Working with Tens Frames: Activities with Adjustments and Extensions for Students of All Grades

The following activities aim to consolidate and extend students' understanding of numbers and quantities. They also give students the chance to work toward the '200 hits', or experiences, they need to become proficient with any new number concept or strategy. Please allow students to simply have fun exploring and expanding their mathematics with these and any other activities they engage in. The process is about confidence and extension in mathematics as opposed to success or failure.

Some of the materials used throughout these tasks

(Templates are at the end of this booklet):

- Two sets of blank ten-frame mats
- Two sets of blank double ten-frame mats
- Counters
- Playing cards
- Three sets of ten-frame cards with dots prefilled from 1 - 10
- Dice
- 0-20 numeral cards

Activities:

1. Building Sets (Materials: blank ten frame mats, double ten frame mats, counters)
Call out a number from 1-10 and have children build that amount on their ten frame using counters. Children fill the first row of five first to use friends of five knowledge. Call out a different number and have children build the new number. Observe to see if children can simply add or remove counters or if they must begin from 1 each time. Continue with different amounts.

- **Extra:** To build knowledge of doubles and near-doubles, have children also make numbers in halves or near-halves, eg make 6 as 3 and 3, or make 7 as 3 and 3 plus one more based on their near-doubles knowledge of 6.
- **Extension:** Move to a double ten frame and call out a number from 10-20.
- **Extension:** Start with 20 on the frames and go back to 0 by calling smaller values each time.
- **Extension:** Assign different values to the counters and call out numbers that they could make, eg each counter equals 5, call out 45 and children use 9 counters to make 45.
- **Extention:** Assign different values to different coloured counters so that they have to combine colours and values to make a number, eg call out 143 and different colours could represent 10s, 5s, 2s and 1s in order to make the value.

2. Roll and Build (Materials: ten frame cards, dice)
Children roll a dice and build that amount on their ten frame mats. Children record the process as a number sentence after each roll (eg 6 + 3 = 9, 9 + 2 = 11).

- **Extension:** Roll the dice three times
- **Extension:** Start at a number and subtract each time the dice is rolled
- **Extension:** Roll multiple dice, combine the values then add or subtract
- **Extension:** Roll the dice multiple times but each roll represents whether the child is rolling a hundreds, tens or ones values to build a number
- **Extension:** Do the above activity but create more than one number and add the values together _OR_ work out the lowest value and subtract it from the larger number

3. Memory (Materials: two sets of ten frame cards)
Place the ten frame cards face down in an array. Children take turns turning over two cards. They identify the amount on each card. If they are the same they take both cards.
- **Extension:** Pick up two cards, add the total and record as a number sentence. Repeat the process and get a point when you make the same total again.
- **Extension:** Pick up two cards and calculate the difference between the two quantities. Repeat the process and keep adding the differences to each other. The winner has the lowest total at the end.
- **Extension:** Pick up two cards and multiply the values to create the largest total at the end

4. Challenge (Materials: two sets of ten frame cards)
Do this activity with an adult or another child at home. Each person gets 1 set of ten frame cards that have been shuffled and turned over. Both people turn over the top card of their pile and identify the amount. The person with the greater amount takes both cards.
- **Extension:** Grab more than two cards
- **Extension:** Use multiple sets of cards and identify totals and how many more to X, eg to sets of cards, child picks out 8 and 5 and discusses how many more to 20.
- **Extension:** Have children identify how many more to ten and verbalise and/or write the applicable number sentence, eg 7 dots = 3 more to ten _OR_ 7 + 3 = 10
- **Extension:** Children identify and record the two addition and subtraction number sentences /facts they can identify from the cards they have turned, eg 7 dot card means they could learn that 7 + 3 = 10, 3 + 7 = 10, 10 – 7 + 3 and 10 – 3 = 7. Do this with multiple sets of cards and higher totals too

5. Ten Frame Flash (Materials: large ten frame cards)
Flash a ten frame card to your child and ask them to identify how many dots they saw.
- **Extension:** Ask them to identify one more or one less than the amount of dots.
- **Extension:** Have them tell you how many empty spaces there are or how many more are needed to make 10.

6. Ten Frame Trains (Materials: at least two sets of ten frame cards)
Child sequences a random set of ten frame cards in order from 1 to 10 and then back to 1, etc. Your child will practice counting forwards and backwards out loud.
- **Extension:** Turn over some cards in the train and have your child identify which numbers are now turned over or hidden.
- **Extension:** 'Train carriages': use two or more sets of cards, line the sets face-down in 'trains' and have children choose a 'carriage' from each train to try and collect the most number of 'passengers' or dots that they can by adding the values. This can be done ny choosing any number of 'carriages

7. Make 10 (Materials: two sets of ten frame cards)
Place the cards face up in an array. Your child will try to find two cards that together total 10. To challenge your child you can turn the cards face down.
- **Extension:** Set other target values they could make beyond 10 or 20. They could then work out how far away they are after grabbing their cards.
- **Extension:** Include subtraction; grab three cards, add the total and then subtract the next value card to be turned over.

8. Dice Match (Materials: dice and ten frame cards)
Roll the dice and have your child find the ten frame card that has the same amount.
- **Extension:** If they roll 11 or 12 they grab multiple cards to make the amount
- **Extension:** Roll three dice and use multiple cards and sets to make the total

9. What's the Difference? (Materials: at least three sets of ten frames, 50 counters, playing cards)
Playing cards are spread out face down. You and your child take turns turning over two cards in the pile. Children then determine the difference between the two cards and take that amount of counters. Play continues until all of the cards from the pile have been used. The player with the most counters wins. Observe to see what strategies your child is using to find the difference and also in how they calculate their counter numbers.

- **Extension:** Take two cards or more and create the smallest or largest number possible using the face values of the cards, eg 3 and 6, smallest value is 36, largest value is 63. They add their values using any means possible.

10. Ten Frame Difference Challenge (Materials: 2 sets of 10 frame cards, 50 counters, tens frames)
Players take turns turning over the top card from the pile of 10 frame cards. Each player identifies their amount. The person with the largest takes as many counters from the pile as the difference between the two cards. Play continues until all the counters are gone. The winner is the player with the most counters. Use the tens frames to assist in building and adding the total.

- **Extension:** Take two cards (or more). Add the values on the cards or use the face value to create the largest two-digit number, eg 3 and 6 to make 9, or 3 and 6 to make 63. The person with the largest value takes as many counters from the pile as the difference between their total and the total of the other player.

11. Fish (Materials: at least two sets of ten frames or playing cards)
You will play in groups of 2 to 4 (partner, sibling etc). Deal each player 4 cards. Spread the rest in the centre like a fish pond. All players take turns asking another if they have a card with an amount that is the same as one of their cards. If they have the card they give it to the player. If they do not they draw a card from the pile. Play continues until one player gets rid of all their cards, or all the cards are matched.

- **Extension:** '10 Fish' - play the game like 'Fish' only the object of the game is to ask the other players for a card that will add to one of theirs to make a sum of ten.
- **Extension: '**Fish for a total' – Use playing cards and players must have 4 cards in their hand at all times. Based on their cards, players work out a 'total' they can make with two cards and ask another player if they have that 'total', eg, Player 1 has 3, 9, 10, 4 – they add the 9 and 4 and ask Player 2 for a total of 13. Player 2 must then work out if they have two cards that make 13, if so they need to hand them to Player 1 who keeps the cards to add to their score.
  - **NOTE:** Scoring could be based on the number of cards collected or the total face value of the cards a player has

13. Ten Plus/Nine Plus (Materials: 2 sets of ten frame cards)
Place a "10" ten frame card face up in the centre to signify that you already have "10". Place the other ten frame cards in a pile face down. You will both take turns turning over the top card and adding it to "10".

- **Extension:** Play the game "Nine Plus" which is like Ten Plus only use the "9" ten frame card as the card to add the other numbers to.
- **Extension:** How many more to? Turn over the card and then say how many more to 20, 30 or 40 etc.

14. 0-20 Numeral/Ten-Frame Match (Materials: 2 sets of 10 frame cards, 0-20 numeral cards)
Spread the 0-20 numeral cards face up in order. Take turns turning over two ten frame cards and working out the total. They then grab the numeral card that matches their total. The winner is the one with the most numeral cards.

- **Extension:** Select a numeral card and make that value in the most creative ways as possible using the 10-frame dot cards, eg numeral card 16 means they could use dot cards 10 and 6, or 8, 5 and 3. The aim is to understand different ways to 'number bust' or make quantities.

15. Flash: One More

Once your child is familiar with the basic patterns and knows them automatically, flash a 10 frame card and ask them to name the number that is one more than the number flashed.

- **Extension:** Have children explain the number that is two more/one less/double/ten more than the number flashed.
- **Extension:** Use playing cards, select two or more cards, have children create a number based on the face value of the cards, they then identify two more/one less/double/ten more/100 more or less etc.

17. 1 more/1 less/10 more/10 less

The following prompts are written down: one more, one less, ten more, ten less.

Flash a ten frame card as the 'starting number'. Your child will select one prompt. For example, if you flash a card showing '5' your child might say, "one more than 5 is 6", then they might say, "ten more than 6 is 16", and then, "one less than 16 is 15" – it is self-directed learning

- **Extension:** Move to larger values by grabbing several cards or using playing cards and have children explain 100 more/100 less
- **Extension:** Record responses in number sentences and create a word sentence, or story, that fits the equation, eg 16, 10 less is 6, 16 – 10 = 6, 16 cookies and I ate 10 so 6 are left

18. Teen Frame Flash (11-20)

Once your child is subitising (instantly recognising) ten frame patterns 0-10, introduce cards showing larger numbers (i.e. more than one ten frame). Key questions to ask when flashing the cards include: How many?; How many more than 10?; How many more to 20? As they become familiar with the 'teen' patterns introduce further questions to develop number relationships.

- What is one more/two more than the number I flashed?
- What is one less/two less than the number I flashed?
- How far away is the number I flashed from twenty?
- Double the number I flash.
- What is the near Doubles fact? (i.e., if 15 is flashed, children's answer 7+8)

19. Don't go over the edge! (it's like a child-friendly Blackjack ☺)

Choose a total value that children are allowed to get close too but can't go over. Roll a die and create the value on tens-frames. Then need to work out how many more they need to get to the total and discuss which values they could turn over that would not 'go over the edge', or beyond the total. They continue their turn until they decide to stop so that they don't risk going over the edge. They then work out how far away from the total value they are and add this to their score. If they 'go over the edge' they add 5 points to their score immediately. The aim is to get the lowest score possible.
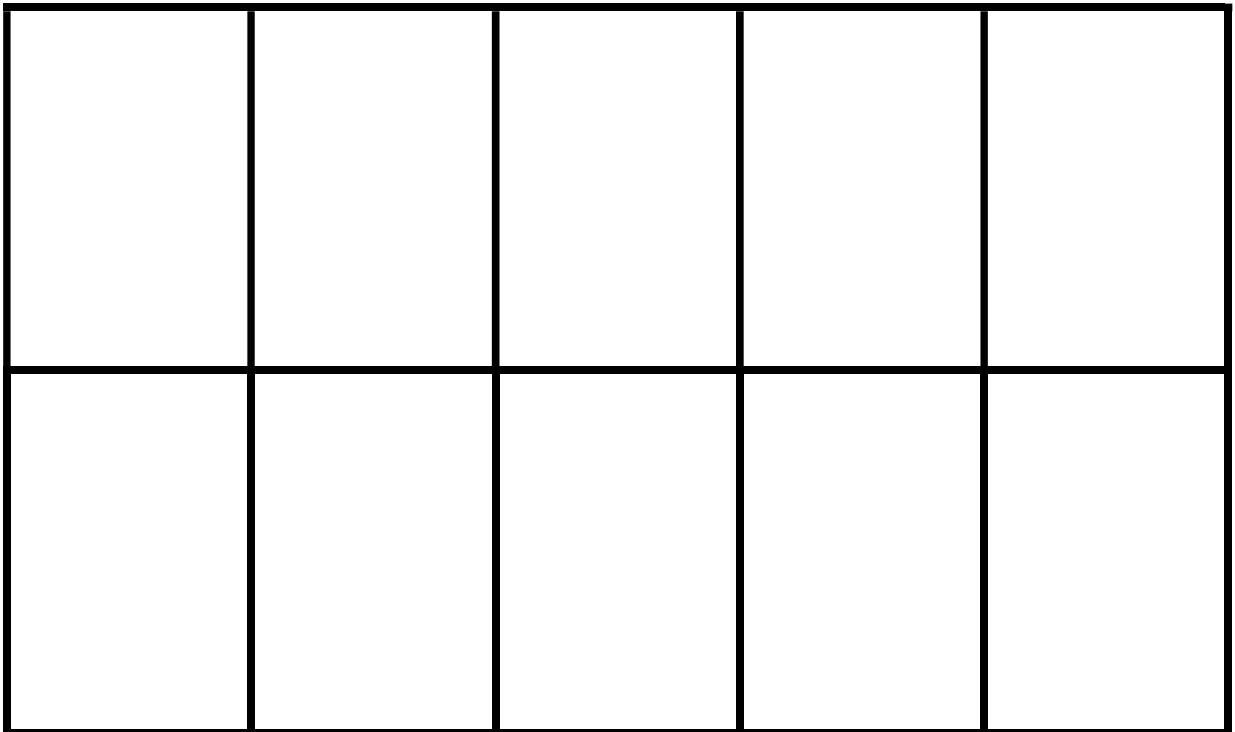
- **Extension:** Set higher targets and roll the die multiple times on each turn and add the values together, eg instead of 6 being the largest number they could roll, 12 could now be the largest if two dice were used or 18 if the die was rolled three times
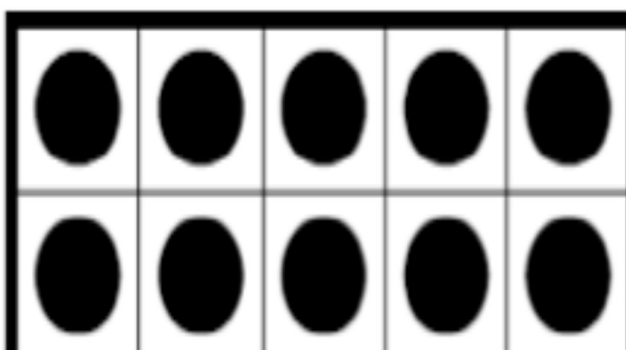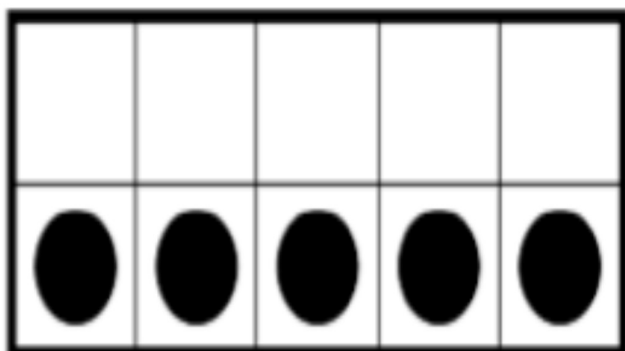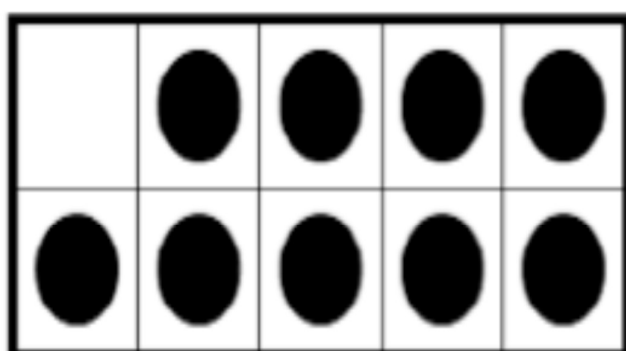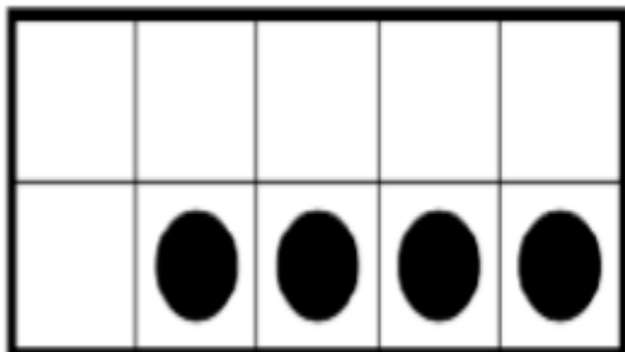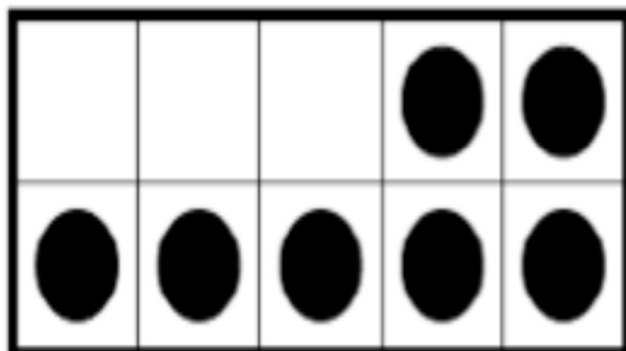
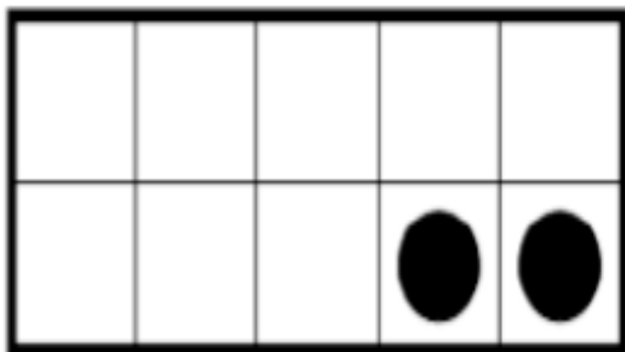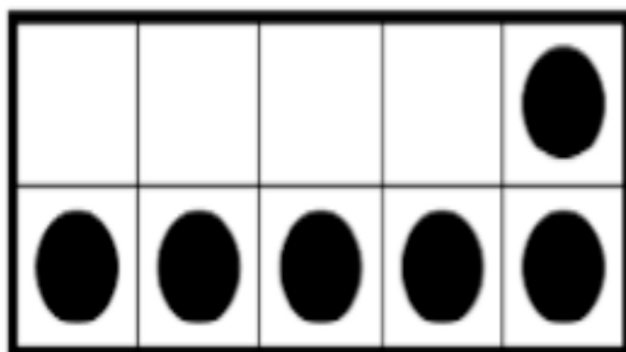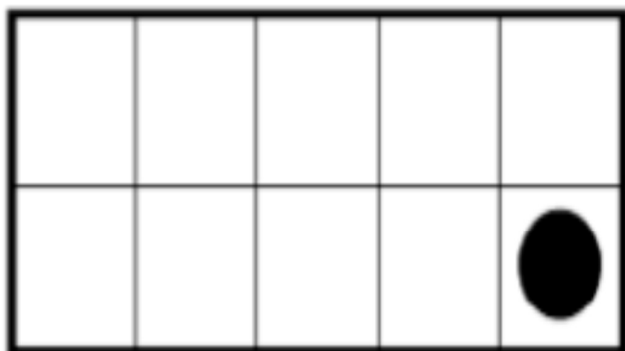# Blank double ten frame mats

Blank ten frame mat (cut in two mats)
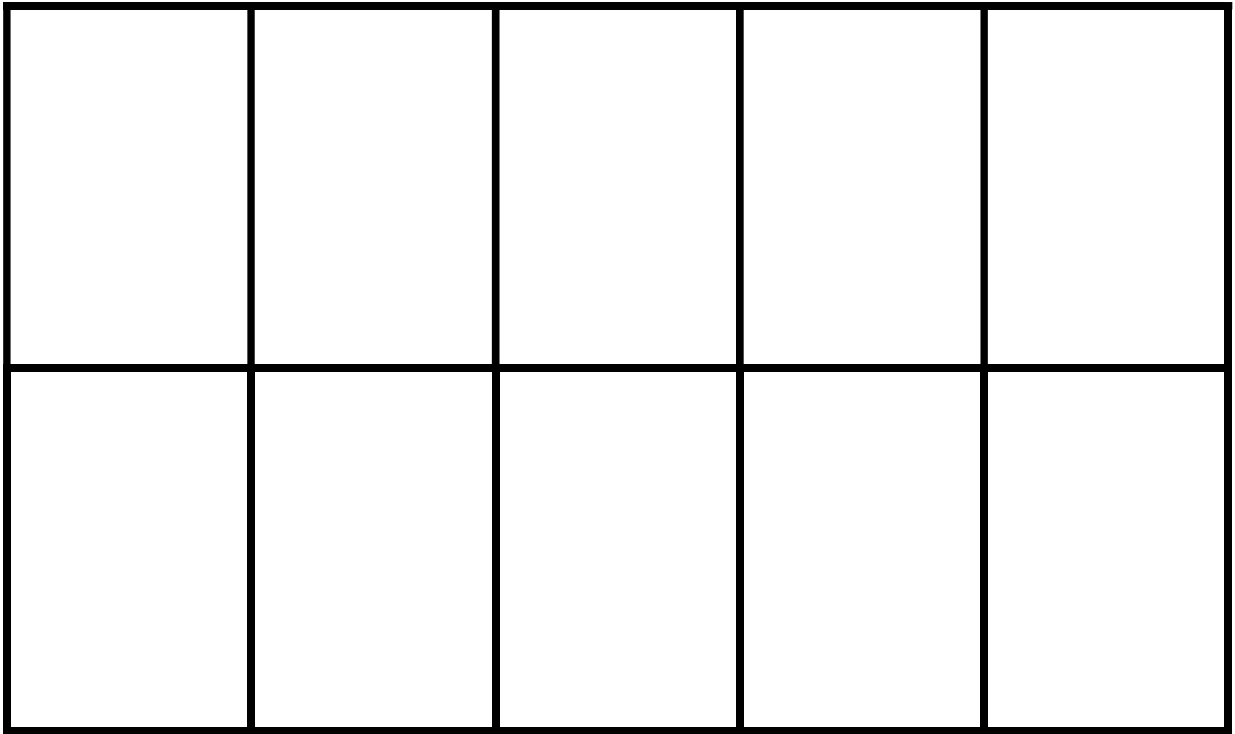
Cut here
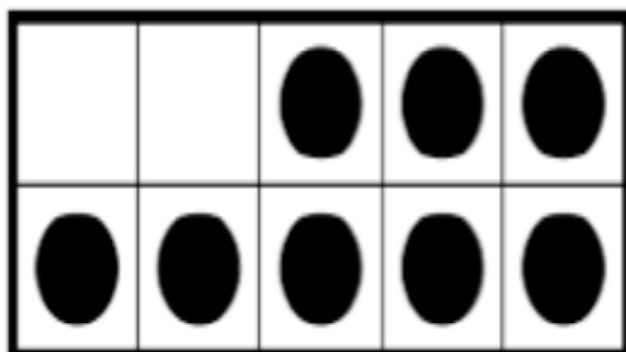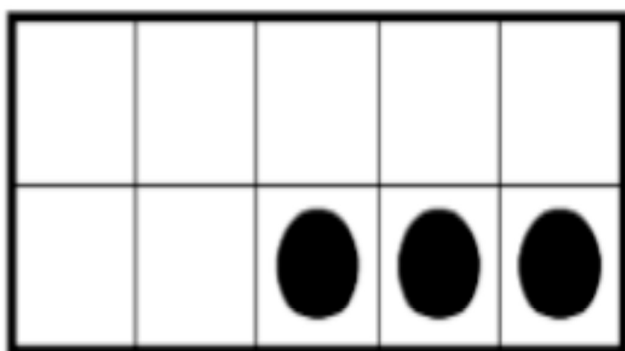
0-20 Numeral Cards (cut into separate cards)

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