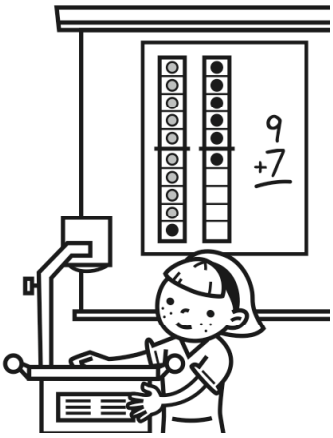
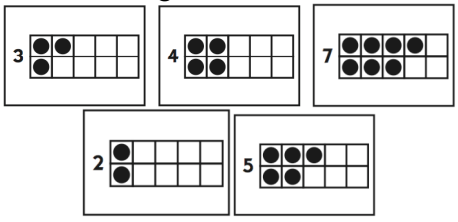
Grade 2, Unit Three: Addition, Subtraction & Probability

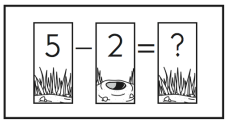
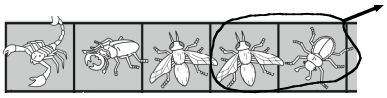
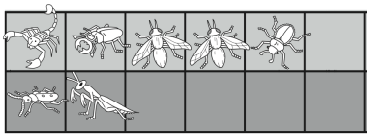
In this unit your child will:

- use strategies to help recall basic addition facts with sums to 20 and basic subtraction facts from 18
- use models and numbers to demonstrate the meaning of addition and subtraction, especially when solving story problems
- predict the likelihood of different outcomes based on the initial conditions of a simple game



Your child will learn and practice these skills by solving problems like those shown below. Keep this sheet for reference when you're helping with homework.

Problem	Comments
Students will play a game in which the goal is to pick up cards that add up to a target number. The player with the most cards at the end of the game wins, so the more cards you pick up in each turn, the more likely you are to win. The example below shows how a student might decide which cards to take in a single turn. **Target Number: 9**  "I know 7 plus 2 is 9. 4 plus 5 also works. But if I do 4 and 3, that's 7. Then 2 more makes 9. If I do that, I can pick up three cards!" **7 + 2 = 9** **4 + 5 = 9** **3 + 4 + 2 = 9**	This unit includes many games that help students practice their basic addition and subtraction facts. The challenge of this game is to find different ways to add up to the target number to collect the most cards. This is engaging for students who know many of their facts. It also promotes flexibility and provides a lot of practice for those students who are still learning the facts. The cards in this game show each number with dots to help students who are still mastering their facts.

Problem	Comments
Solve this subtraction problem and tell a story problem to go with it.  **Example 1:** I put out 5 plastic bugs. I took 2 of them away. There were 3 left. My story is: "There were 5 bugs on the ground. 2 bugs flew away. There were 3 bugs left on the ground."  **5 – 2 = 3** **Example 2:** I put out two groups of plastic bugs. There are 5 in one group and 2 in the other. You can see 5 is 3 more than 2. My story is: "There were 5 bugs on the ground and 2 bugs on the rock. How many more bugs were on the ground?"  **5 – 2 = 3**	By solving story problems that feature subtraction in context, students think of subtraction in terms of both taking away and finding the difference between two groups (i.e., how much larger one group is than another). It is important for students to be able to think of subtraction in both ways, and it also helps them solve problems efficiently. Sometimes it's faster to take a little bit away from one number (take away). Often times, it makes the most sense to think about adding up from the smaller number to the larger (finding the difference). Students might also solve subtraction problems by thinking of related addition problems. For example, "I know 2 plus 3 is 5, so 5 minus 2 must be 3." This is one reason we have students study addition and subtraction together, and why we invite them think of fact families. This is an example of a fact family: 2 + 3 = 5 5 – 2 = 3 3 + 2 = 5 5 – 3 = 2

Frequently Asked Questions about Unit Three

Q: Why are students spending time learning strategies? Why not just memorize the addition and subtraction facts?
A: We expect students to recall basic addition and subtraction facts from memory; in most states, students are expected to master those facts sometime in second grade. However, we know that students forget these facts sometimes and that strategies allow them to quickly compute the answers when needed. In fact, students with instant recall of the facts are, in many cases, performing almost instantaneous calculations based on many of the strategies they will be reviewing in this unit.

Q: Why does this unit address probability ideas too? The homework includes probability games, but I'm not sure why.
A: Games are one of the most effective ways to provide students with the repeated practice they need to commit basic facts to memory. Those games are a lot more enjoyable, engaging, and motivating if they include an element of strategy: we often integrate this challenging element into the games by inviting students to consider the likelihood of different outcomes. This motivates students to play the games over and over again to see what the outcomes will be. Even students who are very fast with their facts will find these games challenging as they experiment and reason logically to come up with the best strategy for winning.