



# Wheelchair Craft Instructions

Build a wheelchair model to explore how technology supports people with disabilities and raise awareness through this engaging, hands-on activity.

## Materials Needed for the Wheel Chair:

- Printout of the wheelchair craft
- Card paper/Sturdy Color paper/2 - 3 Pages of Thin Paper glued together
- Markers/Colored pencils or pens
- A few pieces of a Carboard thick surface to safely press holes into or a Rubber Cutting Mat
- A cut out piece of cardboard 7" by 7" (for the wheels and support)
- Glue stick or Wood Glue (for thicker papers)
- Cello-Tape or Masking Tape.
- Scissors
- Compass/ Divider/ Sharp Lead Pencil
- 1x Earbud (with the cotton removed)
- 2x Toothpicks
- 1x Straw

## Instructions:

### Prepare Your Workspace:

- Remove the cotton from the Earbud Stick.
- Gather all the materials and tools you need.

### Preparing the Printout:

- Thoroughly glue the printout of the wheelchair to the card paper.
- Let the glued paper sit under heavy books to make sure the paper is flattened and that the glue bonded with the paper is dry.
- Once flat and dry, color in your printout and decorate each of the blank pieces without a pattern.
- Make sure to not obscure the lines on the printout if you are using paint or dark colors.

### Cutting out the Printout and extra coloring:

- Cut out the pieces from our Printout.
- Decorate the pieces on the reverse side of your page to match the design or color in with black marker:
  - Footrests, Arm Rest Bars,
  - Arm Rests (Use the text as the bottom of your armrest),
  - Foot Rest Bars,
  - Foot Rest Paddle,
  - Wheelchair Back - The Handle Bars on the sides
  - Wheelchair Back- The 2 joints at the bottom.



#### Preparing the Wheels and Joints Holes:

- Place down layers of Cardboard or use a Rubber Cutting Mat for a safe working surface.
- Glue 2 Back Wheels and 2 Front Wheels to a piece of Cardboard.
- Cut these Wheels out of the Cardboard ensuring to cut around the shape.
- Carefully puncture holes into the glued Wheels and Cardboard using the Compass.
- Glue the “extra” Back Wheels and Front Wheels to the cut out Cardboard pieces so that they are centered and lined up with the holes.
- Look for the indent through the paper to find the hole then carefully puncture a hole onto the newly glued sides of Wheels.
- Use the space and puncture holes into the Wheelchair Joints on the big dots.
- Thread the holes on the Front Wheels and Front Wheel Joints with a Toothpick ensuring all the holes are open.
- Thread the Back Wheels to be big enough to fit your ear bud stick. Tip: Spin the toothpick.

#### Pre-Folding our pieces and Cutting the Slits:

- Arm Rest Bars
  - Fold the top small square tab downwards behind the colored-in side.
  - Make 4 small folds after the arm rest pattern blocks on each of the arm rest bars.
- Wheelchair Front:
  - Fold the patterned tabs folds behind the colored-in side.
  - To make a stepped shape, fold the top seat squares closed and the last square backwards like a zig zag.
  - Cut the two slits in the top square shown by the broken lines.
  - Slide the arm rests bars into each of the corresponding slits with the small folded square tab on the non-colored-in, reversed side.
  - Glue the folded square tabs of the Arm Rest Bar.
  - Attach the Arm Rest Bar bottom tab to the corners of the 3<sup>rd</sup> square on the front of the Wheelchair to make the base of the seat.
- Footrest Bars
  - Fold the top tab downwards behind the colored-in side.
  - Fold the bottom tab upwards over the colored-in side.
  - Fold along the line connecting the triangle and the long bar.
- Wheelchair Back:
  - Glue the left and right footrest bars to the left and right sides of the reversed Wheelchair Back piece.
  - Fold the Handles inwards on the colored-in side.
  - Reverse the piece and fold the left and right squares inwards.
  - Fold the bottom tabs inwards to form rectangles.
  - Cut the 2 slits shown on each side by the broken lines.
- Front Wheel Joints:
  - Cut the Slits shown by the broken lines.
  - Fold inward along the Vertical lines making a ‘rectangle’ box where the colored-in side is on the outside.





Preparing the Axels for the Wheelchair Back and the front Wheel joints:

- Front Wheel joints and front Wheels:
  - Carefully cut 2 smaller Sticks from the Toothpick, roughly  $\frac{3}{4}$  inch, with scissors or ask an adult for help.
  - Thread in the smaller Toothpick Stick, one side of a Front Wheel Joint, a Front Wheel and the other side of the Joint, through the holes.
  - Glue the patterned tab forming a rectangle. Tip: Use a Toothpick to help press it down.
  - On one of the edge squares slits, slide the Front Wheel Joint upward so the lines cross.
  - Check that the height of your Front Wheels line up with the Back Wheels and adjust.
  - Glue the circular top of the Front Wheel Joints by pressing the tab down, letting it fold against the side of the Wheelchair Back piece.
  - Test how the Front Wheels spin.
- Back Wheels and Wheelchair Back:
  - Mark a straw to the width of Wheelchair Back ( about 1.8 inches).
  - Cut the straw to size.
  - Tape the straw in place lining up with the square holes on the sides.
  - Fold and glue the bottom tabs to make sure the straw wont shift.
  - Place the Earbud Stick into the straw.
    - If you have a big straw, wrap one line of masking tape around the Earbud Stick in the center, thick enough to keep the axel centered from within the straw.
  - Attach the wheel to each side of the Earbud Stick, leaving space.
  - Test how the Back Wheels spin.
  - Check that the height of all your Wheels line up and adjust.

Finishing Touches:

- Glue the tabs of Wheelchair Front and attach it to the reversed Wheelchair Back, closing the Wheelchair Frame.
- Test how all the Wheels are placed and adjust.
- Glue down the top square tab of the Foot Bars to the Arm Rest Bars attached to the Wheelchair Front piece.
- Attach the Foot paddle to the two bottom foot bar tabs with glue.
- Glue the short foot bar horizontally behind the two Parralel Foot Bars.
- Fold the Handles to make a hexagon and close the two tabs together.
- Glue the Handles' tabs over the wheelchair backs' handlebars into place, then shape the hexagon back.
- Glue the Armrests onto the Arm Bars.
- Have fun with the mechanics and customization!