

**LESSON: Stick Dice Game****GRADE: K****OBJECTIVES:****Operations & Algebraic Thinking****Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from-**

- **K.OA.A.1** Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.

**MATERIALS & RESOURCES:**

- Recycled popsicle sticks (14 per person)
- large sticks approx.. 2” x 12” (4 per person)
- Paint & brushes and/or markers
- Suggested books-
  - *Native American Games & Sports*, Burak
  - *American Indian Games*, Miller

**PRESENTATION:**

Tell the kids they get to play a game for mathematics class. But first they get to learn about and make the game. We are playing this game because we are learning about the first peoples of Iowa. This is a game that they are said to have played.

**DIRECTIONS:**

1. Read suggested or similar books about games played by first peoples.
2. Show the children examples of the stick die and tally sticks.
3. Hand out sticks for dice, popsicle sticks, and art supplies

4. Tell the children the larger sticks (2”x12”) are to make the stick dice and should be plain/one color on one side and decorated on the other side. They need to paint or draw a pattern of crisscrosses on two of the sticks and a pattern of straight lines on the other two sticks. They should have
  - 2 sticks with crisscrosses on one side and blank/one color on the other side
  - 2 sticks with straight lines on one side and blank on the other side
  - It is ok if the blank side is painted one color, it just needs to be free of patterns
  - Options for simplifying or adding creativity are included below.
5. The smaller, popsicle sticks are used to tally the points they will get when they throw the stick dice.
  - 4 of the popsicle sticks will be worth 10 points each.
  - 10 of the popsicle sticks will be worth 1 point each.
6. Have the children lay out their fourteen popsicle sticks. Then ask them to take away 4 of the sticks. How many are left over. This can then be repeated but changing the equation and subtracting 10 instead of 4.
7. They need to choose one color and paint four of the popsicle sticks that color. Then choose a second color and paint the remaining 10 popsicle sticks in that color.
8. Players- 2-10 people can play at a time.
9. Each person takes a turn throwing one dice, the person who gets the blank side up will start the game. If more than one person gets a blank side those people keep on throwing.
10. The starting player throws the dice in the air so they land in the center of the circle. They try to score points according to the patterns that the dice land in. If the player scores points, they collect that many tally sticks from all of the other players. If this person doesn't score, the stick dice are passed to the next player. The object of the game is to collect all of the tally sticks from the other players. If a player loses all tally sticks, he or she still gets one more chance to score before being disqualified from the game.

11. Scoring: There are two differently painted stick dice, each worth different point values. There are two dice with the patterned side and two dice with blank or plain sides. Play as directed in above step 10, or set a point goal and play to that goal. For example play until someone reaches 50 points.

- Roll all four plain sides up = 10 points
- Roll all four painted sides up = 8 points
- Roll 2 blank & 2 x's sides up = 6 points
- Roll 2 blank & 2 dots sides up = 4 points
- All other combos = 0 points

### **OPTIONS-**

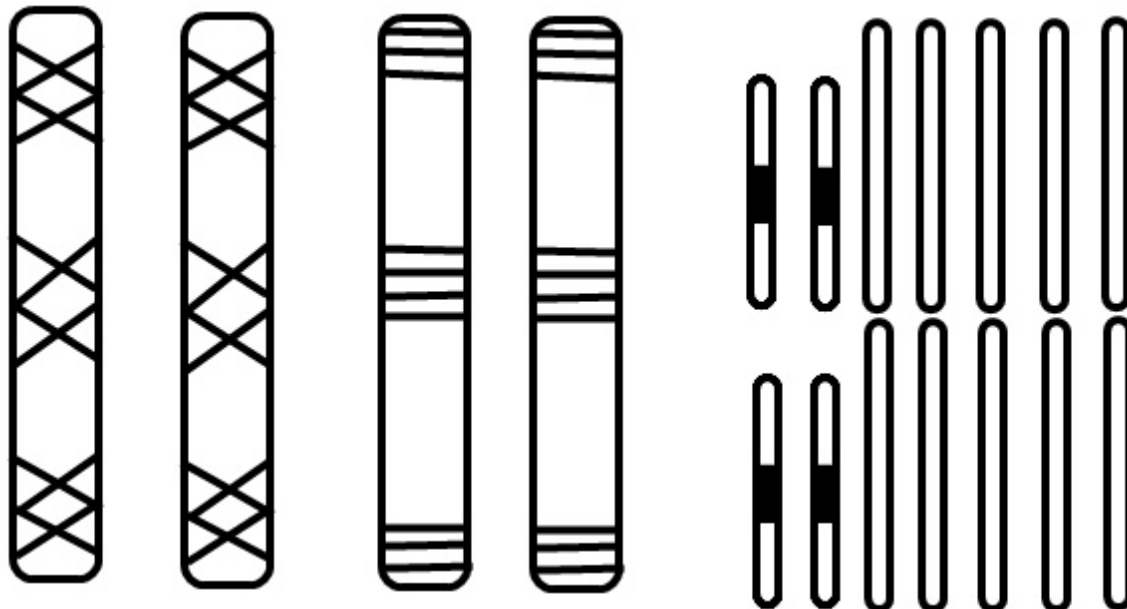
#### **simplify**

- If you want to simplify the game, use only 2 stick dice of the same pattern and use only the 1 point tally sticks. Use the following scores-
  - 2 blank sides = 4 points
  - 2 pattern sides = 3 points
  - 1 blank and 1 pattern = 2 points

#### **more creativity**

- It's possible the kids could make their own patterns to replace the crisscross and straight line patterns. One pattern will be worth more points as you will see in the scoring directions below. This may be more complication than tolerable for kindergarteners. The teacher or leader can judge if this is a good idea.

### Example of Stick Dice And Tally Sticks



Source: [collections.ic.gc.ca/games/chance/stickdice.html](http://collections.ic.gc.ca/games/chance/stickdice.html) more images below

There is a huge variety of traditional games of chance involving dice made from decorated sticks, bone, or pottery discs. Often they involved betting but have modified to awarding points. Similar games were played by the Ojibwa, Meskwaki, Potawatomi, Arapaho, and Cheyenne.

**TIME:**

**30-45 min to make sticks**  
**20-45 min to play game**

**PROCESSING THROUGH THE SIX PILLARS:****What?**

- What did you learn about the games played by the first peoples of this land?
- Do you think the descendants of the people who made this game might still be playing it?
- Was this a fun way to learn and use math skills? There are many games which require math skills.

**So What?**

- Were you respectful of others while making and playing the game? Were other people respectful of you?
- Is respect important if you want to learn and have fun?

**Now What?**

- Do you think you will learn about other games like this or make up a game?

