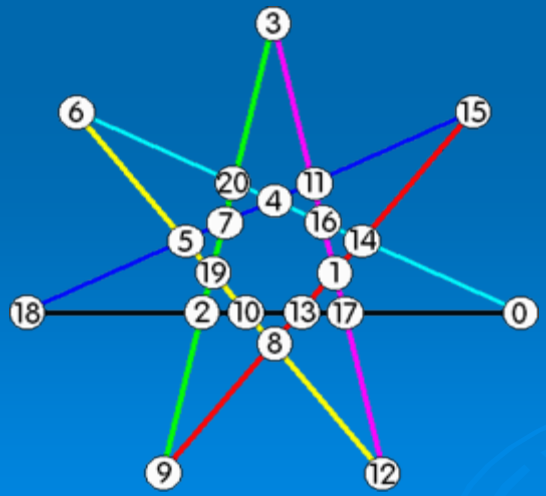
- **TECNOLÓGICO DE MONTERREY**
  Campus Guadalajara
- **INSTITUTO TEPEYAC**
  Campus Santa Anita
- **ESCUELA PRIMARIA URBANA 64**
  "Lázaro Cárdenas"
- **ESCUELA SECUNDARIA MIXTA 40**
  "José Clemente Orozco"
- **ESCUELA SECUNDARIA TÉCNICA Nº 144**

RECREATIONAL ACTIVITIES FOR TEACHING MATHEMATICS



BY:
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AND
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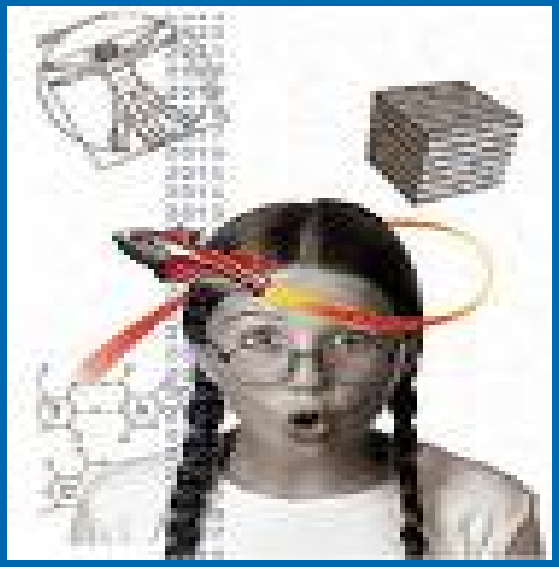
Know a days teaching mathematics is an important topic in most of the countries, which are searching for alternatives to solve the difficulties that the students face in the classroom.

- The educational changes should respond to the continuous advances of the society and to the needs of adaptation that it requires, also they shouldn't be limited to sporadic reviews. On the contrary, the depth and the velocity of these changes make us build permanent and gradual mechanisms, that can evaluate and reformulate the curricular contents.



- **Currently, the needs of learning are related with the capacity of reflection and the critical analysis, the production and the exchange of knowledge through diverse media, as well as the participation in a more increasingly versatile labor world.**

- **Using mathematics in a recreational way gives us the opportunity to approach the student to its emotional and creative part, also it becomes attractive and satisfactory.**

- Some of the advantages that it offers are the following:

1. It helps with the interaction of the students
2. It lets us put in practice intellectual resources
3. It contributes to the creation of a relaxed environment that favors the learning

- Mathematics don’t need to be boring.
- As teachers, we need to do our work pleasant for our students and for us.

- It is clear that, especially in the task to initiate the youngest in the mathematical work, that the flavor to play can impregnate of such way the work, that it will be more motivating, stimulating, pleasant and, for some, even exciting.

We want to use simple activities, such as games, so that the students can be familiarized with the topics.

ACTIVITY FOR 8TH. GRADE
LINEAR EQUATIONS

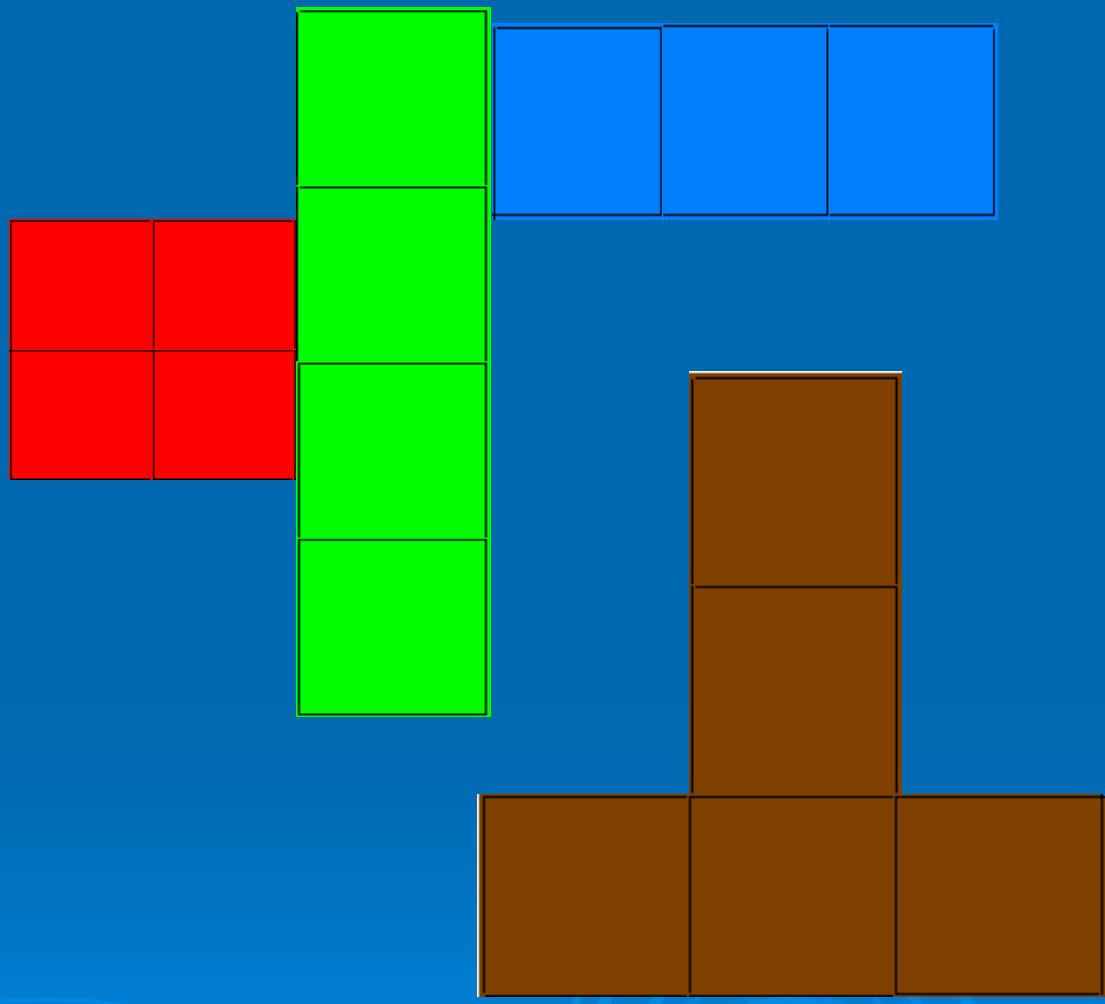
- The activity is done in teams of 3 or 4 students.
- Previously, ask each team to bring a calendar sheet. It is helpful if all the teams bring the sheet from the same month.

CALENDAR SHEET

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			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		

Show the students the next activity:

Cut in the cards the following four windows which will serve to look at a part of the calendar.



Each card is going to be placed over the calendar sheet

EACH COLOR IS A DIFFERENT WINDOW

Calendar sheet

SUNDAY	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY
			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		

- *Find the way to obtain the sum of the three numbers by just multiplying once, or by using a product and an addition.*
- *Find an algebraic expression that helps us obtain the sum of the three numbers that appear in the window.*
- *Put another window anywhere in the calendar and find which combinations help you get the numbers you have.*
- *Looking for the solution will make the students propose arithmetic strategies that will conduct them to algebraic applications.*
- *They will show their conclusions to the entire classroom.*

Additional activity for the calendar

- *Make teams of 3 or 4 persons.*
- *They're going to create 5 new windows. Then, they're going to find the algebraic expressions that let them know the sum of the numbers in the windows using the following arrangement of numbers.*

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

TRIANGLES

- **Organize the group in teams (give each team the same number of toothpicks).**
- **How many triangles can you build with the same amount of toothpicks?**
- **Build the triangle with the toothpicks and fill in the chart.**

Number of toothpicks	Number of triangles that can be built	Measure of the sides (units: toothpicks)
1	0	
2	0	
3	1	1-1-1
4		
5		
6		
7		
8		
9		
10		
11	4	5-5-1/5-4-2/5-3-3/4-4-3

- Show their results

* Compare the charts, and wherever there's a different result, validate the answer.
* Complete the chart. Everyone must get the following answers.

Number of toothpicks	Number of triangles that can be built	Measure of the sides (units: toothpicks)
1	0	
2	0	
3	1	1-1-1
4	0	
5	1	2-2-1
6	1	2-2-2
7	2	3-3-1 3-2-2
8	1	3-3-2
9	3	4-4-1/4-3-2/3-3-3
10	2	4-4-2 4-3-3
11	4	5-5-1/5-4-2/5-3-3/4-4-3

Besides the exploration of different triangles, they will analyze, when is possible to form triangles and when not.

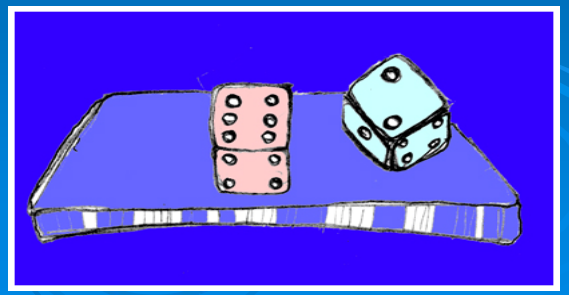
- **THEY MUST CONCLUDE:**

"THE SUM OF THE MEASUREMENTS OF ANY TWO SIDES FROM A TRIANGLE MUST BE GREATER THAT THE MEASUREMENT OF THE THIRD SIDE"

THEY WILL ALSO PRACTICE HOW TO DRAW A TRIANGLE USING A RULER AND A COMPASS, AND THE NUMBER OF TOOTHPICKS AS CENTIMETERS

ADDITIONAL ACTIVITY

- Make teams of 4 or 5 students.
- Each students will throw 3 dices.
- If it's possible to form a triangle with the numbers in the dices, then the player must add the numbers and write the sum as if there were points. If it's not possible to form a triangle, then the player gets zero points.
- The winner will be whoever has more points after 10 turns.



PURPOSE

- **SHOW HOW FRACTIONS AND ITS EQUIVALENCES CAN BE USED THROUGH GAMES AND DIDACTIC MATERIAL AS AN ALTERNATIVE *FOR LEARNING***

CHALLENGES IN TEACHING FRACTIONS

1. CONTEXTUALIING FRACTIONS
2. DESIGN OF PROBLEMS
3. MAKE SENSE AS USEFUL TOOL

JUSTIFICATION

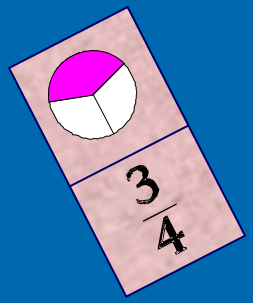
FRACTIONS. . .

ARE USED LESS IN DAILY LIFE . . .

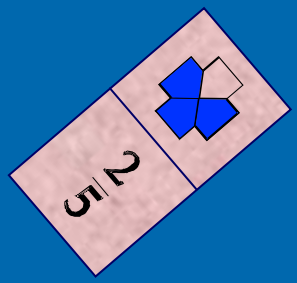
. . .THERE IS FEW PREVIOUS KNOWLEDGE

ACTIVITIES TO DEVELOP

- **MEMORY GAME** (finding the equivalence)
- **BINGO** (identifying the equivalence)
- **DOMINOES**



MEMORY GAME



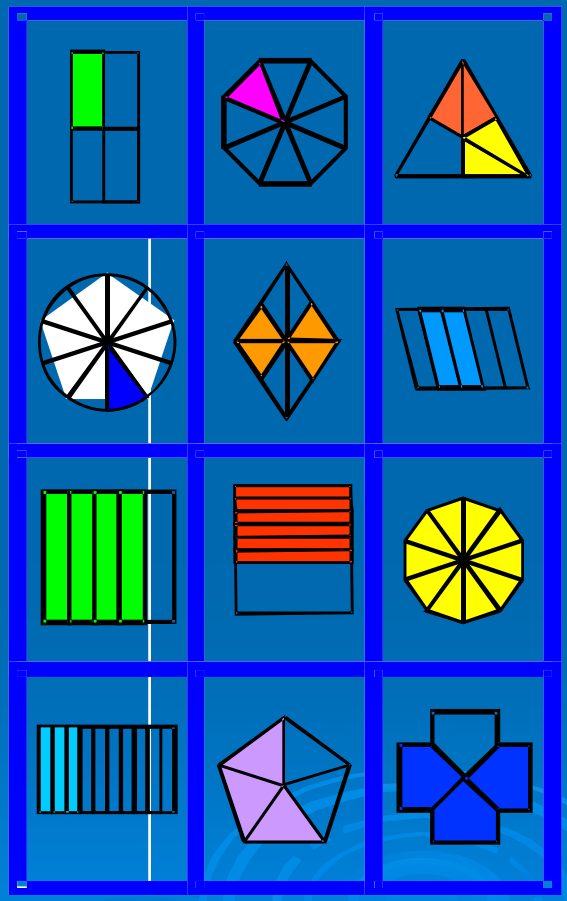
- **INSTRUCTIONS**

- GET TOGETHER IN TEAMS.
- EACH PLAYER IS GOING TO TAKE TWO CARDS.
- CHECK IF THE GRAPHIC FRACTION IS EQUIVALENT TO THE NUMERIC FRACTION.
- IF IT'S EQUIVALENT KEEP THE CARDS AND REPEAT THE PROCEDURE.
- THE PLAYER LOSES ITS TURN, WHEN HE DOESN'T FIND EQUIVALENT FRACTIONS.
- THE WINNER IS THE PERSON THAT HAS MORE PAIRS.

BINGO

INSTRUCTIONS

- EACH PLAYER WILL CHOOSE A BOARD FORMED BY 12 GEOMETRICAL FIGURES.
- ONE OF THE PLAYERS WILL BE THE GUIDE AND WILL CALL THE CARDS.
- THE GUIDE WILL PICK A CARD RANDOMLY. THE CARD WILL HAVE A WRITTEN FRACTION, WHICH HAS TO BE ASSOCIATED WITH THE FIGURES IN THE BOARD.
- THE PLAYERS WILL REGISTER IN THE BOARD THE CARDS THAT THE GUIDE CALLS IF THEY HAVE THEM.
- THE WINNER WILL BE WHOEVER FILLS FIRST THE BOARD



EVALUATION - REFLECTION

- What did you experience?
- Was it fun?
- Was it interesting?
- Which other topics can be related with these games?
- Are there any other applications?