Sorting Squares 2

(Martin Gardner)

A student is given the large square below. They are asked to fold the paper forwards or backwards along any horizontal or vertical line. They are then asked to keep doing this until they have the folded the packet into a single square packet. This will take from 4 to 6 folds. You take the packet and cut along the 4 outside edges so that all the squares are separate. Deal out the 16 single squares into two piles. The student's pile will have the numbers facing **down.** Your pile will have their numbers facing up. The student is asked to add the numbers in their pile which you cannot see. When they have the sum you open a paper on the desk and it predicts the total.

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

Answer: The total of the face up numbers is 68. The sum of the face down numbers is 68

Preparation

Print out the square. Do not use heavy paper or card stock. Cut out the large square. You will need a good scissors to cut the final packet. You may have the student fold along all the vertical and horizontal lines before you start the trick. That makes the packet come out more square. Write the number 68 on a piece of paper and place it folded in half on the desk.

Presentation

A student is given the large square below. They are asked to fold the paper forwards or backwards along any horizontal or vertical line. They are then asked to keep doing this until they have the folded the packet into a single square. This will take from 4 to 6 folds.

You take the packet and cut along the 4 outside edges so that all the squares are separate. Be sure to cut far enough inside the edges to ensure the small squares are separate. There is space along the edges so that you can cut off the edges and still have the numbers show.

You now start dealing the 16 single squares into two piles on the desk. The student's pile will have the numbers facing **down.** Your pile will have their numbers facing up. The student is asked to add the numbers in their pile, which you cannot see. When they have the sum you open a paper on the desk and it predicts the total. The students squares will total 68.

Note: Do not tell them in advance what you are going to do. When they total the numbers on the their cards have then open the paper and see your prediction was correct.

Why does this work.

face up	face down	face up	face down
face down	face up	face down	face up
face up	face down	face up	face down
face down	face up	face down	face up

The trick Sorting Squares 1 proved that
after folding and dealing the squares as described above
the squares in **white will face in one direction**
and the
the squares in **yellow will face in the other direction.**

You can know in advance that
one set of squares will face up and
one set of squares will face down
but you can't know which is which

Sorting Squares 1 Card

1	2	3	4
8	7	6	5
12	11	10	9
13	14	15	16

Sorting Squares 1 sorted the even numbers
from the odd numbers.

the even numbers went in the in the yellow squares
and the odd numbers went in the white squares

Sorting Squares 2

The order of the numbers on the Card in Sorting Squares 2 is different then the order used in Sorting Squares 1.

Sorting Squares 2 Card

1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16

The large square looks like the version 1 square
but it is ordered differently

The way the numbers are put in the squares

You can know in advance
the total of the numbers in the yellow squares is 68
the total of the numbers in the white squares is 68

Sorting Squares 3

A student is given the large square below. They are asked to fold the paper forwards or backwards along any horizontal or vertical line. They are then asked to keep doing this until they have the folded the packet into a single square packet. This will take from 4 to 6 folds. You take the packet and cut along the 4 outside edges so that all the squares are separate. Deal out the 16 single squares into two piles. One student's pile will have the numbers facing **down.** The other students pile will have their numbers facing up. The students are asked to add the numbers in their piles which you cannot see. When they have the sum you open 2 papers on the desk and they each predict one of the totals.

Card 3

24	26	28	14
27	41	32	33
15	17	11	31
23	22	25	35

Sorting Squares 3

24	26	28	14
27	41	32	33
15	17	11	31
23	22	25	35

Sorting Squares 3

The way the numbers are put in the squares

You can know in advance

the total of the numbers in the yellow squares is 195

the total of the numbers in the white squares is 209

Preparation

Print out the square. Do not use heavy paper or card stock. Cut out the large square. You will need a good scissors to cut the final packet. You may have the student fold along all the vertical and horizontal lines before you start the trick. That makes the packet come out more square. Write the number 209 on a piece of paper and 195 on a second piece of paper, fold them in half and place them on the desk. **I use 2 students for this version.**

Presentation

A student is given the large square below. They are asked to fold the paper forwards or backwards along any horizontal or vertical line. They are then asked to keep doing this until they have the folded the packet into a single square. This will take from 4 to 6 folds.

You take the packet and cut along the 4 outside edges so that all the squares are separate. Be sure to cut far enough inside the edges to ensure the small squares are separate. There is space along the edges so that you can cut off the edges and still have the numbers show.

You now start dealing the 16 single squares into 2 piles on the desk. Deal the squares into 2 piles one in front of each student. The one pile will have the numbers facing **down.** The second pile will have their numbers facing up. Each student is asked to add the numbers in their pile, When they have the sums you open the papers on the the desk and see that they predict the 2 totals.

Note: Do not tell them in advance what you are going to do. You cannot know which pile will have the 209 and which pile will have the 195 so do not imply that. Open both and show that you predicted both totals.

Note: If they ask you do do this again you could use the square below **but only have 1 prediction card because the totals for both piles will be the same.**

Sorting Squares 4

A student is given the large square below. They are asked to fold the paper forwards or backwards along any horizontal or vertical line. They are then asked to keep doing this until they have the folded the packet into a single square packet. You take the packet and cut along the 4 outside edges so that all the squares are separate. Deal out the 16 single squares into two piles. One student's pile will have the numbers facing **down.** The other students pile will have their numbers facing up. The students are asked to add the numbers in their piles. When they have the sum you open 2 papers on the desk and they each predict one of the totals.

Card 4

24	26	28	14
27	41	32	33
15	17	11	31
23	22	25	35

Answer: The total of the face up numbers and the total of the face down numbers is 164

24	22	12	14
28	21	32	34
25	17	11	23
13	22	15	15

Sorting Squares 4

The way the numbers are put in the squares

You can know in advance

the total of the numbers in the yellow squares is 164

the total of the numbers in the white squares is 164