play on the slide or on the swings?
 
</td><td>Which do you like better: cats or dogs?
 
</td></tr>
<tr><td>Questions to ask</td><td>• How can we figure out how many students would rather play on the slide?
• How many students would rather play on the slide?
• How can we figure out how many students would rather play on the swings?
• How many students would rather play on the swings?”</td><td>• How many people like cats better?
• How many people like dogs better?
• If 1 more person likes cats, how many?
• If 1 less person likes dogs, how many?</td></tr>
</table>

<table>
<tr><th colspan="3">True or False?</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine encourages students to make sense of equations, often without any computation. It provides another opportunity for students to justify their reasoning as they explain to others what they are thinking.</td></tr>
<tr><td>Summary</td><td colspan="2">Students are presented with a series of equations, one at a time. Some equations may be true, and some may be false. Students use what they know about place value, operations, and number relationships to decide if each is true or false. And then, students explain how they know.</td></tr>
<tr><td rowspan="2">Examples</td><td>Grade 1</td><td>Grade 4</td></tr>
<tr><td>Decide if each statement is true or false. Be prepared to explain your reasoning.
5 = 5
4 + 1 = 5
6 = 4 + 1
1 + 4 = 4 + 1</td><td>Decide if each statement is true or false. Be prepared to explain your reasoning.
2 x 7 = 3 x 7
3 x 8 = 3 x 6
2 x 8 = 4 x 4
2 x 12 = 3 x 6</td></tr>
<tr><td>Questions to ask</td><td colspan="2">• How did you decide if the equation was true or false?
• If false, how could you make it true?
• Can you prove it is true or false without solving both sides of the equation?</td></tr>
</table>

<table>
<tr><th colspan="3">What Do You Know About ___?</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine encourages students to share their experiences and understandings about a math topic.</td></tr>
<tr><td>Summary</td><td colspan="2">Students are presented with a number, expression, or are asked a general question about a math topic. They then list everything they know about that topic. The teacher writes what students say and then references the list later so that students can add more ideas.</td></tr>
<tr><td rowspan="2">Examples</td><td>Grade 2</td><td>Grade 5</td></tr>
<tr><td>What do you know about 354?</td><td>What do you know about $\frac{3}{2}$?</td></tr>
<tr><td>Questions to ask</td><td colspan="2">

Can you draw a picture or diagram to show what you know about _____.
What experience do you have with _____?
Where might you see _____?
How would you use _____?
When responding to a number:

How could you represent that number using a number line or place value blocks?
What are some numbers that are larger/smaller than that number?
What equations can you write using that number?

</td></tr>
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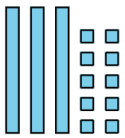
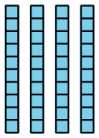
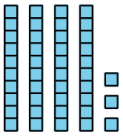
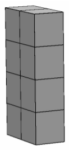
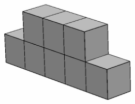
<table>
<tr><th colspan="3">Which One Doesn't Belong?</th></tr>
<tr><td>Purpose</td><td colspan="2">This routine provides an opportunity for students to reason about characteristics of shapes, math tools, or other images to decide which one doesn't belong. Because any answer is correct, students are able to focus on communicating their reasoning and justifying their choice.</td></tr>
<tr><td>Summary</td><td colspan="2">Students are shown 4 different images, which may be numbers, equations, shapes, images, or diagrams. They decide which one doesn't belong and explain why.</td></tr>
<tr><td rowspan="2">Examples</td><td>Grade 2</td><td>Grade 5</td></tr>
<tr><td>Which one doesn't belong?
A 
B 
C 
D  </td><td>Which one doesn't belong?
A 
B 
C 
D  </td></tr>
<tr><td>Questions to ask</td><td colspan="2">• Which one doesn't belong? Why?
• What is the same and different about the others?
• Can you think of a reason why another one doesn't belong?</td></tr>
</table>