



## Solving the Middle Layer- (left) Songs & Chants for Learning



**Purpose:** The purpose of this lesson is to incorporate as many learning modalities as possible to help elementary students solve the middle layer of the Rubik's Cube.

**Lesson:** Have students prepare cubes by solving the top layer. Tell students, *Now that you know the Superman move, you can almost always solve the middle layer of the cube, but what happens when an edge piece needs to be moved to the left side rather than the right side of the cube? For this mirror image move, we are going to need some help from one of the best martial artists in the world: Jackie Chan.*

Show a picture of Jackie Chan with nunchucks. Explain that we will always picture Jackie Chan in our minds using his nunchucks with his left hand: left hand up, then left hand down while the nunchucks are being swung. Have students stand in a place where they have an arm's length of space on either side. Teach the song:

### The Jackie Chan Move

*This is a repeat after me song (students repeat)*

*That means you say what I say and you do what I do (students repeat)*

***Hey, hey, bo-diddly-bop***

***I'm gonna get this to the LEFT spot***

***With an upside down T in my LEFT hand***

***I'm gonna flip like Jackie Chan!***

***Top Right***

***LEFT Up***

***Top Left***

***LEFT Down***

***Top Left***

***Face Right***

***Top Right***

***Face Left***

See [video](#)  
for hand  
motions.

*This move is a mirror image move to the Superman move. Whenever you need to move a piece from the top to the left side of your cube, picture Jackie Chan with his left arm going up and then down with those nunchucks.*

Before students practice, write the patterns on the board. *All cubes down! Before we practice this move, we need to look for meaningful patterns within the move. Just like with the Superman move, the more patterns we can find, the more easily our minds will be able to remember what to do when we get to this move.* Refer to the moves on the board (it helps to write them in a column). Students observe that every other move is an opposite move (top right/top left, left up/left down), every other move is a top move, and in moves 2 and 4 you do left up/ left down, but in moves 6 and 8 you do face right/face left. Students also observe that the first move always moves away from that arm up/arm down move.

Mark meaningful patterns in different colors for students to refer to later. Refer students to the copies of lyrics from earlier. Have students highlight patterns on the song to match the colors they used on the Superman song.

Give students an opportunity to practice solving the middle layer.

**Closure:** *Now you've learned both steps to solve the middle layer of the cube. When you need to move a piece from the top of the cube to the right, which move do you do? (Superman!) Which move will you do if you want to move a piece from the top to the left side of the cube? (Jackie Chan!)*

**YouTube links:**

Entire playlist: <http://tinyurl.com/ElemVideos>

Video for this lesson:

<https://youtu.be/KVgpqH8Tbak>



# Solving the Middle Layer- (right) Songs & Chants for Learning



**Purpose:** The purpose of this lesson is to incorporate as many learning modalities as possible to help elementary students solve the middle layer of the Rubik's Cube.

**Lesson:** Have students prepare cubes by solving the top layer. Tell students, *Today we are going to learn a more challenging algorithm, but we aren't going to do it alone. We are going to have a little help from the man of steel himself: Superman! When we have learned his signature move, you will have the skills it takes to solve (most of) the middle layer of the Rubik's Cube easily!*

Demonstrate a Superman stance and show them that if he flies, he will put his right arm up to go up into the air. When he's done, he simply places his arm at his right side. That is the main idea behind this move. Right arm up, right arm down. Have students stand in a place where they have an arm's length of space on either side.

## The Superman Move

*This is a repeat after me song (students repeat)*

*That means you say what I say and you do what I do (students repeat)*

***Hey, hey, bo-diddly-bop***

***I'm gonna get this to the right spot***

***With an upside down T in my hand***

***I'm gonna flip like Superman!***

***Top Left***

***Right Up***

***Top Right***

***Right Down***

***Top Right***

***Face Left***

***Top Left***

***Face Right***

See [video](#) for hand motions.

*Before we get started practicing this move with our cubes, we need to understand what we are doing and why this move works. When we look at the cube I have in my hand, I have flipped it over and have the yellow 'button' on top. What I'm trying to do is to get each edge piece that is in the incorrect spot to the correct spot on the sides. The first thing I'll need to do is make an upside down T. (demonstrate and allow students to create an upside down T with their cubes) Now, if my piece on the top of my upside down T belongs on the right side of my cube, I'm going to do the Superman move! How do I know it belongs on the right? Because the edge piece will have the color of the face I'm looking at, as well as the color of my next door neighbor to the right of me. Now help me demonstrate the move that's going to get this piece to its correct location by singing the Superman song with me. (Sing song together slowly as you demonstrate the move). Allow students to practice the move. Students who struggle may need you to hold the base of the cube while they practice for the first time.*

*All cubes down! Before we practice this move one more time, we need to look for meaningful patterns in the move. After all, the more patterns we can find, the more easily our minds will be able to remember what to do when we get to this move. Refer to the moves on the board (it helps to write them in a column):*

Students observe that every other move is an opposite move (top left/top right; right up/right down)., every other move is a top move, and in moves 2 and 4 you do right up/right down, but in moves 6 and 8 you do face left/face right. Mark meaningful patterns in different colors for students to refer to later. Pass out song lyrics. Have students highlight patterns on the song, ie. Top Right= Green, Top Left= Blue, Superman move (right up/right down)= red with a Superman S next to it.

**Note:** Students will need the second half of this lesson really soon after this portion of the lesson so they can completely solve the middle layer. (Solving the Middle Layer- left)

### **YouTube links:**

Entire playlist: <http://tinyurl.com/ElemVideos>

Videos for this lesson:

<https://youtu.be/n8RMocZxyoE> and <https://youtu.be/orab5VBtaTM>

## Solving the Middle Layer Song Lyrics

### Superman Move

(move a piece to the right)

Hey, hey, bo-diddly-bop  
I'm gonna get this to the right spot  
With an upside down T in my hand  
I'm gonna flip like Superman!

Top Left  
Right Up  
Top Right  
Right Down  
Top Right  
Face Left  
Top Left  
Face Right

### Jackie Chan Move

(Move a piece to the left)

Hey, hey, bo-diddly-bop  
I'm gonna get this to the LEFT spot  
With an upside down T in my LEFT hand  
I'm gonna flip like Jackie Chan!

Top Right  
Left Up  
Top Left  
Left Down  
Top Left  
Face Right  
Top Right  
Face left