SPEAKING THE LANGUAGE OF NUMBERS

Math is the language of numbers. If it can be counted, it's math. A major part of our everyday life is spent counting: cooking (measuring ingredients), sports (keeping score), shopping (estimating prices), tipping at a restaurant (how much is 20%), paying bills, etc.

This book is dedicated to making math fun by learning through games. Playing cards, dice and BINGO will be used to help your students learn to add, subtract, multiply and divide.

I recommend a few essential tools:

* a deck of cards
* dice
* coins
* a white board and dry erase marker
* abacus (allow the child to use it at any time)

If you want to invest a few more dollars, you should buy:

* base 10 blocks
* interlocking math cubes
* deck of flash cards (1-100)
* place value flip chart
* a number line for the student's desk

These tools along with a stopwatch will make learning math fun.

A balanced mathematical approach brings discovery-based learning to students by allowing them to discover patterns for themselves. Also, drilling mathematical facts through games is important.

Memorizing the timetable is essential. Long multiplication (273 × 48) without knowing the timetable will be difficult.

1	2	3	4	5	6	7	8	9	10	11	12
2	4	6	8	10	12	14	16	18	20	22	24
3	6	9	12	15	18	21	24	27	30	33	36
4	8	12	16	20	24	28	32	36	40	44	48
5	10	15	20	25	30	35	40	45	50	55	60
6	12	18	24	30	36	42	48	54	60	66	72
7	14	21	28	35	42	49	56	63	70	77	84
8	16	24	32	40	48	56	64	72	80	88	96
9	18	27	36	45	54	63	72	81	90	99	108
10	20	30	40	50	60	70	80	90	100	110	120
11	22	33	44	55	66	77	88	99	110	121	132
12	24	36	48	60	72	84	96	108	120	132	144

Teach addition first, then subtraction, followed by multiplication and finally division.

Make learning fun through friendly competition.
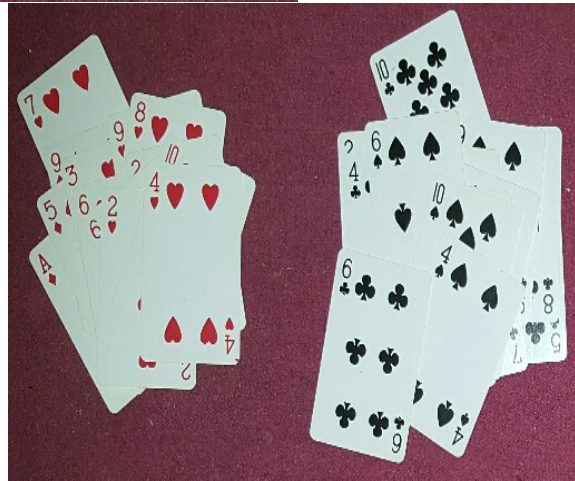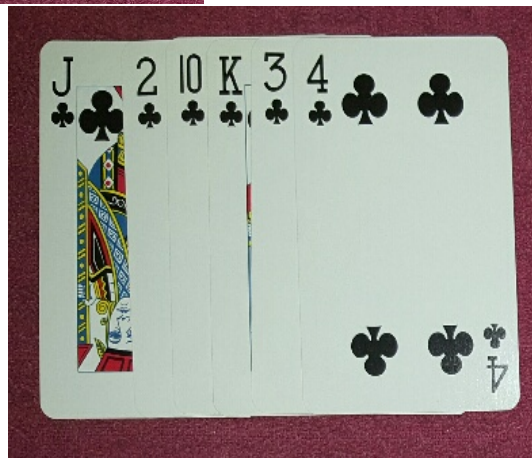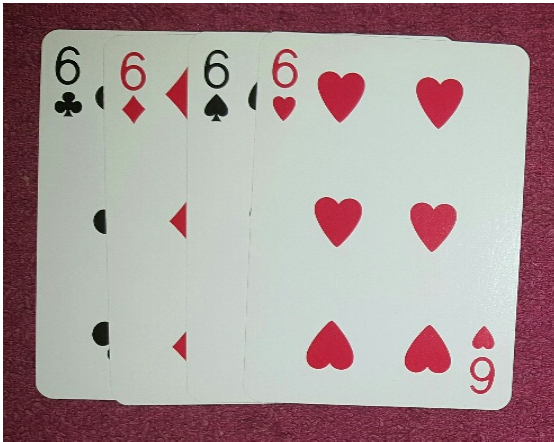
Card games

* For most games, take the Jacks, Queens and Kings out of the deck. If desired, Jokers can be wild.

* Aces count as one.

* Most games can be played alone (versus a timer), in small groups or as a class.

* It is easy to change the games from addition to subtraction or multiplication to division.

Separate cards by numbers, patterns or color.

Start with only a few cards before using the entire deck.

Match

* Turn over two cards and find a match.

* Winner has the most pairs.

If older students play with younger students, together they can add their number of pairs, highest total wins!

Even or odd?

* Divide a deck of cards equally.

* The players race to have two separate piles of cards (even and odd).

* The first one to finish with 100% accuracy wins, unlike the hand on the right.
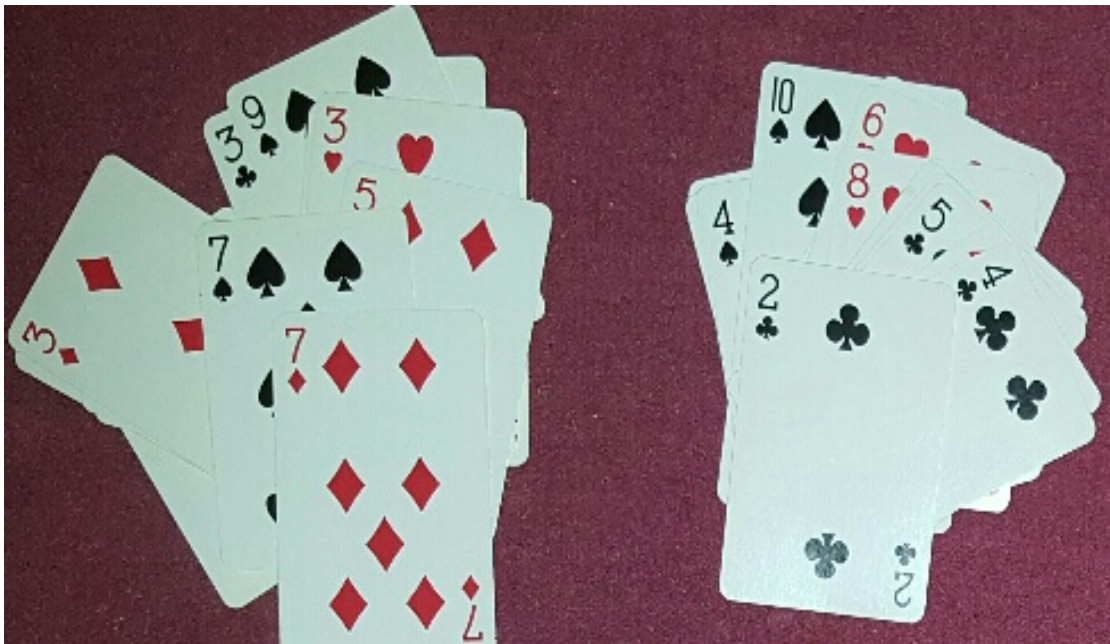
Remember, it is easy to alter any activity. This game can be played solo (versus a timer). Also, the entire class can each have their own deck and do it at their seat. Winner gets to be first in the lunch line!

Joker (Old Maid)

* Leave one Joker in the deck.

* Deal all the cards equally.

* Do not let your opponents see your cards.

* Each player takes turns picking one card from another.

* Show everyone your match and place it on the table.

* First one to get rid of all your cards wins!

* Last person with the Joker (or until time runs out) loses.

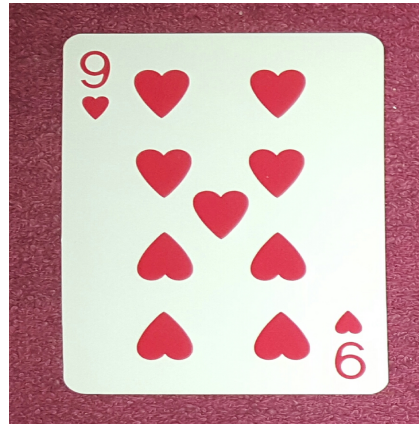# Organize Lowest to Highest
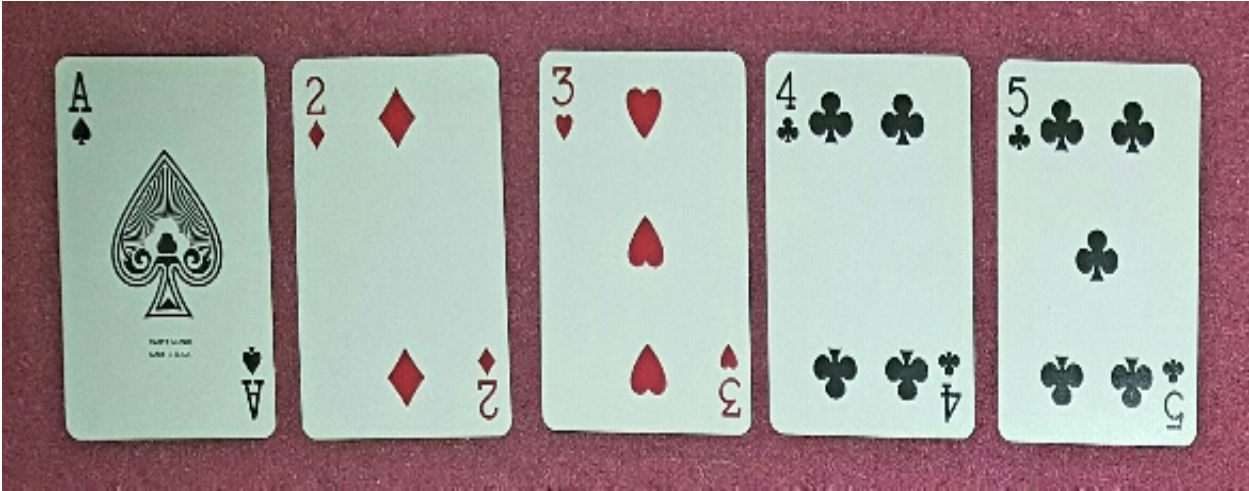
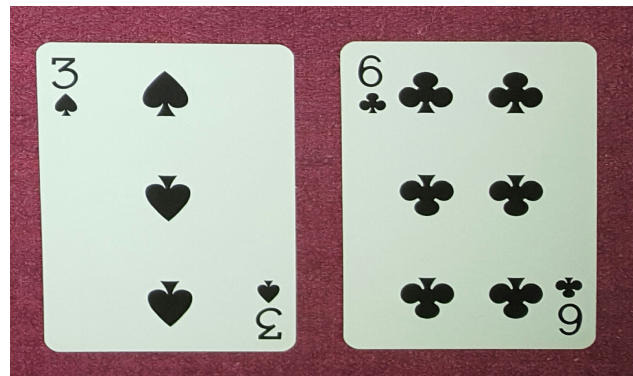Also, put the proper amount of pennies next to each card.

The MAGIC number

 * Deal each student seven cards.

 * Show the
MAGIC card.

 * Students must use two or more cards to equal the magic number. Fastest person keeps the cards.

* For a classroom activity, the teacher can have the number on an overhead projector and the students write the correct answer on their white boards.

Buy a set of cards (1-100) to have a larger "Magic Number."

* I am repeating myself, but kids tell me they practice the MAGIC number at home!

* Place a card at the top and several below.

* The student must find cards that match the number.

* After they find a match, they replace it with two cards. If none of the seven cards match the featured number, draw another card.

* Try to get as many pairs in one minute!
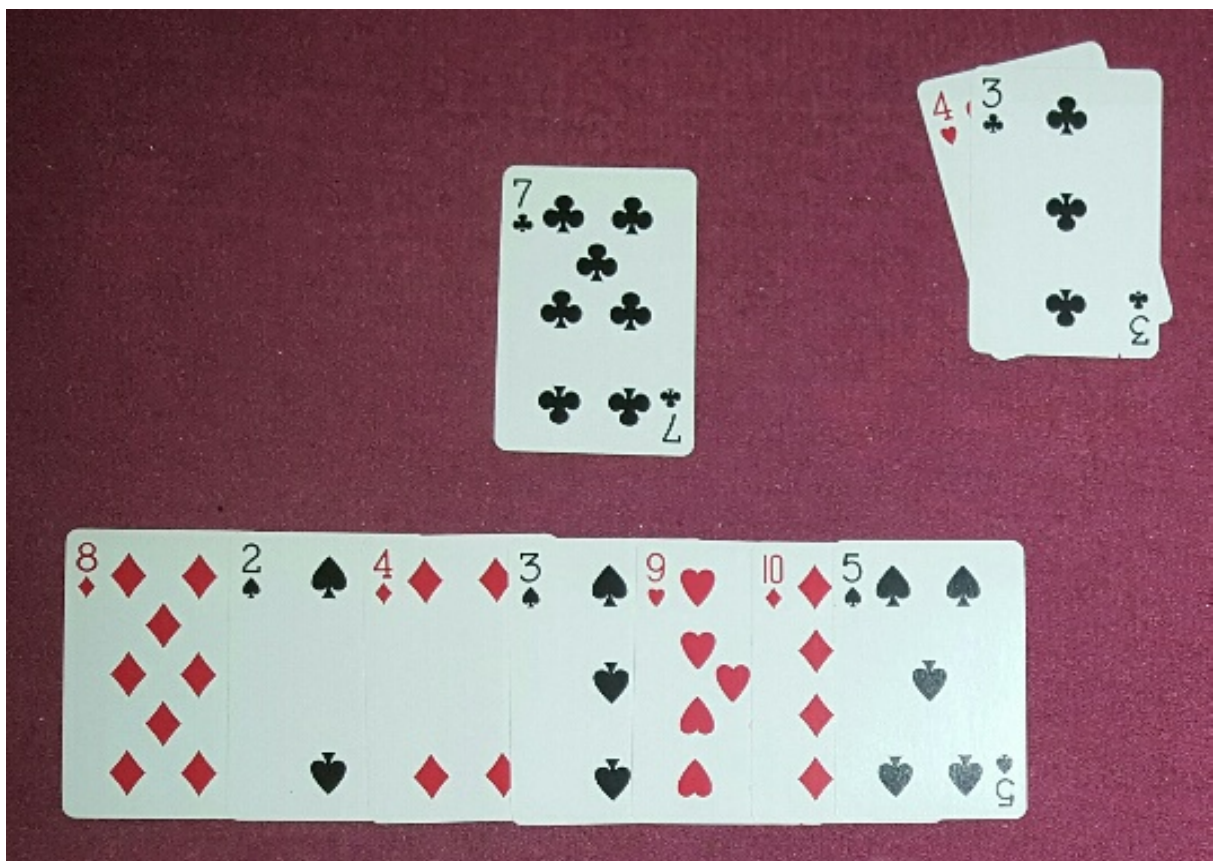
WAR!

* With an entire deck of cards dealt, each player shows one card. The highest card wins the opponent(s) card(s). If two cards are equal, each player puts three cards face down in the center. One card is then drawn and the highest card wins the battle. Play until one person wins all the cards or the alloted time expires.
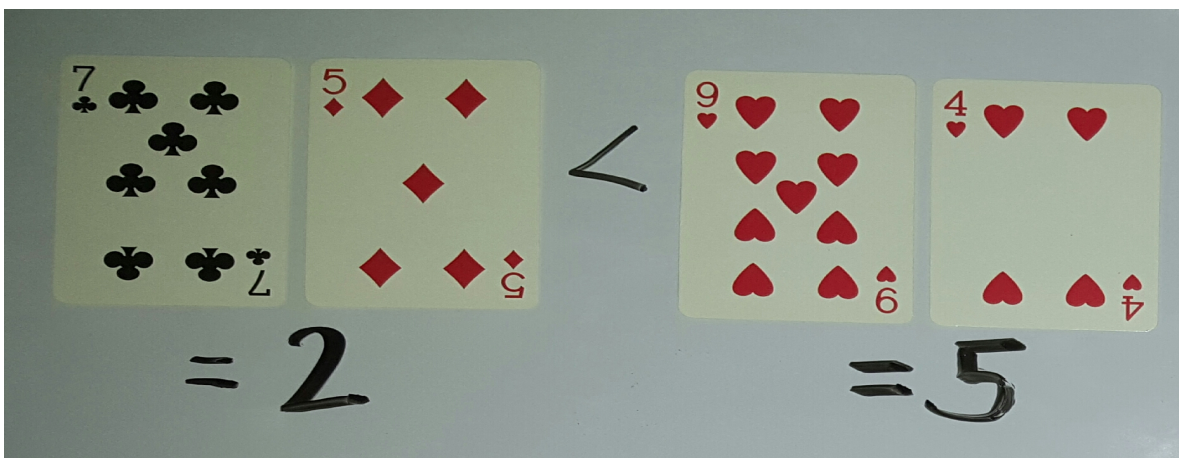

Winner
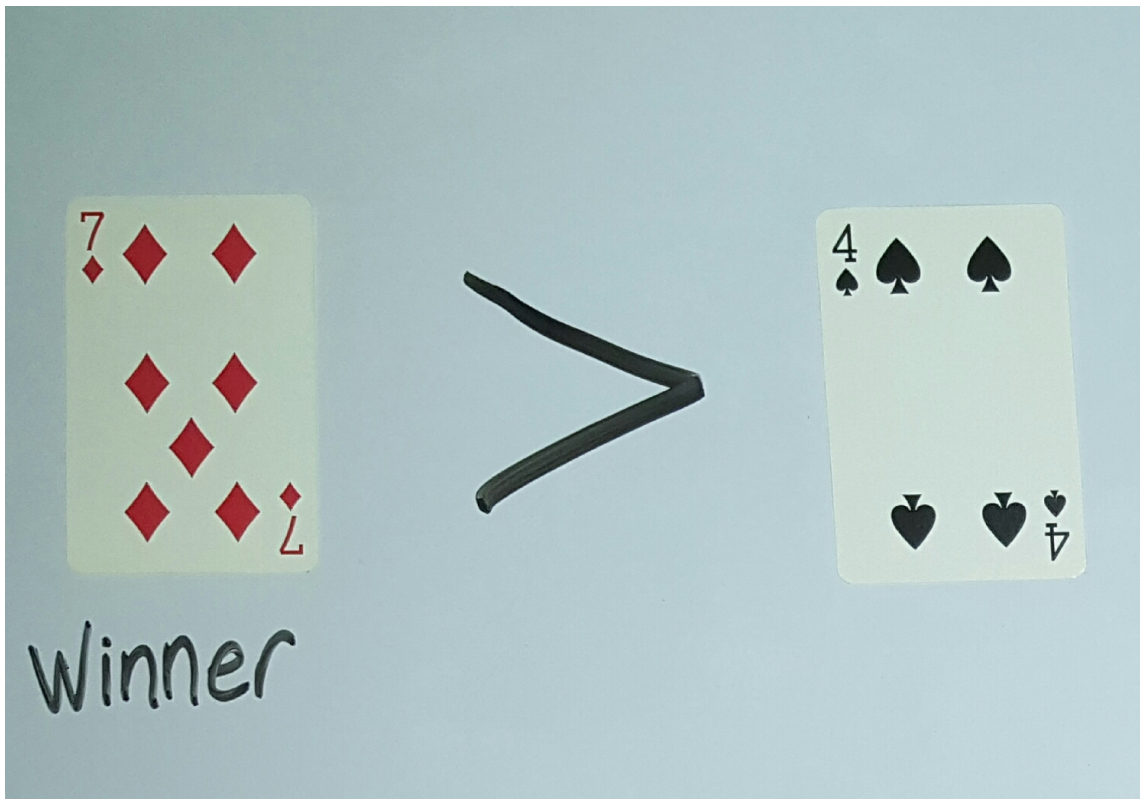
WAR! (Addition)

 * Same rules as single card war, but played
 with two or three cards.

winner
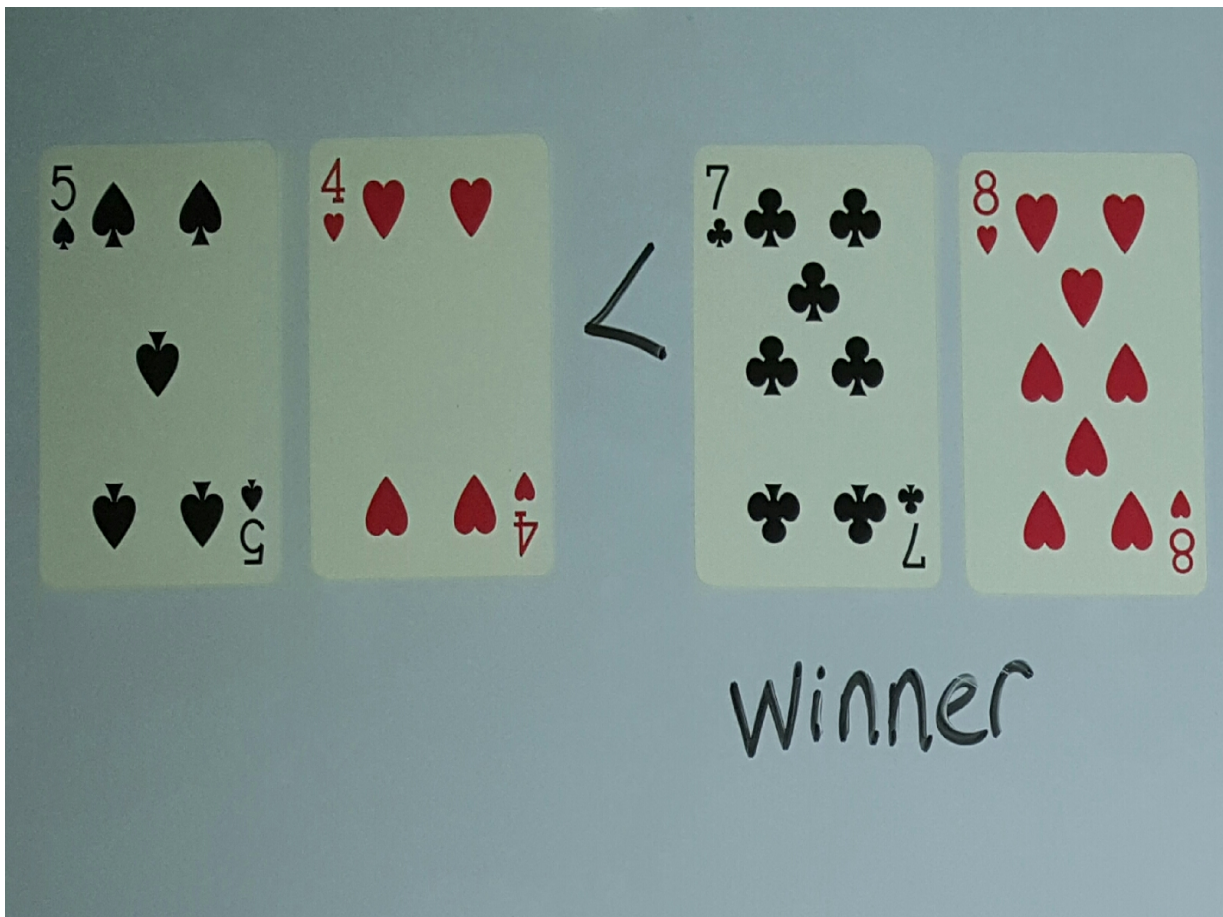
Make it a class competition. Whoever has
the most cards after the deck is completed or
alloted time expires will get a piece of junk
from the dollar store!

WAR! (Subtraction)

* Students put the largest card to the left and write down or verbally state the correct answer.
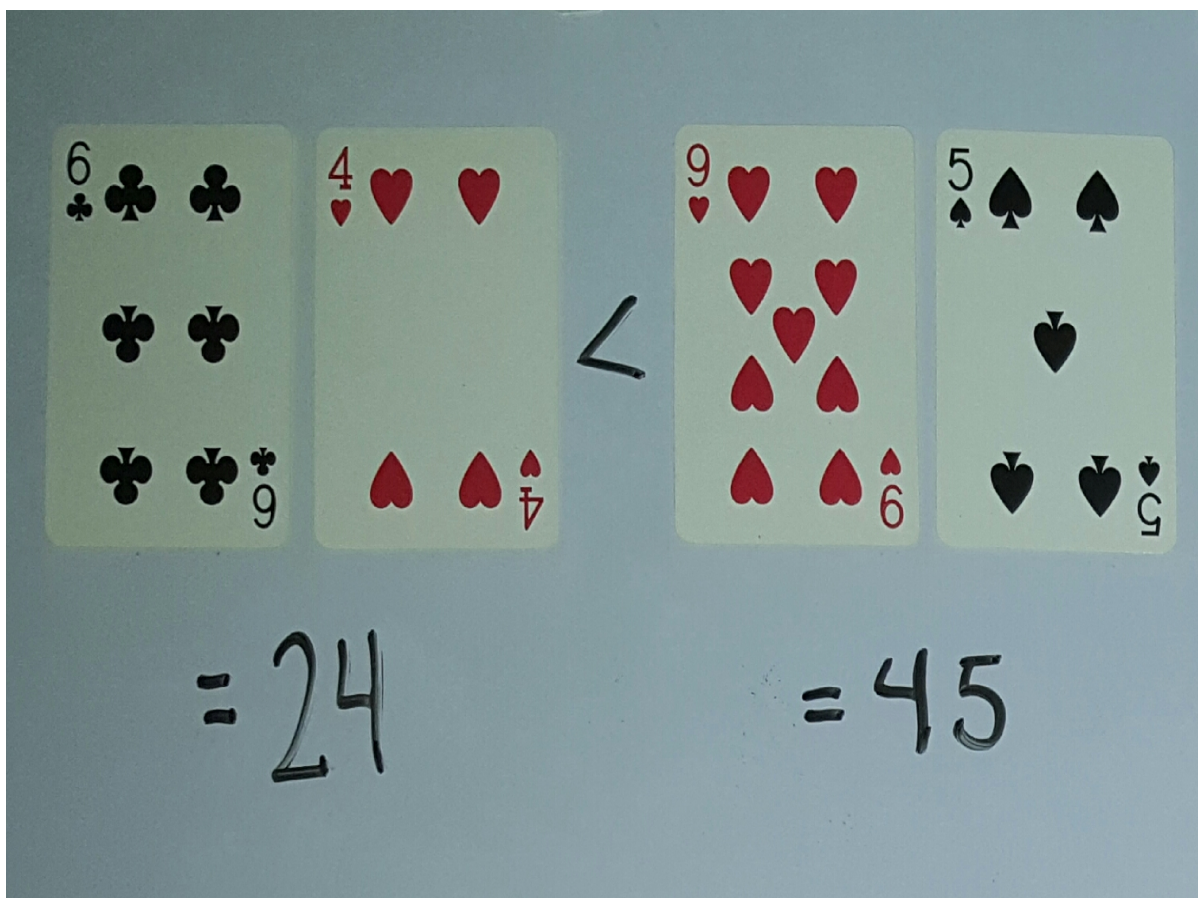

$= 2$ $< $ $= 5$

* A complex version, red cards (hearts and diamonds) are positive and black cards (clubs and spades) are negative. Add or subtract for the answer. Highest number wins!

$= 2$ $>$ $= -10$
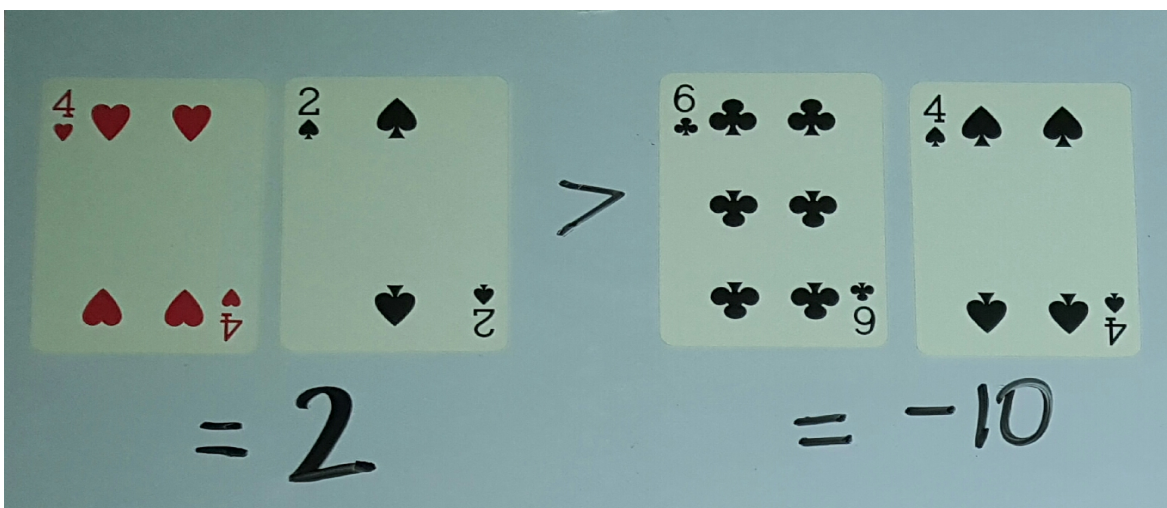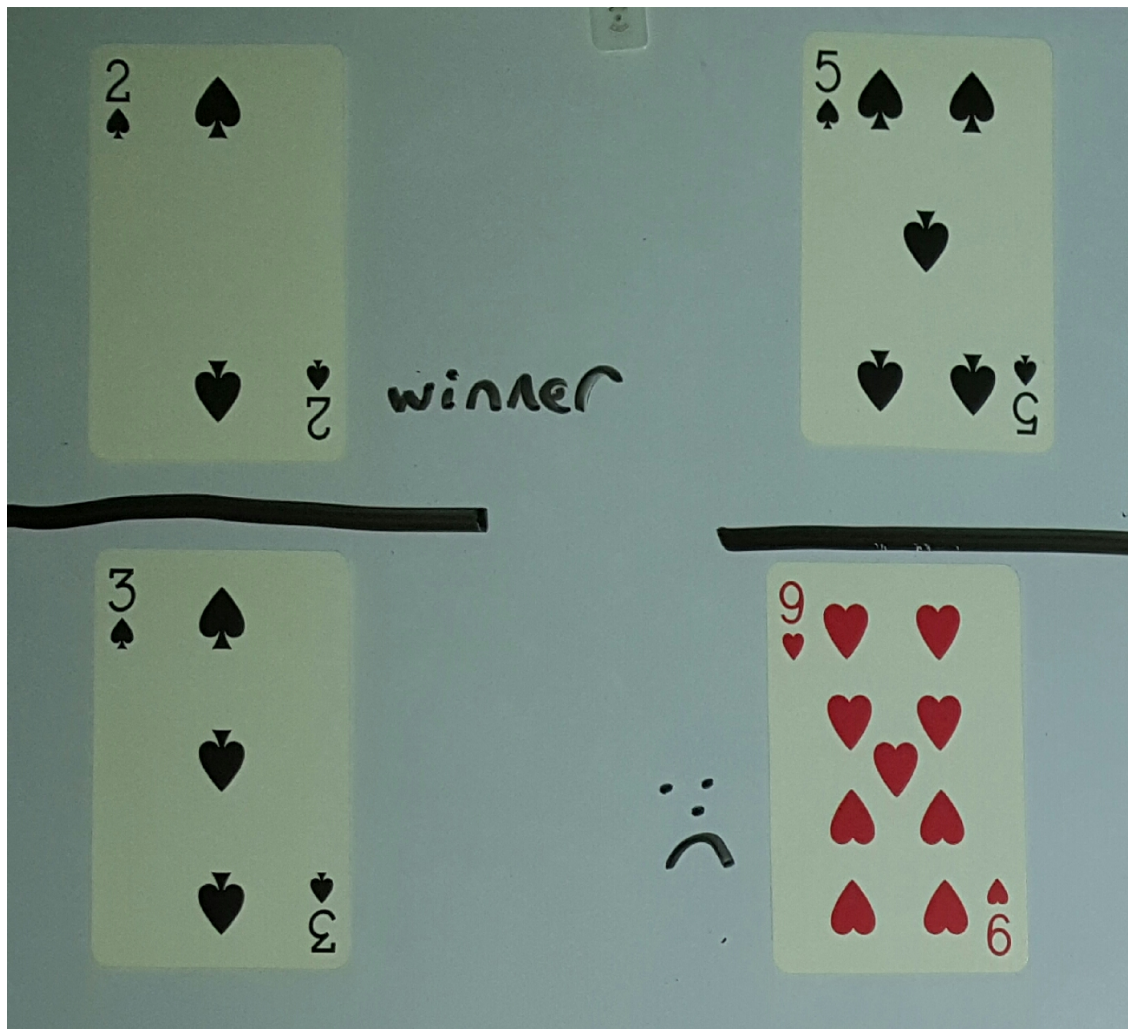
WAR! (Multiplication)

* Allow students to use the multiplication table if needed. Be sure to start with low numbers before introducing the entire deck.

WAR! (Fraction)

* Make the largest fraction. Improper fractions can be done at a later time.

* Start with two cards per person. Later on, students can be given three cards and use any two of their choice.

Take a hike!

* Multiple decks of cards may be needed. All face cards (Jack, Queen and King) can be included. Ÿ^|| the students, ...
* ...

* The entire class sits in a circle on the carpet ... everyone has the ... If each student has f...cards, five hands will be played.

* Òvery s... write on their white board ... All ties go to whoever puts their card down first.

* The youngest player will throw a card in the center of the circle. The person to their left will toss any card of their choice in the middle. After everyone puts one card in the center, the person with highest card gets a point.

* After playing the number of cards dealt, whoever matches their number of victories wins. In the event of a tie, the person who bids the highest wins. Make up your own second tiebreaker.
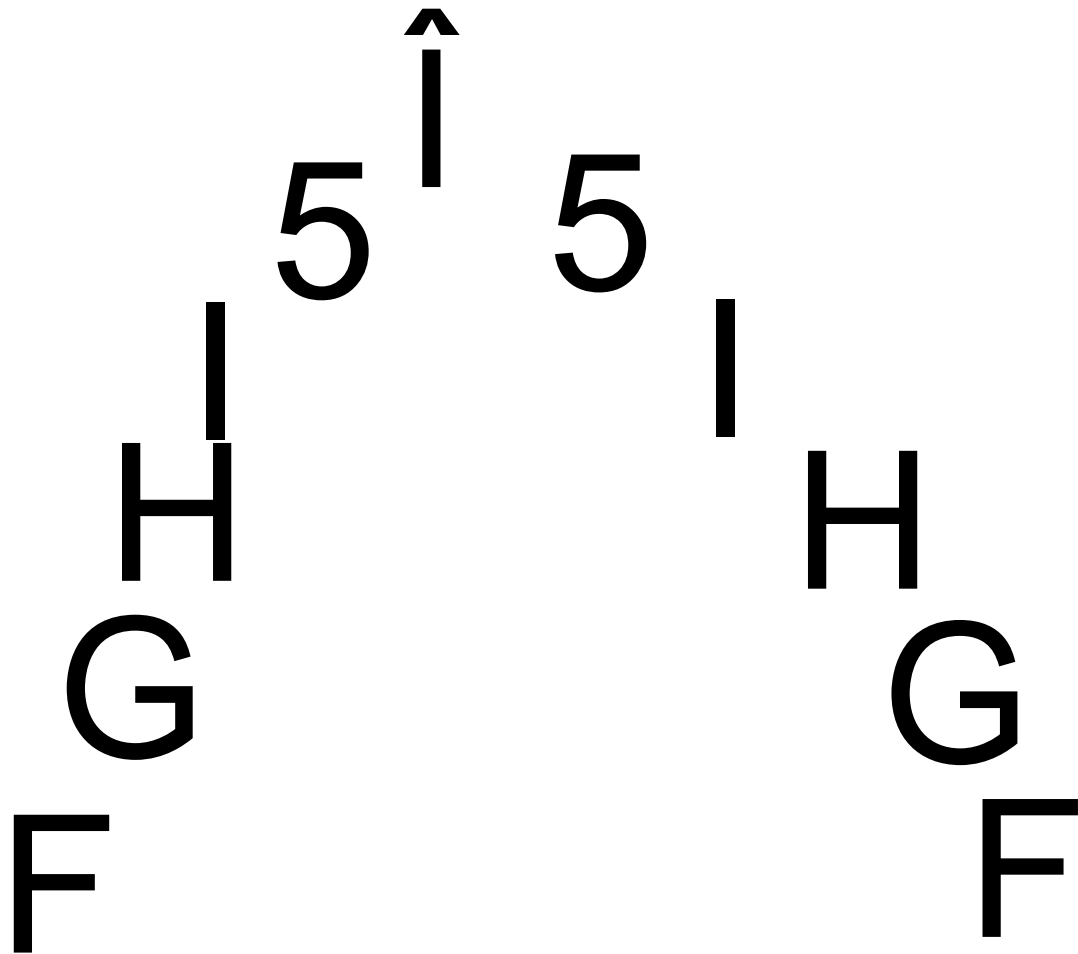
Estimation

* When estimating, round down for 0-4 and up for 5-9.

* Students practice in small groups. Dealer puts down two cards; first one to write the correct answer wins. Three or more cards can be used at a later time.

* Cards are placed on an overhead projector. The first person or team to write the correct answer on their whiteboard wins!

Ö&^

5 5

| H

H

G

G

F

F
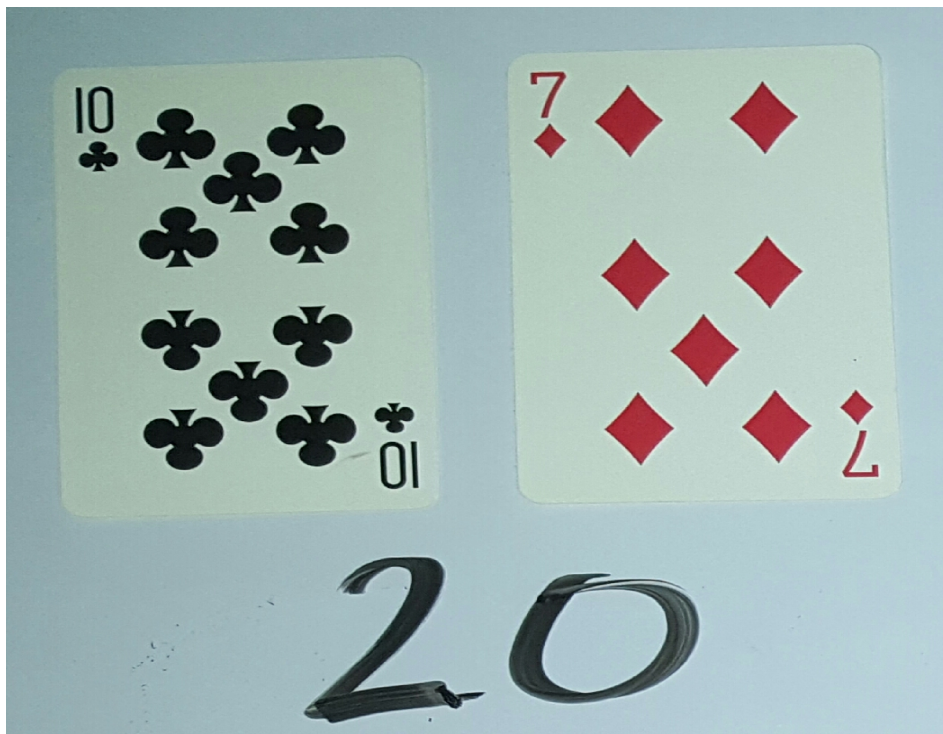
Can also be played with multiple dice and a higher mountain.

Dice (addition)

* Add the total. Highest number gets the victory. First one to ten victories wins!
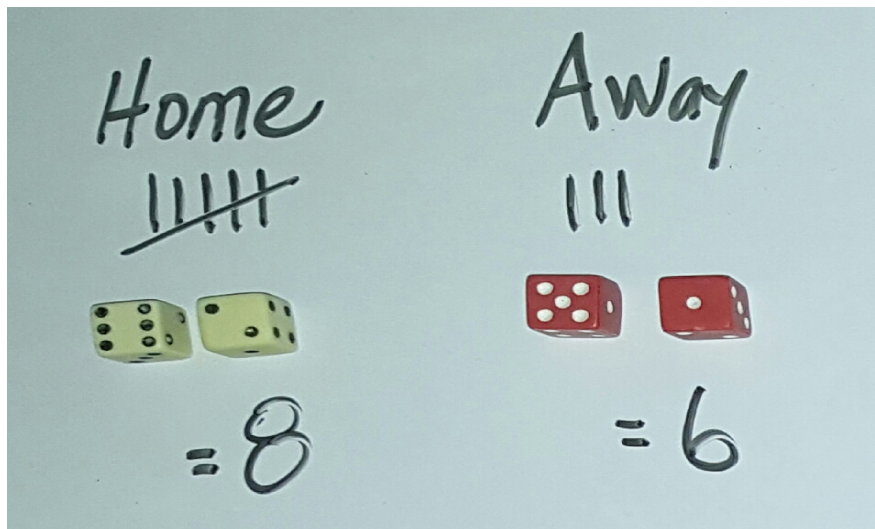
* Three dice are a great way to differentiate instruction.
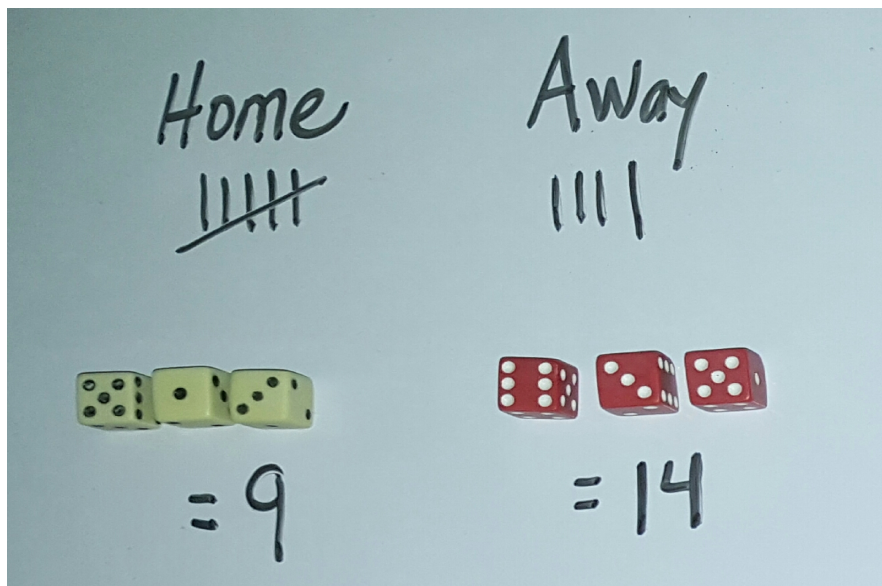
Dice (subtraction)

* Use two different color dice. White dice are positive and the other dice are negative.

winner

-3   3

* Three dice for advanced students.

winner

= 8   = -7
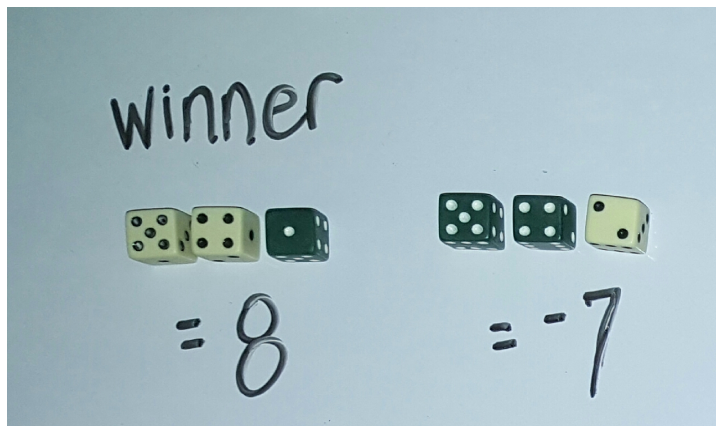
* Dice with more than six sides can be used.

Coins (pennies)

4 + 1 = ?

3 + 2 = ?

2 + 3 = ?

1 + 4 = ?
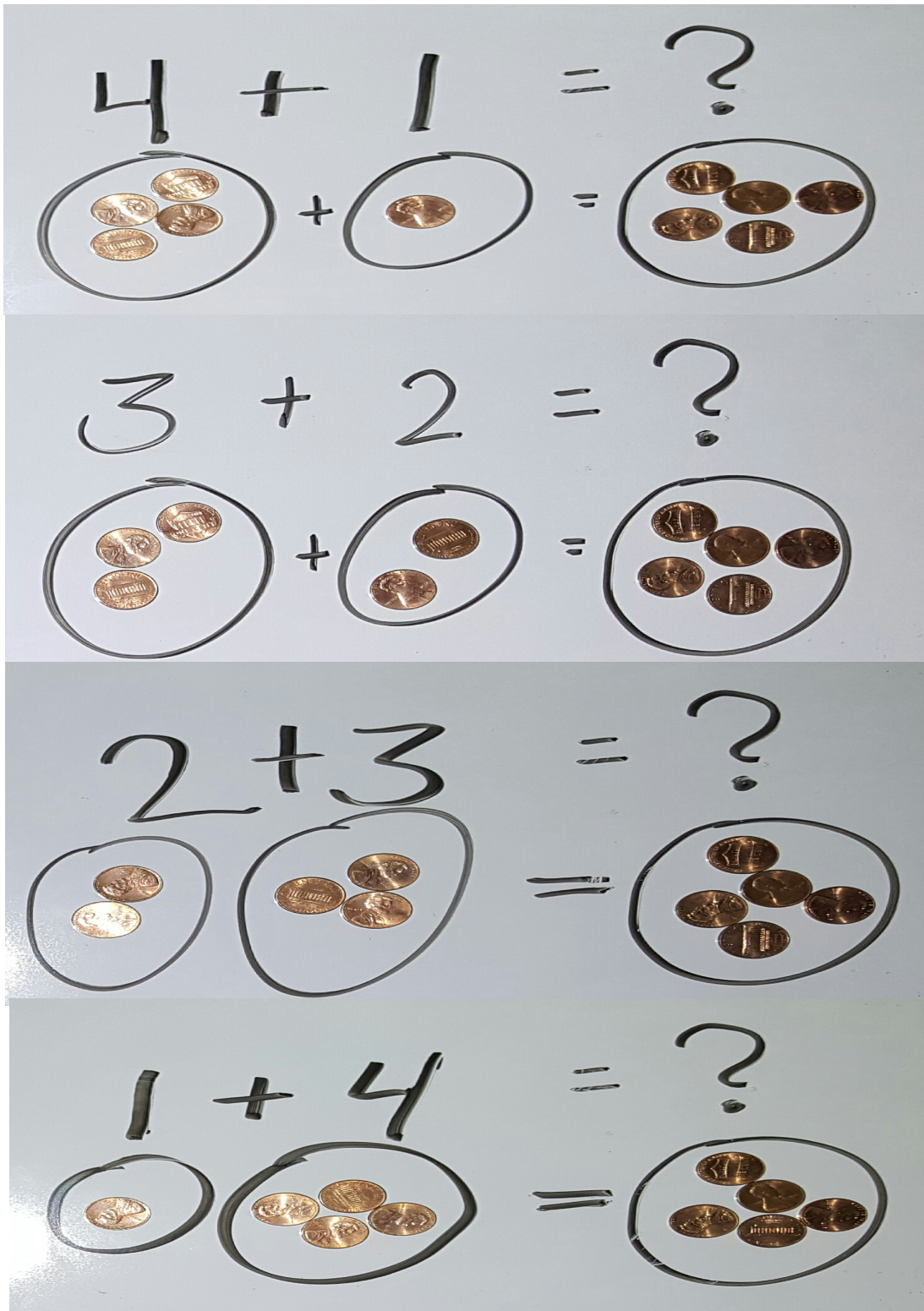
* Nickels (.5), dimes (.10) and quarters (.25) can be used.

Coins

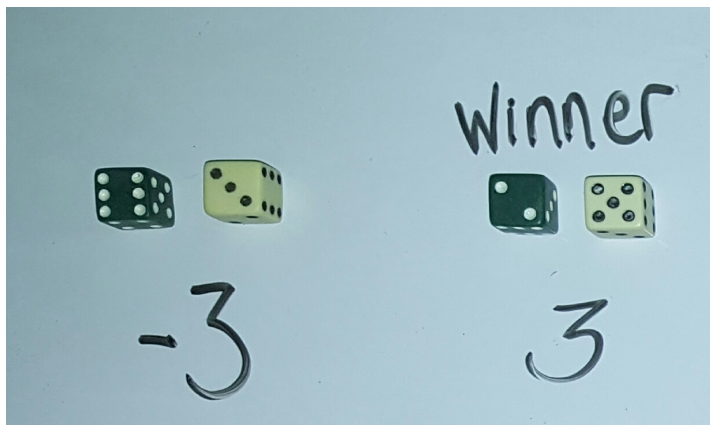* On an overhead projector, add money to create a makeshift BINGO game.

* For little kids, say the amount and the children write it in the proper square on their white board.

* Older kids can be given word problems. *"If a candy bar cost 25 cents, how much will it cost to buy three?"*

* Remember, learning should be challenging, but not frustrating. Adjust the game to meet the needs of your students.

teacher

student

Whiteboards

* On an overhead projector or on your whiteboard, write a number pattern with missing digits.

* The students write the missing digits on their white board.

* Ask students to write the number of a specific place value.

"Write the number in the place value of a hundred."
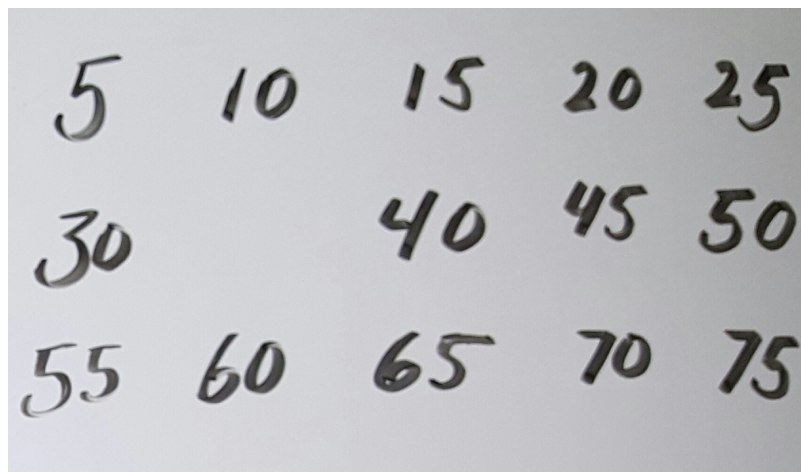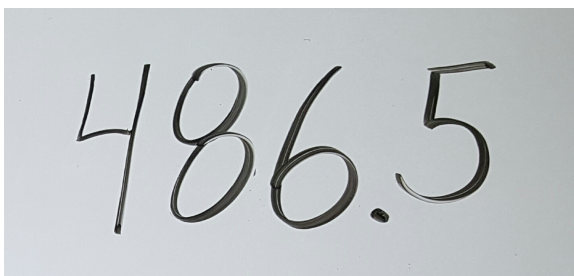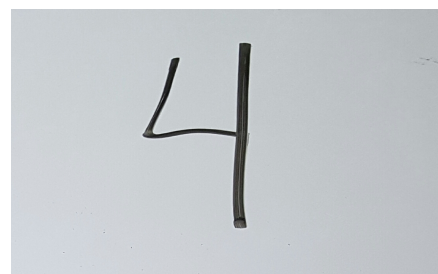

teacher   *student*

Fractions

A good attention getter for any lesson will make students interested. Tell a story and give real life examples. Ask the children, *"Would you rather have 3/100th or 1/10th of a pizza?"* After they write down their answers, divide the pizza and give them their requested share. Every student will know the importance of fractions!

Have a 100 piece puzzle and come to the conclusion, 100 pieces makes one complete puzzle.
Take away one piece and ask, "*Is the puzzle complete?*" No, it has 99 of 100 pieces, 99/100. Take away another, 98/100, etc.

It can also be written $\underline{99}$ or .99 or 99%.
                           100

Decimals separates whole numbers from fractions.

Place value

* Students make their own place value chart, and the teacher says a number. The pupils place cards in the proper spot.

* Remove the 10s from the deck.

* Remember, the decimal point is where we use the word **"and."**
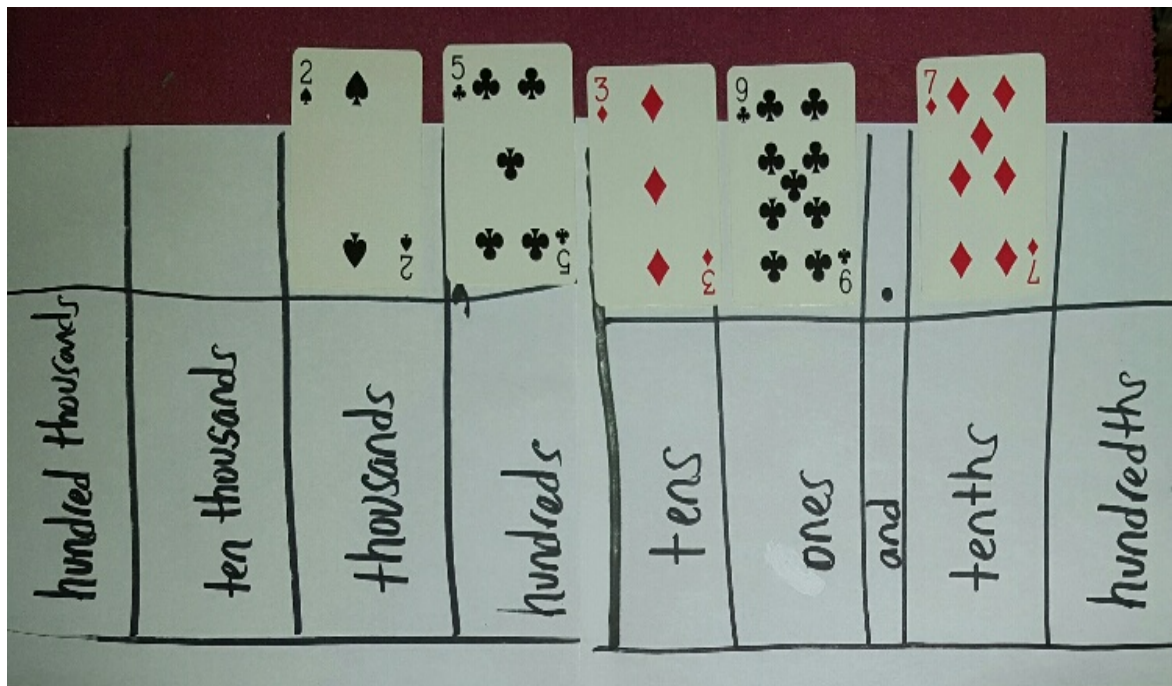
BINGO

Every day, practice counting aloud the BINGO board they are working on. For example, when a student is counting by 5s (5, 10, 15, etc), that will prepare them for multiplication. They will know 3 sets of 5 equal 15.

After the brief warm-up, give the student a problem they can handle. A three-year old may be asked, *"Can you find the number 4?"* Later they can be asked, *"What is 2 + 3?"* Having an abacus close by will be a great help.

Ask the students to stare at the BINGO boards and share their observations with you.

There are many variations of BINGO math games; the following pages are just one option.

BINGO count by 1

1 2 3

4 5 6

7 8 9

BINGO count by 1

1   2   3   4

5   6   7   8

9   10   11   12

13   14   15   16

BINGO count by 1

1 2 3 4 5

6 7 8 9 10

11 12 13 14 15

16 17 18 19 20

21 22 23 24 25

BINGO count by 1

```
 1  2  3  4  5  6  7  8  9 10
11 12 13 14 15 16 17 18 19 20
21 22 23 24 25 26 27 28 29 30
31 32 33 34 35 36 37 38 39 40
41 42 43 44 45 46 47 48 49 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 80
81 82 83 84 85 86 87 88 89 90
91 92 93 94 95 96 97 98 99 100
```

BINGO count by 2

2   4   6   8   10

12 14 16 18 20

22 24 26 28 30

32 34 36 38 40

42 44 46 48 50

BINGO count by 2

2 4 6 8 10 12 14
16 18 20 22 24 26 28
30 32 34 36 38 40 42
44 46 48 50 52 54 56
58 60 62 64 66 68 70
72 74 76 78 80 82 84
86 88 90 92 94 96 98

BINGO count by 3

3   6   9   12

15   18   21   24

27   30   33   36

39   42   45   48

BINGO count by 3

3	6	9	12	15	18
21	24	27	30	33	36
39	42	45	48	51	54
57	60	63	66	69	72
75	78	81	84	87	90
93	96	99	102	105	108

BINGO count by 4

4   8   12   16

20   24   28   32

36   40   44   48

52   56   60   62

BINGO count by 4

4   8   12 16 20

24 28 32 36 40

44 48 52 56 60

64 68 72 76 80

84 88 92 96 100

BINGO count by 5

5   10   15   20   25

30   35   40   45   50

55   60   65   70   75

80   85   90   95   100

105   110   115   120   125

BINGO count by 6

6 12 18 24
30 36 42 48
54 60 66 72
78 84 90 96

BINGO count by 7

7   14   21   28

35   42   49   56

63   70   77   84

91   98   105 112

BINGO count by 8

8 16 24 32

40 48 56 64

72 80 88 96

104 112 120 128

BINGO count by 9

9 18 27 36
45 54 63 72
81 90 99 108
117 126 135 144

BINGO count by 10

10   20   30   40
50   60   70   80
90 100 110 120
130 140   150   160

BINGO count by 11

11   22   33
44   55   66
77   88   99

BINGO count by 12

12   24   36

48   60   72

84   96 108

1 x 1 =   1

2 x 1 =   2

3 x 1 =   3

4 x 1 =   4

5 x 1 =   5

6 x 1 =   6

7 x 1 =   7

8 x 1 =   8

9 x 1 =   9

10 x 1 = 10

11 x 1 = 11

12 x 1 = 12

1 x 2 = 2

2 x 2 = 4

3 x 2 = 6

4 x 2 = 8

5 x 2 = 10

6 x 2 = 12

7 x 2 = 14

8 x 2 = 16

9 x 2 = 18

10 x 2 = 20

11 x 2 = 22

12 x 2 = 24

$1 \times 3 = 3$

$2 \times 3 = 6$

$3 \times 3 = 9$

$4 \times 3 = 12$

$5 \times 3 = 15$

$6 \times 3 = 18$

$7 \times 3 = 21$

$8 \times 3 = 24$

$9 \times 3 = 27$

$10 \times 3 = 30$

$11 \times 3 = 33$

$12 \times 3 = 36$

1 x 4 = 4

2 x 4 = 8

3 x 4 = 12

4 x 4 = 16

5 x 4 = 20

6 x 4 = 24

7 x 4 = 28

8 x 4 = 32

9 x 4 = 36

10 x 4 = 40

11 x 4 = 44

12 x 4 = 48

$1 \times 5 = 5$

$2 \times 5 = 10$

$3 \times 5 = 15$

$4 \times 5 = 20$

$5 \times 5 = 25$

$6 \times 5 = 30$

$7 \times 5 = 35$

$8 \times 5 = 40$

$9 \times 5 = 45$

$10 \times 5 = 50$

$11 \times 5 = 55$

$12 \times 5 = 60$

1 x 6 = 6
2 x 6 = 12
3 x 6 = 18
4 x 6 = 24
5 x 6 = 30
6 x 6 = 36
7 x 6 = 42
8 x 6 = 48
9 x 6 = 54
10 x 6 = 60
11 x 6 = 66
12 x 6 = 72

$$1 \times 7 = 7$$

$$2 \times 7 = 14$$

$$3 \times 7 = 21$$

$$4 \times 7 = 28$$

$$5 \times 7 = 35$$

$$6 \times 7 = 42$$

$$7 \times 7 = 49$$

$$8 \times 7 = 56$$

$$9 \times 7 = 63$$

$$10 \times 7 = 70$$

$$11 \times 7 = 77$$

$$12 \times 7 = 84$$

1 x 8 = 8

2 x 8 = 16

3 x 8 = 24

4 x 8 = 32

5 x 8 = 40

6 x 8 = 48

7 x 8 = 56

8 x 8 = 64

9 x 8 = 72

10 x 8 = 80

11 x 8 = 88

12 x 8 = 96

1 x 9 = 9

2 x 9 = 18

3 x 9 = 27

4 x 9 = 36

5 x 9 = 45

6 x 9 = 54

7 x 9 = 63

8 x 9 = 72

9 x 9 = 81

10 x 9 = 90

11 x 9 = 99

12 x 9 = 108

$$1 \times 10 = 10$$
$$2 \times 10 = 20$$
$$3 \times 10 = 30$$
$$4 \times 10 = 40$$
$$5 \times 10 = 50$$
$$6 \times 10 = 60$$
$$7 \times 10 = 70$$
$$8 \times 10 = 80$$
$$9 \times 10 = 90$$
$$10 \times 10 = 100$$
$$11 \times 10 = 110$$
$$12 \times 10 = 120$$

$1 \times 11 = 11$

$2 \times 11 = 22$

$3 \times 11 = 33$

$4 \times 11 = 44$

$5 \times 11 = 55$

$6 \times 11 = 66$

$7 \times 11 = 77$

$8 \times 11 = 88$

$9 \times 11 = 99$

$10 \times 11 = 110$

$11 \times 11 = 121$

$12 \times 11 = 132$

1 x 12 =   12

2 x 12 =   24

3 x 12 =   36

4 x 12 =   48

5 x 12 =   60

6 x 12 =   72

7 x 12 =   84

8 x 12 =   96

9 x 12 =   108

10 x 12 = 120

11 x 12 = 132

12 x 12 = 144

1	2	3	4	5	6	7	8	9	10
2	4	6	8	10	12	14	16	18	20
3	6	9	12	15	18	21	24	27	30
4	8	12	16	20	24	28	32	36	40
5	10	15	20	25	30	35	40	45	50
6	12	18	24	30	36	42	48	54	60
7	14	21	28	35	42	49	56	63	70
8	16	24	32	40	48	56	64	72	80
9	18	27	36	45	54	63	72	81	90
10	20	30	40	50	60	70	80	90	100

Future versions of this book will
include information on advanced math:

* the importance of borrowing.

  78   *70 + 8 = 60 + 18*
- 69   *60 + 9 = 60 + 9*
= ??

Then check 69   69 + 1 = 70
                + 9   or   + 8
                = 78   = 78

_ _

504   7 x 50 =   350
 x 7   7 x 4 =   + 28
= ???   378

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600 x 30 = (6 x 3) 18 + three zeros (18,000)

Plenty of word problems.