

Office of Larry E. Reider
Kern County Superintendent of Schools
1300 17th St. – CITY CENTRE
Bakersfield, CA 93301-4533
Advocates for Children

Office of Christine Lizardi Frazier
Kern County Superintendent of Schools
Advocates for Children

MATH FIELD DAY
DESCRIPTION OF CONTESTS

LEAP FROG 9:00

Two-person teams are entered with each person working different sets of multiple-choice problems during the first round (30 minutes). At the end of Round 1 and a ten minute break, papers are exchanged and each person is allowed 30 minutes to check, correct and complete his/her partner's work. During this checking period, teammates show each other the work they are doing and write notes, but no talking will be allowed. All work is entered on a single Scantron sheet. **Calculators allowed.**

Teams are filled by students who are enrolled in 6th, 7th and 8th grade. While students may move up a level to fill a team, they may not move down to complete a 7th or 6th grade team.

POWER RELAYS 9:00

Five-person teams enter from each grade (6, 7 and 8). The relay consists of four different rounds of five questions. The five students line up approximately 50 feet from a desk. The students must remain in the same order throughout the relay. Each student runs to his/her assigned desk and chooses a question to answer. The student must place an answer in one of the answer spaces or an X indicated he/she could not come up with an answer. Each question may only be attempted once! After the first five questions have been attempted, rounds 2, 3 and 4 will proceed in the same manner. The winner will be determined by the most correct responses. In the case of a tie, the team with the shorter elapsed time will be declared the winner. Maximum allowed: 15 students from a school, five from each grade. **Calculators are provided or a student may use his/her own.**

CIRCUIT TRAINING 9:00

Each two-person team will move through 24 different stations. They will work collaboratively on estimation, spatial visualization, interpretation of tables, charts, and maps and other interesting problems. Each team will be allowed 2-3 minutes per station (at the discretion of the proctors). Maximum: One two-person team from 6th grade, and one two-person team from 7th and 8th grades combined. Non-programmable calculators are allowed.

SCHOOL PROBLEM SOLVING 9:00

Each four-member team works together on 20 problems. They can divide the problems and each do a portion or do them cooperatively. There will be one answer sheet for each team. The first team finishing with the highest number of best solutions is the winner; the time limit is 80 minutes. Non-programmable calculators are allowed.

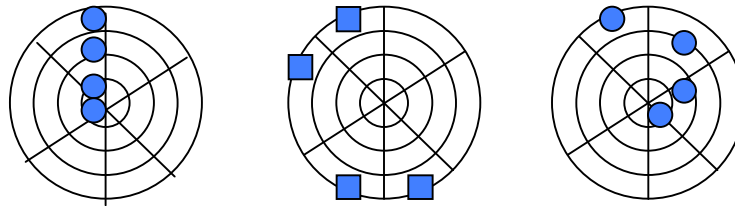
TRIATHLON GAMES TOURNAMENT 9:00

All entries represent one grade at a school—6th, 7th, or 8th. All players play Contig and Circle Tic Tac Toe. The top eight students then proceed to play Kalah as an elimination tournament. The top four places in each grade level receive trophies.

CIRCLE TIC TAC TOE (First Game)

Two rounds are played by all students; points are given for each win or bye. To break ties for eighth place, Contig will be played. The object of the game is to get four marks (x's or o's) in a row in one of three ways: straight out from the center, around any ring, or by a spiral “staircase” move in either direction. The center point may not be crossed to get 4 in a row.

Examples of
winning
moves



CONTIG (Second Game)

Materials

- ❖ Contig game board
- ❖ Different colored marker for each player
- ❖ 4 dice- 2 colored, 2 white
- ❖ 2 –4 players

Directions

- Each player rolls all four dice. High roll goes first.
- Players rotate clockwise.
- The player selects three dice to roll. Colored dice denotes negative numbers and white denotes positive numbers.
- The object of the game is to create a problem with the numbers rolled that has an answer corresponding to one of the unoccupied squares on the Contig Game Board. The student may use any of the four operations (addition, subtraction, multiplication or division) and may use the numbers rolled in any order.
- For example, if the student rolled +3, -2 and -4, some combinations would include:

$$\begin{aligned} &+3 +(-2) - (-4)=+5 \\ &+3 \times (-2) \times (-4)= +24 \\ &+3 \times (-4 \text{ divided by } -2)=+6 \\ &-4 \times (-2 -(+3))=+20 \end{aligned}$$

- Once a player creates a problem, that player writes that problem on paper and the other players check to see if the answer is correct. If the answer is correct, the player colors the square. If the answer is incorrect, they lose that turn.

Strategy

- ❑ Place colors to connected squares to create runs or to block your opponent's attempt to build a run. Bonus points are scored for direct connections of two to five of the same color. Highest total wins the game

Unable to play

- If there is no available space possible with that particular roll, the player declares he/she is unable to move and passes the dice. However, if a possible total for an available space was overlooked, any other player may point out the move, and place his/her own color in that space. You must declare for the space before the dice are rolled.

Game ends when one of these occurs

- ✓ All spaces are filled
- ✓ One person has 20 circles colored
- ✓ After 3 consecutive rolls by each player results in no available spaces.

A time limit may be imposed for each player's turn and to end the game. For example, a player may have 1 minute to find a problem to use, and the game will last for 25 minutes.

Scoring

1 point for each marker place, plus bonus points as follows

2 points for 2 connections

5 points for 3 connections

7 points for 4 connections

10 points for 5 connections

KALAH (Third game for finalists)

This is a single elimination tournament, which will consist of top 8 students from 6th, 7th and 8th grades. The teacher will determine how many games are played in each round according to the time available (usually 1 or 3).

Description: Start with three stones in every hole in the carton; have one Kalah at each end. Coin flip determines who moves first. Pick up all stones from any section on your own side; drop one stone in each section as you move around to the right. Drop one stone in your own Kalah as you go by; never put stones in your opponent's Kalah. If your last stone lands in your Kalah, you get an extra turn. If your last stone lands on an empty section on your side you MUST "capture" the stones across from it. Put your stone and your opponent's stones into your Kalah. If you capture, that ends your turn. Whichever player empties his/her side first gets all the remaining stones in the opponent's sections. Count your Kalah to determine the winner. Loser chooses who goes first in the next game if the round has more than one game. Students may see how the game is played by watching the video. To order call 661-636-4640.

SUDOKU 9:00

Complete the grid so that every row, column, and 3x3 box contains every digit from 1 to 9 inclusively.

9	6		5				8	3
3			2	7	9			4
		2	6				9	
	9				6	7		
7	4						5	1
		8	4				2	
	7				5	4		
6		3	9	1	4			5
5	1				8		3	2

9	6	7	5	4	1	2	8	3
3	8	1	2	7	9	5	6	4
4	5	2	6	8	3	1	9	7
2	9	5	1	3	6	7	4	8
7	4	6	8	9	2	3	5	1
1	3	8	4	5	7	6	2	9
8	7	9	3	2	5	4	1	6
6	2	3	9	1	4	8	7	5
5	1	4	7	6	8	9	3	2

TAX COLLECTOR 9:00

Tax Collector, taken from Family Math, is a game that uses skill in solving problems that involve multiplication factors. A computer program has been designed by David Aubin of Ridgecrest for the Kern County Middle School Math Field Day.

The student will be told what number to enter into the computer to represent a maximum paycheck. The number will be easiest for 6th grade, medium for 7th grade and hardest for 8th grade (but ≤ 100).

Assume the maximum paycheck is 16.

The taxpayer (student) enters a paycheck which becomes part of his total.

The tax collector gets all the factors of that paycheck except the paycheck itself. For example, if 16 is chosen the factors are 1, 2, 4, 8 and 16. The taxpayer gets 16 and the tax collector (computer) gets everything but the 16 for a total of 15. The numbers available for the next move on the taxpayer's part are now 6, 9, 10, 12, 14 and 15. (3, 5, 7, 11 and 13 are prime numbers and the tax collector already has the factor of 1.)

Once a number or factor has been used (entered), **it may not be used again** until the next game. Since 1 is a factor of every number, the tax collector will get 1 from the first paycheck that is chosen, along with any other available factors.

Continue choosing paychecks until there are no paychecks left that have factors.

If there are no factors left for a particular paycheck, the tax collector gets that check.

When there are no paychecks left that have factors available, the tax collector gets the rest.

The computer will add the student’s (taxpayer’s) total and its (tax collector’s) total to see who has the most.

Here is a five move game played with “12” as the top number:

Move	Taxpayer	Tax Collector
1	11	1
2	10	5, 2
3	6	3
4	8	4
5	Oops, cannot use 12 because 1, 2, 3, 4 and 6 are taken. Cannot use 9 because 1 and 3 are taken.	12, 7, 9
Total	35	43=winner

MAD HATTER 9:00

Multiple-choice test, calculators not allowed. Description: Each grade level will have a separate test. Twenty-five problems will be projected on a large screen at 45-second intervals. The questions will **not be read aloud**. Students in pairs will choose the best answer and record it on their Scantron sheet, being careful that their words or hand signals are not intercepted by other teams. The Scantron sheets will be collected by the proctors and turned in to central scoring after each round. Two students from each Grade 6, 7 and 8 may enter. **Calculators allowed.**

INDIVIDUAL MEDLEY

The Individual Medley consists of multiple-choice questions, which are worked within a 35-minute time limit. Awards are given to the students with the best 6th, 7th and 8th grade score from each school. Test is administered at the school site prior to Math Field Day. Winners’ list is faxed or e-mailed to KCSOS prior to Math Field Day. **Calculators allowed.**

PRELIMINARY RELAY Follows completion of Power Relays

Each team will consist of four members. At a signal, the first member of every team will run a short distance to get his/her problem, solve it, put the answer on an answer card and run back as quickly as possible. Then the second member of each team runs forward, gets his/her question, answers it, and so on until all four questions have been answered. The first team to submit four correct answers is the winner. If any questions are answered incorrectly, each student will run again and check his/her own work until the mistake or mistakes have been found. The judges will not indicate which answers are incorrect. The questions will not be too difficult. The relay race continues until winning teams are determined for each division. Maximum number of entries: four 6th, four 7th and four 8th students from each school. As in Leap Frog, teams may be filled by students moving up a level, but never down. **Calculators are not allowed. Prizes are awarded on the spot.**

Office of Larry E. Reider
Kern County Superintendent of Schools
1300 17th St. – CITY CENTRE
Bakersfield, CA 93301-4533
Advocates for Children

TRADITIONAL RELAY Final Event of day

Each team will consist of four members. At a signal, the first member of every team will run a short distance to get his/her problem, solve it, put the answer on an answer card and run back as quickly as possible. Then the second member of each team runs forward, gets his/her question, answers it, and so on until all four questions have been answered. The first team to submit four correct answers is the winner. If any questions are answered incorrectly, each student will run again and check his/her own work until the mistake or mistakes have been found. The judges will not indicate which answers are incorrect. The questions will not be too difficult. The relay race continues until winning teams are determined for each division. Maximum number of entries: four 6th, four 7th and four 8th students from each school. As in Leap Frog, teams may be filled by students moving up a level, but never down. **Calculators are not allowed.**

AWARDS approx. 1:15