Adding and Subtracting 10

Adding and subtracting 10 to any number without having to unit count is an extremely important concept – not only in learning the basic facts but later when we work with different strategies to add and subtract 2-digit numbers.

To work on adding ten, have the student use the double 10-frame and build problems such as 10 + 3 and 4 + 10. Ask questions such as, "What's ten more than 3?" We want the student to see the pattern of what happens when we add 10 – please don't tell them the pattern, just do enough problems and keep asking them if they see a pattern. There is a recording chart that should be helpful for the student to see the pattern for adding ten.

Number	Ten More Than The Number

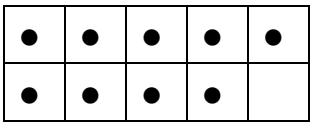
The 0-10 number cards, 0-9 die, 0-9 spinner, 0-10 spinner can all be used to help generate problems. Turn over one of the cards, spin the spinner, or roll the die and ask the student, "What is 10 more than ??".

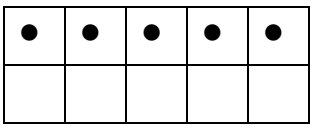
To work on subtracting 10, ask the student to build a number such as 17 on the double 10-frame and then ask them to subtract 10. There is a recording chart for ten less than a number and number cards from 11 through 20 made with double 10-frames on the cards to help with the visualization of subtracting 10.

A hundreds chart is a great tool to use to look for patterns
You can use *Math Basketball*, *Math Baseball*, *Math Race*, or *Catch Me If You Can* as a game to practice these concepts.

Adding 9

Ask the student to build 9 + 5 on the double 10-frame.

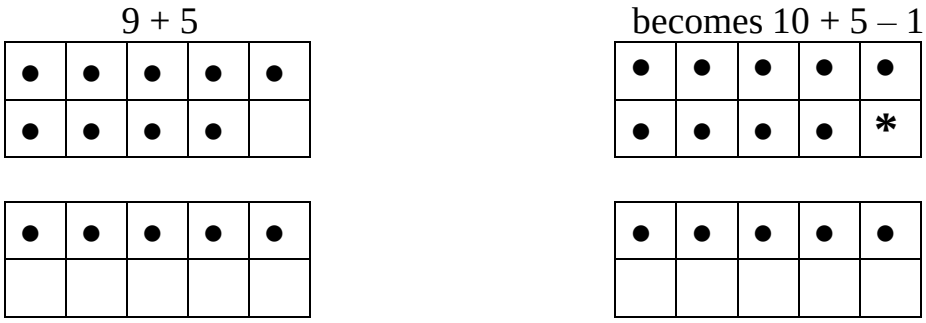




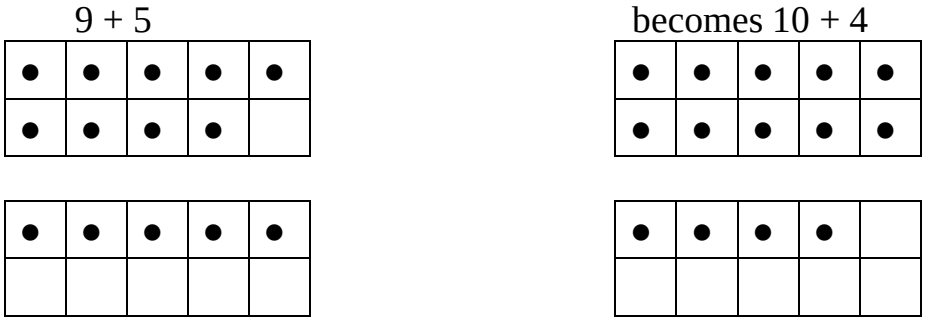
Now challenge them to find a quick way to determine how many counters are on the board. If you see them unit-counting, tell them that will work but that you are looking for a quicker way to determine how many counters there are.

There are 2 very efficient strategies for adding 9:

1. One strategy is to pretend that the 10-frame with 9 in it is full and has 10; find that number; then subtract 1 for the one we pretended was there.
   For example:



2. Another strategy is to take one of the counters from the smaller number and fill up the other 10-frame
   For example:

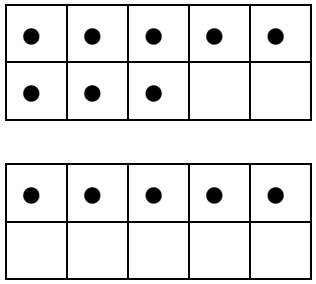


You will probably need to build several of these before either strategy becomes a habit. Make sure you build the commutative facts – build 5 + 9 as well as 9 + 5.

Pull the cards that have 9 as one of the addends from the *Adding 8 and 9 Cards* and use them to be the problems while you play *Math Basketball*, *Math Baseball*, *Math Race*, or *Catch Me If You Can*. For a little more abstraction, use the 0-10 number cards, 0-10 spinner, 0-9 spinner, or 0-9 die to generate a number and then ask the student to add 9 to this number. Model building the problems on the double 10-frames.

Adding 8

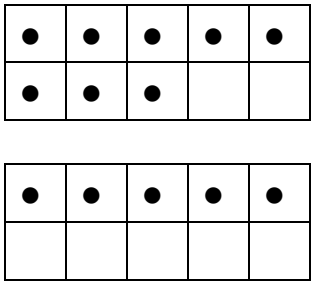
The strategies for adding 8, like adding 9, are built around being able to add 10. Start with asking the student to build a problem such as 8 + 5 using the double 10-frames and to find a quick way to determine how many counters are on the board.



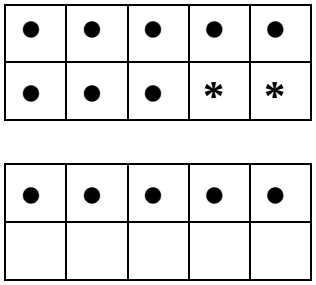
1. One strategy is to pretend that the 10-frame with 8 in it is full and has 10; find that number; then subtract 2 for the two we pretended was there.

For example:

8 + 5

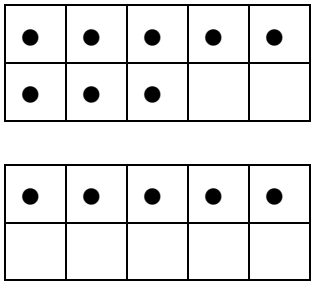


becomes 10 + 5 – 2

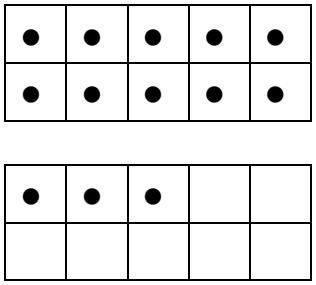


2. A second strategy for adding 8 is to use 2 of the counters from the 5 to finish filling up one of the 10-frames:

8 + 5



becomes 10 + 3



Again, you will probably need to build several of these before either strategy becomes a habit. Make sure you build the commutative facts – build 5 + 8 as well as 8 + 5.

Pull the cards that have 8 as one of the addends from the *Adding 8 and 9 Cards* and use them to be the problems while you play *Math Basketball, Math Baseball, Math Race,* or *Catch Me If You Can*. You can also use the 0-10 number cards, 0-10 spinner, 0-9 spinner, or 0-9 die to generate a number and then ask the student to add 8 to this number. Model building the problems on the double 10-frames.

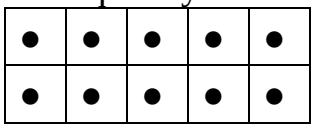
Subtracting 9 and 8

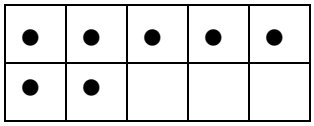
Subtracting 9 and 8 is also built around the number 10.

For example; let's look at the problem 17 – 9. There are three quick and efficient strategies for doing this:

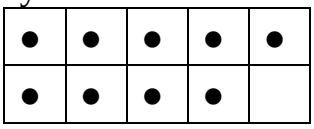
1) start with 17 on the double-10 frame; remove 10 and put 1 back.
2) start with 17 on the double-10 frame; remove the 7 (to get down to 10) and then remove 2 more.
3) start with 9 on the double 10-frame and think addition – if I have 9, how many more will I need to have 17?

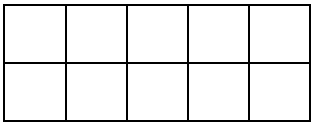
How can I quickly remove 9?





How many more do I need to make 17?





Similar strategies for working 17 – 8 are to:

1) start with 17 on the double-10 frame; remove 10 and put back 2.
2) start with 17 on the double-10 frame; remove 7 (to get down to 10) and then remove 1 more.
3) start with 8 on the double 10-frame and think addition – if I have 8, how many more will I need to have 17?

Use the 11-18 cards from the 11-20 set of cards to generate the first number and ask the student to subtract 8 and/or 9.

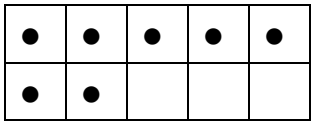
There is an 8, 9, 10 spinner and an +, – spinner that can be used along with the 11-20 number cards to practice adding and subtracting 8, 9, and 10 in a mixed sitting.

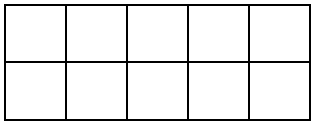
Using Ten as a Bridge

The "hard" addition and subtraction facts are those facts that have a sum greater than 10. We are going to use 10 as our "bridge" to help with these facts – in fact we did this with 8 and 9 in the second and third strategy listed.

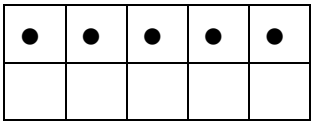
For addition of these facts, we will "count up" but not by unit-counting but by "chunking" our counting around 10. Let's look at 7 + 5

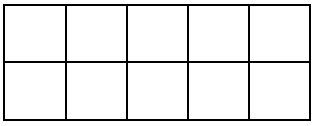
If I start with 7, how many does to take to fill up the 10-frame? How many will go in the second frame?





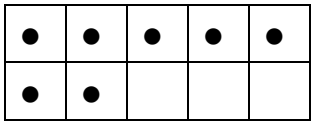
If I start with 5, how many does to take to fill up the 10-frame? How many will go in the second frame?

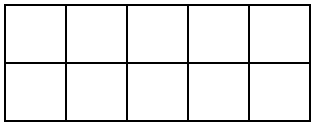




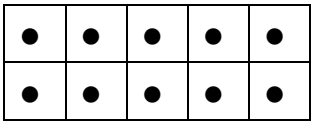
For subtraction, we will "count up" or "count down" but not by unit-counting but by "chunking" our counting around 10. Let's look at 16 – 7

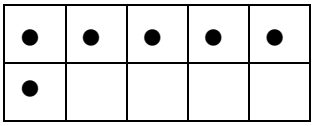
If I start with 7, how many does to take to fill up the 10-frame? How many will go in the second frame to get to 16?





If I start with 16, how many does to take to get back to 10? How many more to get to 7?





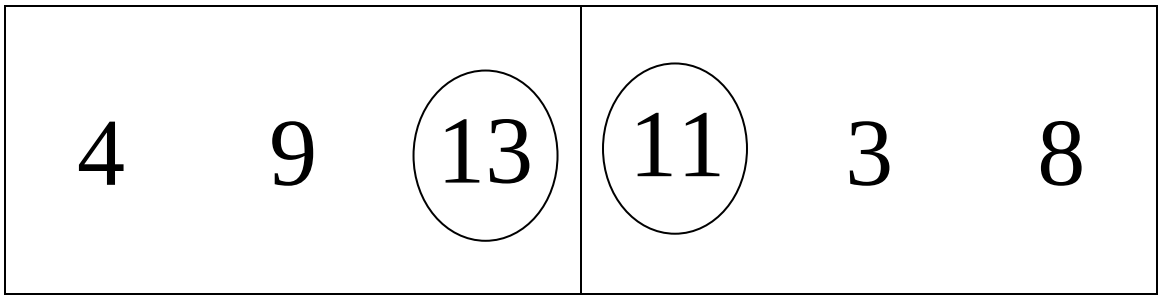
You will need to have the students build a lot of these problems with the double 10-frame before you ever ask them to do this mentally. Understanding and being able to use the strategy of using 10 as a bridge will take a lot of time but is well worth the time spent!

Building around ten is POWERFUL! If we look at the facts with a sum of 10 and then the facts that can use 10 as a bridge, it is over half of all of the addition and subtraction facts!

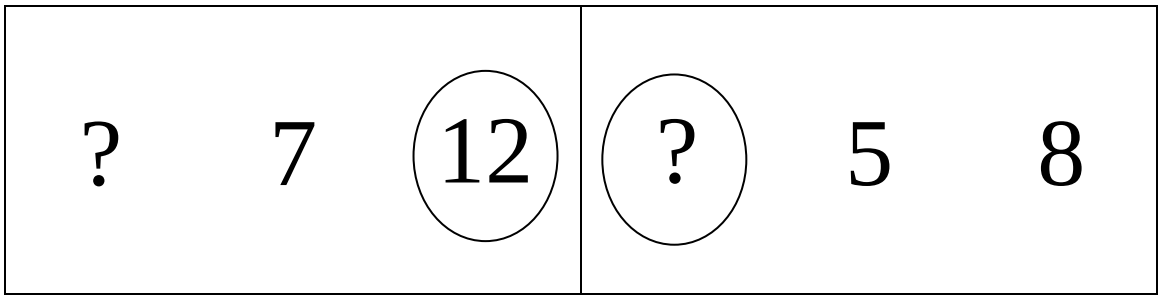
+	0	1	2	3	4	5	6	7	8	9	10
0	0	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10	11
2	2	3	4	5	6	7	8	9	10	11	12
3	3	4	5	6	7	8	9	10	11	12	13
4	4	5	6	7	8	9	10	11	12	13	14
5	5	6	7	8	9	10	11	12	13	14	15
6	6	7	8	9	10	11	12	13	14	15	16
7	7	8	9	10	11	12	13	14	15	16	17
8	8	9	10	11	12	13	14	15	16	17	18
9	9	10	11	12	13	14	15	16	17	18	19
10	10	11	12	13	14	15	16	17	18	19	20

There is a set of Missing Number Cards in the materials – all of these cards are designed to practice the strategy of using 10 as a bridge.

Show the student, without any explanation, families of numbers with the sum circled as in the cards below.



Ask them why they think the numbers go together and why one number is circled. When this number family idea is understood, show them some families with one of the numbers replaced with a question mark and ask them what number is missing.



When the student understands this activity, tell them you have some missing number cards based on this idea. Each card has two of the three numbers that go together in the same way. Sometimes the circled number (the sum) is missing and sometimes one of the other numbers (a part) is missing. The object is to name the missing number.

The cards can be cut out and used as problems for the *Math Race, Catch Me If You Can, Math Basketball, and/or Math Baseball* games.

Blank cards are also in the notebook so you can make other problem sets.

Doubles and Near Doubles

It is well documented that students seem to know the doubles facts (both addends alike) better than most other combinations. Maybe it is because of the sing-song rhythm when they say the problem – I don't know but children like the doubles!

Start by working on the doubles before you do the near doubles. Pull just the doubles from the *Doubles and Near Doubles Cards* and have the student use the dry-erase marker to draw an example of a double problem on the cards before you use them in a game. This helps them to "see" the problem and solution.

When you get ready to use the near doubles cards, sort them into groups – for example 3 + 4, 4 + 3, and 3 + 3 (or 4 + 4). Ask the student how the cards are alike and how are they different. Let them draw the same type of design on the near double cards as they did on the double card. These cards can then be used to generate the problems for one of the games in the back of the notebook.

There is also a game called *Four in a Row* to use for practice of doubles and near doubles addition facts.