

While *Family Mathematics Nights* referred to earlier in this handbook are family events in which parents attend with their students, *Parent Mathematics Workshops* are information sessions intended just for parents.

Parent Mathematics Workshops provide the opportunity to investigate concepts and situations in a comfortable and collegial setting.

Important topics in mathematics are presented for the parent audience, including:

- how to use mathematics games to improve student understanding
- how to explore mathematics concepts in the home setting
- how to use picture books to explore mathematics concepts
- explanations of students' development stages, including suggestions for parent support at each stage
- how games provide natural student motivation
- how probability is best understood in real situations that the students can experience.

Information For Parents

Engaging students in basic mathematics skills can be challenging, since this may seem repetitious and uninteresting. Using mathematics activities and investigations for basic mathematics skills provides students with the motivation of winning, in an interesting and engaging context. Twelve mathematics activities are provided that are transferable to the home environment.

For each activity, there is time for the parents to try the activity, as well as analysis of the stages of understanding that parents can witness in the students. In addition to these activities, the workshops include a warm-up activity that investigates concepts of probability, and a short discussion of learning theory.

With an overall time of 1 ½ hours, there are suggested times for each of the sections of this workshop. Parent engagement should ultimately dictate how much time is devoted to each component.

After an initial activity, parents are lead through a variety of problem solving questions that allow them to investigate methods that students might use in their own mathematics work.

Required Materials:

- two dice (numbered cubes) for every group of two parents
- colored counters (each participant will need six counters of the same color)
- one deck of cards, face cards removed, for every two participants
- play money trays (one for each group of four participants)
- game boards for 'Across the River' and 'The Big Race'.

15 Minutes Estimated Time

As a whole group, play the following game of SKUNK.

Each person gets a scrap of paper and writes SKUNK across the top. This is also written on the board at the front of the room. Each letter is a different round of the game.

At the start of the 'S' round, everyone stands up. Two dice are rolled. The sum of the dice is written under the 'S.' After this number is written, each participant decides whether to stay standing or to sit down for the next roll. If a player decides to sit down, that player has to stay seated until the next round starts. A round ends when all participants have sat down, or when a '2' is rolled. If one '2' is rolled, anyone who is still standing loses all of their points from that round. If two '2's are rolled, the people standing lose all of the points they have from all rounds that have been played. The game continues until the final 'K' round has been played. A quick survey should reveal who has the most points. This person has won the game.

15 Minutes Estimated Time

Explain to parents that:

- knowledge is built actively by the learner through a process of making connections to prior understandings
- strategies that are used by students are a combination of processes and beliefs
- when students are allowed to construct their own knowledge, the processes they use are supported by the successes they have had in using these methods.
- when students are told rules or have mathematical operations explained out of context, they may have difficulty translating these skills into new situations
- when students add to their previous knowledge, their learning may be more flexible
- mathematical activities provide motivation for students to develop these understandings, since they are interested in winning.

10 Minutes Estimated Time

Review the rules for ‘Card Match’, ‘Speed’ and ‘Salute’ (pages 42, 49 and 50 in this handbook).

10 Minutes Estimated Time

Provide an opportunity for all of the participants to try playing each of the three games.

10 Minutes Estimated Time

Discuss the learning stages that will be observed when they play these games with their students (pages 43, 49 and 51 in this handbook).

10 Minutes Estimated Time

Review the rules for ‘Across the River’, ‘The Big Race’, and ‘Money Madness’ (pages 56, 57 and 64 in this handbook).

10 Minutes Estimated Time

Provide an opportunity for all of the participants to try playing each of the three games.

10 Minutes Estimated Time

Discuss the learning stages that will be observed when they play these games with their students (pages 56 and 64 in this handbook).

Although some parents will need to leave at the immediate conclusion of the workshop, teachers can expect to engage in dialogue and answering questions with some parents for an additional period of time.

Parent Mathematics Workshop Grades 3-6

Parents need to know that effective problem solving is a skill that needs to be taught. When students are shown general strategies, they can use these in new problem situations. Three strategies will be shown in this workshop. The first strategy is the ‘guess and check’ method. In this strategy the goal is find the correct numbers by making progressively closer guesses and then testing each guess. The second strategy is the ‘draw a diagram’ method. Students using this strategy create a picture of what is happening in the problem. This picture is used to solve the problem. Older students may move into the use of algebraic representations instead of pictures to show the problem. The third strategy is to ‘make a table.’ In this strategy, students create a table of the information they have about the pattern. This table is used to find patterns, and to rule out answers that will not work.

With an overall time of an hour and 40 minutes, the following are suggested times for each of the sections of this workshop. Parent engagement should ultimately dictate how much time is devoted to each component.

Required Materials:

- problem solving handouts
- calculators (one for each participant)
- lined paper.

