

This is a sample lesson plan and direction sheet you will be able to find when downloading from: <http://www.op97.org/curriculum/intellitools/index.html>
The download will ALSO include the actual game. Software: Intellimathics (Intellitools Classroom Suite) must be available to run the game.

Lesson Plan Senet

Introduction to the lesson:

This lesson is designed to introduce students to folktales of Egypt while reinforcing counting skills. Students will read a folktale and play an Egyptian game while practicing counting.

Lesson Objectives:

1. Students will gain knowledge of the culture of Egypt.
2. Students will increase their fluency in counting.

Standards:

Math: Number Sense and Operations

Count by ones and twos to at least 20.

Social Science: Understand social systems, with an emphasis on the United States.

Compare characteristics of culture as reflected in language, literature, the arts, traditions and institutions.

Materials Needed:

Egyptian Folktale : <http://www.theamazinginstitute.org/gurps/mithras/children.htm>
or the book, How the Amazon Queen Fought the Prince of Egypt by Tamara Bower
Markers
Scarab manipulatives

Procedures:

1. Begin the lesson by reading or playing the story. Discuss that it is an Egyptian folktale and that folktales had lessons for the listeners. Discuss the lesson of the story. Discuss how it might be easier to count items from the story like the soldiers in the book or the temples and statues from the online story.
2. Take a field trip to a local river or go there yourself and collect smooth stones. Children will spray paint them gold and then draw scarab beetles on the stones in magic marker. Each child must make at least 30.
3. Call out numbers, counting by twos and then threes, from 1 to 30 to the children and ask them to show that number with scarab manipulatives.
4. Have children use their scarabs and show them in groups of twos and then threes. Count with these groups.
5. Build an Egyptian drum from PVC pipe and a plastic flower pot on top, so it forms a goblet form. Stretch rubber like old inner tube over the flower pot and hold it in place with small bungi cords. Connect the two parts while decorating them with colored duct tape. Beat this drum while counting by 2s and 3s.
6. Explain the rules of Senet and have pairs of children play the game.

Assessment Ideas:

Show children flashcards of numbers from 1 to 30. Have them say the number and count out that number in their scarab manipulatives. Do this with both 2s and 3s also. Assess how well they can count.

Lesson Plan Roshambo

Introduction to the lesson:

This lesson is designed to introduce students to folktales of Japan while reinforcing counting skills. Students will read a folktale and play a Japanese game while practicing counting.

Lesson Objectives:

1. Students will gain knowledge of the culture of Japan.
2. Students will increase their skills in probability.

Standards:

Math:

Calculate the probability of a simple event.

Analyze problem situations (e.g., board games, grading scales) and make predictions about results.

Social Science

Understand social systems, with an emphasis on the United States.

Compare characteristics of culture as reflected in language, literature, the arts, traditions and institutions.

Materials Needed:

Japanese Folktale : The Boy Who Drew Cats - <http://www.aaronshp.com/stories/045.html>

Procedures:

1. Begin the lesson by reading or playing the story. Discuss that it is a Japanese folktale. Discuss the story. Discuss how it might be possible to use large numbers of items, like the paintings, to make predictions about things, like the likelihood of a certain colored cat.
2. Using dice that have different colors on each side, have students make predictions about the colors that are rolled using a variety of number of dice : <http://www.greathallgames.com/aacc/adice/adice.html>. Have them use Graph Club to chart the rolls, so that students can see how their predictions compare to the totals.
3. Explain the rules of the Japanese Scissors, Paper and Rock game and have groups of children play the game.

Assessment Ideas:

Using a die, set a number of rolls that is divisible by 2, 3, and 4. Have the student predict the number of times a certain number turns up during that number of rolls. Assess the reasonableness of the prediction according to probability.

Lesson Plan Pat Cha

Introduction to the lesson:

This lesson is designed to introduce students to folktales of China while reinforcing multiplication skills. Students will read a folktale and play a Chinese game while practicing their multiplication facts.

Lesson Objectives:

1. Students will increase their fluency in multiplication facts.
2. Students will increase their fluency in addition problems with multiple place values.
3. Students will gain knowledge of the culture of China

Standards:

Math:

Investigate, represent, and solve problems using number facts, operations (addition, subtraction, multiplication, division) and their properties, algorithms and relationships.

Social Science

Understand social systems, with an emphasis on the United States.

Compare characteristics of culture as reflected in language, literature, the arts, traditions and institutions.

Materials Needed:

Book – *Two of Everything* by Lily Toy Hong

Story online - http://www.tellingtales.com/Stories/Archive/Two_Of_Everything.htm

Procedures:

1. Begin the lesson by reading *Two of Everything*. Discuss that it is a Chinese folktale.
2. Talk about making something be twice as much. Explain what doubling is.
3. Teach multiplication facts that can be learned easier using doubling (http://www.eduplace.com/math/mw/models/overview/3_9_2.html)
“The Zero Property of Multiplication states that any number multiplied by zero is zero. That is, for any number a , $a \times 0 = 0$ and $0 \times a = 0$. This fact can be used to reduce the number of facts requiring memorization by 11, leaving only 55 facts.
The Identity Property of Multiplication states that for all numbers a , $a \times 1 = 1 \times a = a$. Use of this property leaves 45 facts to be memorized.
When a number is multiplied by 10, the product is found by writing a zero after the number. This leaves 36 basic facts that must be memorized.
Prior knowledge of arithmetic can be used for help with the remaining 36 multiplication facts. For instance, facts involving doubling can be understood as addition facts for two identical addends. Doubling can then be used to recall multiplication facts involving 4 or 8. For example, once $2 \times 6 = 12$ is known, then $4 \times 6 = 2 \times 6 + 2 \times 6 = 12 + 12 = 24$. Similarly, $8 \times 6 = 4 \times 6 + 4 \times 6 = 24 + 24 = 48$.”
4. Explain the rules of Pat Cha and have pairs of children play the game, practicing doubling.

Assessment Ideas:

Show children flashcards of multiplication facts from 0 to 10. Assess how well they are able to answer the facts.

Lesson Plan Eastern Woodland Addition Game

Introduction to the lesson:

This lesson is designed to introduce students to folktales of Eastern Woodland First Americans while reinforcing addition of multiple place. Students will read an Algonquin (Algonquin were Eastern Woodland First Americans.) folktale and play an Eastern Woodland game that is based on a game played by Eastern Woodland women.

Lesson Objectives:

1. Students will gain knowledge of the culture of Eastern Woodland First Americans.
2. Students will increase their fluency in addition.

Standards:

Math:

Students will understand the effects of adding and subtracting whole numbers.

Social Science

Understand social systems, with an emphasis on the United States.

Compare characteristics of culture as reflected in language, literature, the arts, traditions and institutions.

Materials Needed:

Algonquin folk tale: <http://www.ilhawaii.net/~stony/lore31.html>

Procedures:

1. Begin the lesson by reading or the folktale, *Mooiin, the Bear's Child*. Discuss that it is an Algonquin or a folktale of one of the Eastern Woodland tribes, and that folktales were stories that all groups of people had. Discuss the story and talk about how it reflects First American culture.
2. Make a peace pipe by using a straw poked into a Dixie cup and covered with fur, with feathers dangling by string and connected with pipe cleaners wrapped around the stem (straw of the pipe).
3. Investigate the Woodland tribes online and write a newspaper about daily life of the Eastern Woodland tribes. Remind the students that the Cherokee, another Eastern Woodland tribe had their own language and newspaper. Articles should reflect what life was like for Eastern Woodland tribes.
4. Explain the rules of Eastern Woodland addition game and play.

Assessment Ideas:

Give children a worksheet of random addition problems using numbers that include digits in tens and hundreds place value.

Lesson Plan Mancala

Introduction to the lesson:

This lesson is designed to introduce students to folktales of Africa while reinforcing counting skills. Students will read a folktale and play an African game while practicing counting to 20.

Lesson Objectives:

1. Students will gain knowledge of the culture of Africa.
2. Students will increase their fluency in counting.

Standards:

Math: Number Sense and Operations

Count by ones to at least 20.

Social Science: Understand social systems, with an emphasis on the United States.

Compare characteristics of culture as reflected in language, literature, the arts, traditions and institutions.

Materials Needed:

CD or book of *Why Mosquitoes Buzz in Peoples' Ears*
Construction paper
Tag board
Markers
Stapler
Animal manipulatives

Procedures:

1. Begin the lesson by reading or playing the CD *Why Mosquitoes Buzz in People's Ears*. Discuss that it is an African folktale and that folktales had lessons for the listeners. Discuss the lesson of the story.
2. Count the number of animals that are mentioned in the story, first as a demonstration and then together.
3. Call out numbers from 1 to 20 to the children and ask them to show that number with manipulative, preferably ones that are animals from the story. These might be printed, copied, and laminated pictures of these animals.
4. Match flashcards with numbers from 1 to 20 for each child. Have the children name the numbers and count out animal manipulatives to match the number.
5. Have each child make an animal counting book from construction paper, markers, and a stapler. Tell them to read it to a peer and then take it home to read to parents.
6. Explain the rules of Mancala and have pairs of children play the game.

Assessment Ideas:

Show children flashcards of numbers from 1 to 20. Have them say the number and count out that number in their animal manipulatives. Assess how well they can count.

Directions for Senet Game

Play begins by rolling the dice. The first player to roll a 1 starts the game. The object is to get all the balls off the board. Each player advances after rolling the dice on the game board. Movement of playing pieces goes to the right on the top row, around and to the left on the second row, and around and to the right on the bottom row. The winner is the person who gets all their balls off the table first.

During a turn, an opponent's ball can be bumped back to the position your ball originated from if you land on their ball's spot. However, if you can get the proper roll, you can place two of your own balls on the same spot and protect them from being bumped. An opponent's ball cannot be bumped if the ball is lying on the "House of Rebirth," the tile with or the crosses and circles that face different directions. If either of these safe situations occurs, the opponent must stop at the square behind the safe square.

A roll of 1, 4, or 6 gets a player another turn and that player continues his/her turn until a 2, 3, or 5 is rolled.

The five tiles at the bottom have special meaning. The first tile, with the hieroglyphics that look like circles with crosses is a happiness tile that also permits you to be safe. The second tile sends the player back to the "House of Rebirth" tile. The bird tile permits you to send any enemy player's piece back to the rebirth tile. The tile with two things that look like mushrooms permits an extra roll, and the eye of Horus gives two extra rolls. Exact rolls are needed to leave the board but the two die rolls can be divided between two playing pieces for each turn.

Software: Intellimathics (Intellitools Classroom Suite)

Contact: Dr. Cindy Anderson
Roosevelt University, Chicago, IL
canderson@roosevelt.edu

Directions - Multicultural Roshambo, also known as Scissors, Paper, Rock

USA - Odds and Evens (50 percent probability) two players

The teacher determines an even number of matches to win the game.

One student spins to see what his/her player is, scissors (evens) or paper (odds). The other player has the other sign. Each player claims one counting box and scoring grid to be his or hers.

Each student takes turns rolling the dice to select the number of rolls to determine a match. For each match, each student predicts how many times he/she will win. For each spin, the winner of the spin scores 1 point. If the prediction was correct, the player scores an additional bonus of 15 points at the end of the match. At the end of this number of game, the player with the highest score wins.

Each student keeps track of the results of each spin by clicking on the appropriate button with their symbol from the side menu when they win the spin and then dragging the picture that appears to the player's correct counting box. The counting box will keep track of the number of individual points scored by winning the match. The student can use the grid to keep track of the bonus prediction scores and then, when the match is finished, add the score from the counting box to figure the total score.

The winner is the player with the most points at the end of the total number of spins that the teacher assigned.

Japan - Scissors Paper Rocks three players

The teacher determines the number of matches to win the game. The number must be divisible by 3. The game is played in matches made up of rounds. Rounds are one spin; the number of rounds in a match is determined by dice rolls; the game is determined by the teacher's choice for number of matches.

Each student spins to see what his/her player is, scissors, rock, or paper. Each player claims one counting box and scoring grid to be his or hers.

Each student takes turns rolling the dice to select the number of rolls to determine a match. For each match, each student predicts how many times he/she will win. For each spin, the winner of the spin scores 1 point. If the prediction was correct, the player scores an additional bonus of 15 points at the end of the match. At the end of this number of game, the player with the highest score wins.

Each student keeps track of the results of each spin by clicking on the appropriate button with their symbol from the side menu when they win the spin and then dragging the picture that appears to the player's correct counting box. The counting box will keep track of the number of individual points scored by winning the match. The student can use the grid to keep track of the bonus prediction scores and then, when the match is finished, add the score from the counting box to figure the total score. For each round of spinning, the winning spin will tally one point for the win. The player that is directly beaten by the spin loses one point, i.e. if scissors is spun, scissors gets a point, rock gets no points, and paper loses a point. The spinner gets nothing and loses the turn if he/she selects himself /herself.

The winner is the player with the most points at the end of the total number of matches that the teacher has assigned.

Round winners are determined by the following:

Scissors beats Paper, because it can cut paper. Scissors gets one point. Rock gets no points. Paper gets no points.

Paper beats Rock by wrapping it up. Paper scores one point. Scissors gets no points. Rock gets no points.

Rock beats Scissors by dulling the metal. Rock scores one point. Scissors scores no points and rock scores no points.

France - Scissors, Paper, Rock, Well four players

The teacher determines the number of matches to win the game. The number must be divisible by 4. The game is played in matches made up of rounds. Rounds are one spin; the number of rounds in a match is determined by dice rolls; the game is determined by the teacher's choice for number of matches.

Each student spins to see what his/her player is, scissors, rock, paper or well. Each player claims one counting box and scoring grid to be his or hers.

Each student takes turns rolling the dice to select the number of rolls to determine a match. For each match, each student predicts how many times he/she will win. For each spin, the winner of the spin scores 1 point. Others either score nothing or lose a point. If the prediction was correct, the player scores an additional bonus of 15 points at the end of the match. At the end of this number of game, the player with the highest score wins.

Each student keeps track of the results of each spin by clicking on the appropriate button with their symbol from the side menu when they win the spin and then dragging the picture that appears to the player's correct counting box. The counting box will keep track of the number of individual points scored by winning the match. The student can use the grid to keep track of the bonus prediction scores and then, when the match is finished, add the score from the counting box to figure the total score. For each round of spinning, the winning spin will tally one point for the win. The player that are directly beaten by the spin lose one point, i.e. if scissors is spun, scissors gets a point, rock gets no points, And paper loses a point. The spinner gets nothing and loses the turn if he/she selects himself /herself.

The winner is the player with the most points at the end of the total number of matches that the teacher has assigned.

Round winners are determined by the following:

Well beats Rock and Scissors, because both of them sink in the well. Well scores one point. Rock and scissors each lose one point. Paper gets nothing.

Scissors beats Paper, because it can cut paper. Scissors scores one point. Paper loses a point. The other two get nothing.

Paper beats Well by covering it, and beats Rock by wrapping it up. Paper scores one point. Well and rock lose one point. The other get nothing.

Rock beats Scissors by dulling the metal. Rock scores one point. Scissors loses one point. The other two get nothing.

Software: Intellimathics (Intellitools Classroom Suite)

Contact: Dr. Cindy Anderson
Roosevelt University, Chicago, IL
canderson@roosevelt.edu

Directions to Pat Cha:

The purpose of the game is to provide an opportunity for students to practice their basic multiplication facts while enhancing students' knowledge of the Chinese culture by having them experience a game similar to the Chinese dice game called "Pat Cha."

First the teacher sets the number of rolls that the students will take to complete a game. This number must permit each player to roll the same number of times to finish the game.

Then the teacher sets the target number for recording the score for the game. The plan of the game is that the teacher chooses the number that corresponds to the multiplication facts that the student(s) are working on at the time, in other words, if they are studying the 3s in their multiplication facts, the teacher sets the target number as 3.

Each player will take his/her turn to be the model roller or the banker. When the student plays the banker, he/she cannot score points.

The banker rolls his/her 4 dice (Each person's dice are the four different colors in a column.) that will serve as the model for others to match.

Next, the other player(s) takes their turn (The game is designed for 2 to 3 players.)

First, the player spins the spinner, so that a target color can be selected.

Then he/she roll their 4 dice and look for dice that match the numbers of the banker's dice.

The player also looks to see if a six has landed on the color that was previously spun.

If the six die landed on the spinner's color, the player can take the score of six, add the lowest of the four other dice to it, multiply it times the target number, and add that amount to his/her own score.

After checking for the matching color, the player adds their four dice scores according to the rules below:

No match or one match to the four banker's dice - player misses turn, although points may be scored because of the spinner option.

2 matches of the four dice - lowest matching dice times the target number.

3 matches of the four dice - highest and lowest matching dice amounts added together and multiplied by the target number

Scores are recorded in the table for each player, changing the number after each turn.

Then another student takes the role of banker and will not score for that turn.

Play continues until the number of rolls previously selected by the teacher is met. Scores are tallied and the highest score wins.

Software: Intellimathics (Intellitools Classroom Suite)

Contact: Dr. Cindy Anderson
Roosevelt University, Chicago, IL
canderson@roosevelt.edu

Eastern Woodland Addition Game

This game is designed to reinforce the skill of adding numbers with multiple place values.

To start the game, the teacher determines the number of turns that each student will be permitted to finish a complete game. This number is written in the box that is provided in the upper right hand corner.

To start the game, each student spins to determine his player game piece, the fox or bear.

For each turn, the student makes a prediction for the number of spinners that will match his/her game piece for that turn. The student then spins all six spinners AND rolls the die. Then the player determines his/her score for the turn. To score each turn, the number of matches of the spinners to the player's game piece will be first number of the score, that is, the number that will go in the ten's place. For example, if the player's game piece is a fox and he has spun 4 foxes, the first number of the score will be 4. The die roll number is the second number of the score or the number that goes into the one's place. For example, if the player rolls a 6, his/her total score for that turn will be 46 unless there are bonus points to be added.

Bonus points are scored by spinning a red color or making the correct prediction of game piece matches for the turn. If the red color is spun, that player gets a bonus of 55 points added to the total score. If the student has guessed the correct number of matches, an additional 75 points is awarded to the total score. The student can get both bonuses for any turn.

Scores are recorded in the grid on the right side and added up. Scores can be tallied in the grid for each turn. The winner is the player with the most points.

Software: Intellimathics (Intellitools Classroom Suite)

Contact: Dr. Cindy Anderson
Roosevelt University, Chicago, IL
canderson@roosevelt.edu

Mancala directions:

Select a counting box on the end to be yours. These end counting boxes are called mancalas.

Each player will drop seeds into the holes, or for the computer game, the counting boxes, during his/her turn. Decide who the first player will be. That player selects any counting box from the rows on the board to start. The player picks up all the beans/nuts from that counting box and begins dropping a single bean/nut into counting boxes clockwise around the board, leaving the starting box empty.

After the player has dropped the seeds from the first counting box, the player picks up all the seeds in the last counting box that is used and continue dropping these into the counting boxes clockwise around the board. The player continues doing this until he/she reaches an empty hole. If the empty hole is on the other player's side, the turn is over. If the empty hole is on the player's own side, he/she gets the seeds of the opponent's hole that is opposite the empty hole. The player places seeds in their own mancala as they drop seeds around the board.

If a player starts his/her turn from a pot that contains enough seeds to go all the way round the board he/she skips over that original pot when dropping seeds past it.

The game ends when a player cannot make a move because all his/her pots are empty. If player 1's side is empty then player 2's seeds must be arranged in such a way that he cannot pass any seeds to the other side of the board. The remaining seeds become the player 2's.

The player with the most seeds in her store wins.

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Contact: Dr. Cindy Anderson
Roosevelt University, Chicago, IL
canderson@roosevelt.edu