

≡ PROPELLER POWER ≡

## ≡ EQUIPMENT ≡



PENCILS

RULER



SCISSORS

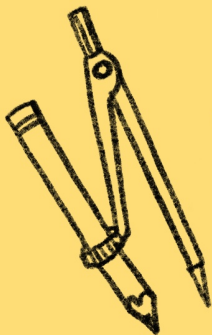


TAPE

STAPLER



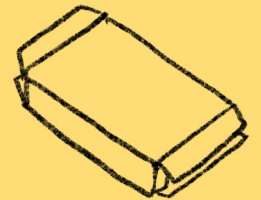
COMPASS



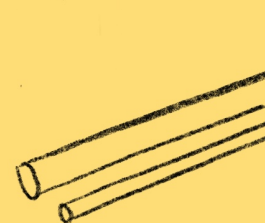
IF YOU DON'T HAVE ONE  
I'LL BE SHOWING YOU HOW  
TO MAKE YOUR OWN.

## ≡ MATERIALS ≡

CEREAL BOX  
(OR SIMILAR WEIGHT CARD)



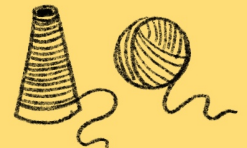
CARDBOARD  
(CORRUGATED LIKE DELIVERY BOXES)



ART STRAWS (BOTH SIZES)

OR A REGULAR STRAW AND SOME PAPER.

THICK THREAD OR THIN STRING



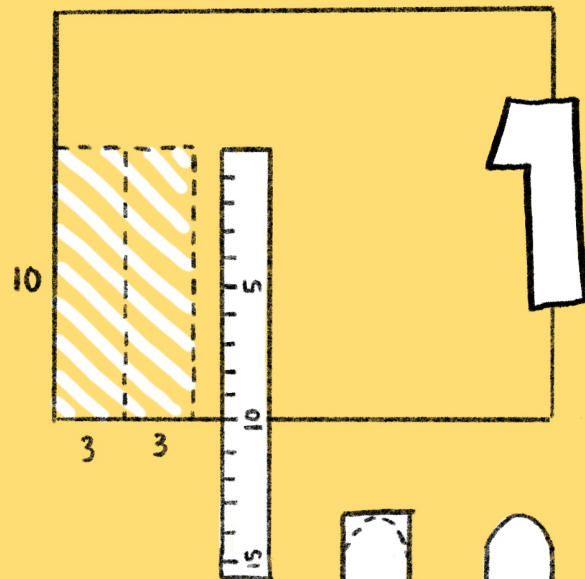
A PAPER COFFEE CUP (OR SIMILAR SIZE BOX)



A CORK OR BOTTLE TOP

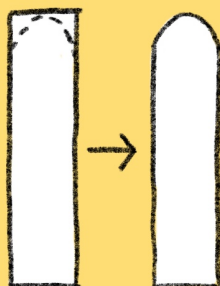


- CUT OUT 2 STRIPS FROM YOUR THICK CARD OR CEREAL BOX. (10CM BY 3CM)

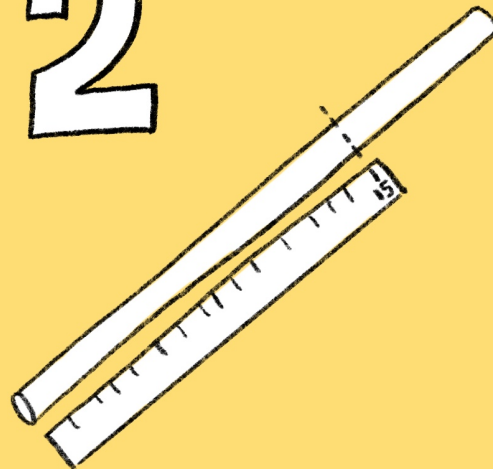


THEN...

- CURVE ONE END OF EACH STRIP.



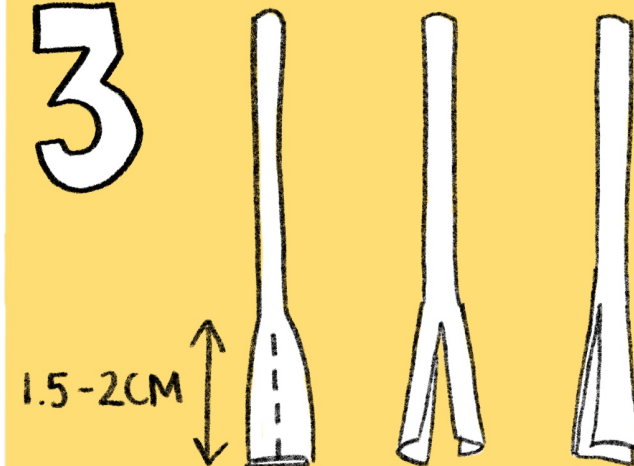
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- MEASURE AND CUT A 15CM LENGTH FROM YOUR NARROW ART STRAW (OR IF YOU'RE USING A KITCHEN STRAW DO THE SAME)

- USING YOUR THUMB AND FINGER SQUISH FLAT ONE END OF THE STRAW (ABOUT 2CM UP).

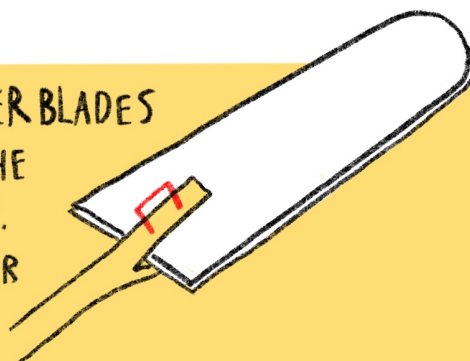
3



- CUT A STRAIGHT CENTRAL LINE INTO THE STRAW.
- SQUISH THE STRAW GENTLY AT THE SIDES TO FLATTEN THE 2 HALVES

4

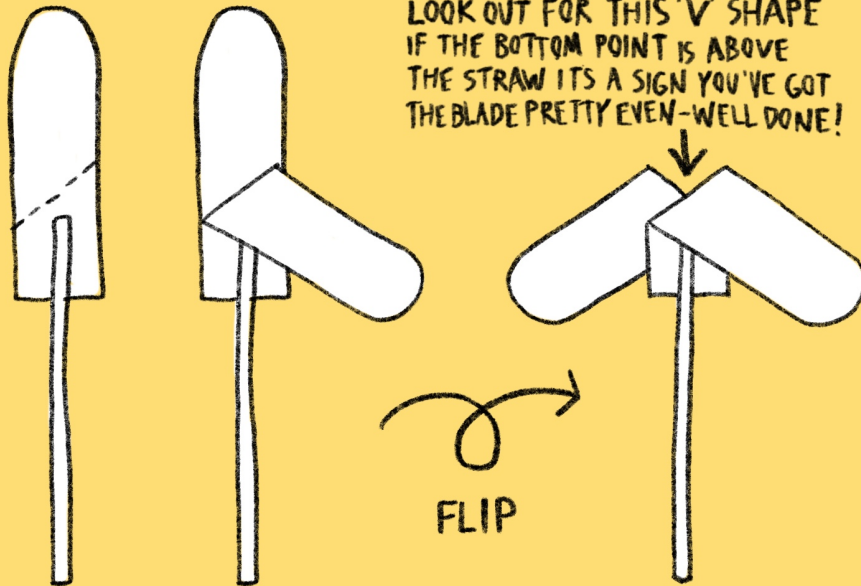
- PLACE YOUR TWO PROPELLER BLADES BETWEEN THE OPENING ON THE STRAW AND STAPLE CAREFULLY. (YOU CAN FLIP IT AND ADD ANOTHER STAPLE IF IT'S WOBBLY.)



MAKE SURE THE STRAW IS IN THE MIDDLE AND IS STRAIGHT!



LOOK OUT FOR THIS 'V' SHAPE  
IF THE BOTTOM POINT IS ABOVE  
THE STRAW ITS A SIGN YOU'VE GOT  
THE BLADE PRETTY EVEN - WELL DONE!



FLIP

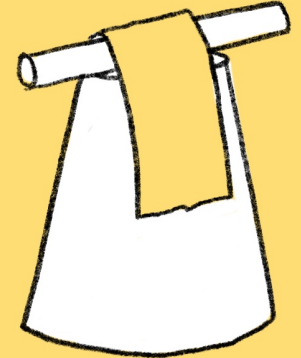
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- FOLD DOWN ONE PROPELLER
- FLIP OVER AND REPEAT FOLD ON SECOND
- OPEN BACK OUT A LITTLE AND TEST

- USING THE WIDER ART STRAW CUT A 9CM LENGTH AND USE TAPE TO SECURE ON TOP OF CUP



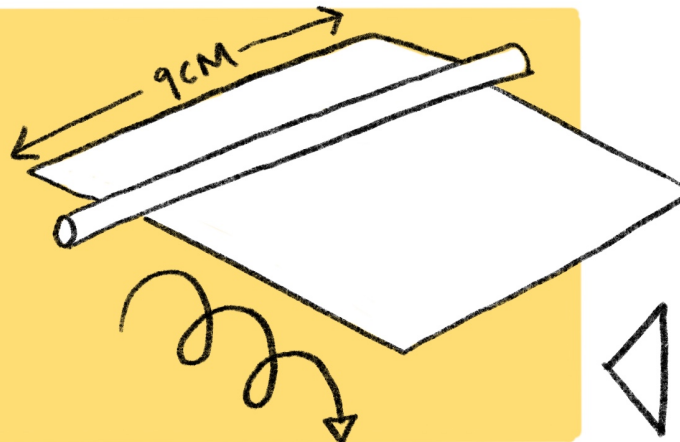
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- (THE LENGTH MIGHT DIFFER IF YOU'RE NOT USING A CUP. IF THAT'S THE CASE YOU'RE LOOKING FOR A LENGTH THAT ALLOWS AN OVERHANG ON BOTH ENDS.)



- WRAP SOME PAPER AROUND THE PROPELLER OR SAME SIZE STRAW. (NOT TOO TIGHTLY - YOU WANT IT TO BE ABLE TO FALL OUT)
- IF YOU WRAP 5-6 TIMES ROUND BEFORE TAPING IT IT'LL BE A LITTLE STRONGER.



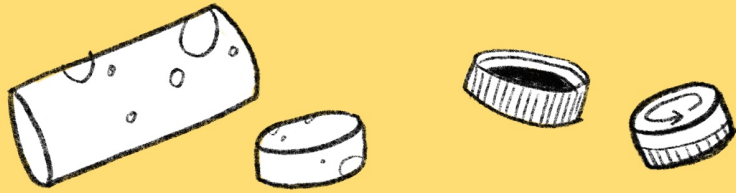
NEXT →

◁ IF YOU NEED TO MAKE A WIDER STRAW FIRST

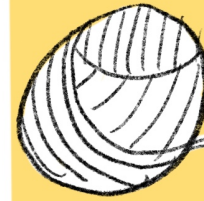


- GET SOME HELP CUTTING A SLICE OF CORK OR USE A SIMILARLY LIGHT OBJECT LIKE A BOTTLE LID

7



- USE A SHARP PENCIL TO POKE A HOLE THROUGH THE CORK DISK OR LID



- CUT A LENGTH OF STRING A BIT LONGER THAN THE HEIGHT OF YOUR STAND

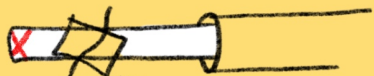
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- TIE CORK ON ONE END SECURLY. (OR USE SOME TAPE ON THE BOTTLE LID)



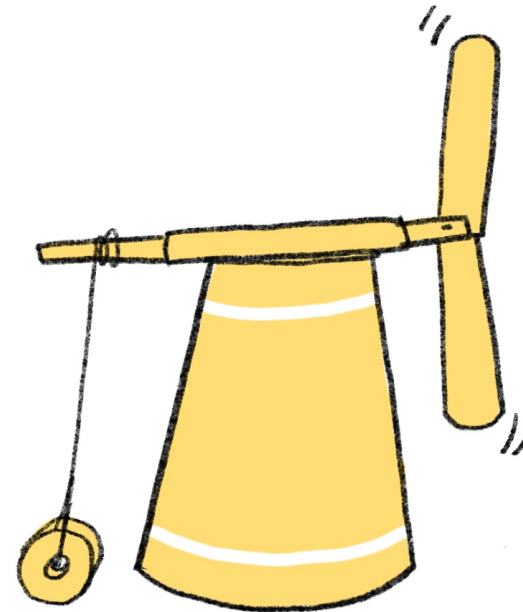
- PLACE PROPELLER THROUGH BASE

9



- TAPE END OF STRING ONTO PROPELLER. (KNOTTING HERE INSTEAD MIGHT NOT WORK AS IT MAY JUST SPIN ROUND IF IT ISN'T TIGHT ENOUGH- AND IF IT IS YOU COULD CRUSH YOUR STRAW- ALSO NOT GOOD!)

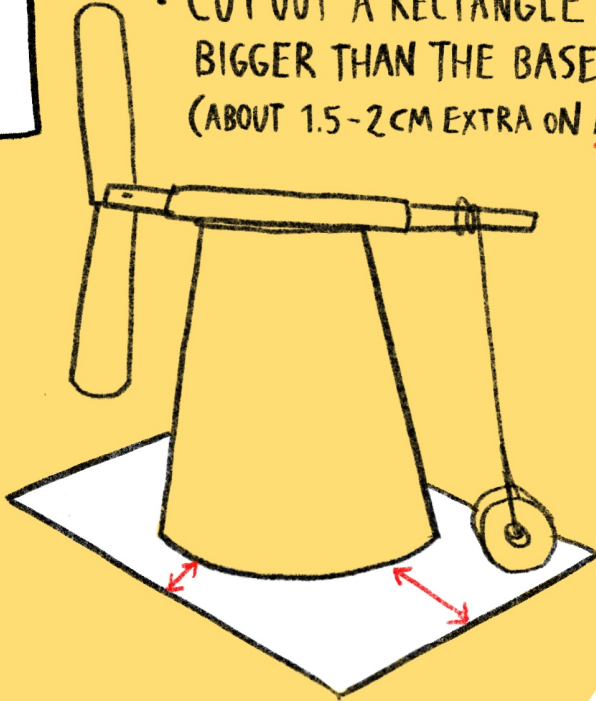
- DON'T ATTACH TOO CLOSE TO THE END! ✗



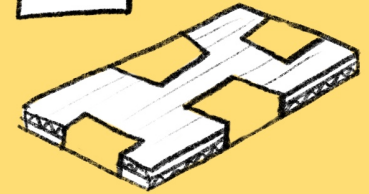
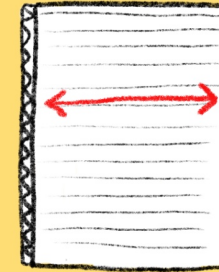
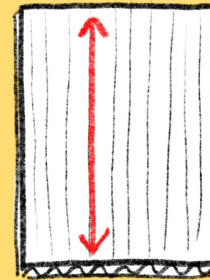
**TEST**

# 1

- CUT OUT A RECTANGLE OF CARDBOARD A LITTLE BIGGER THAN THE BASE OF YOUR CUP. (ABOUT 1.5-2CM EXTRA ON ALL SIDES)

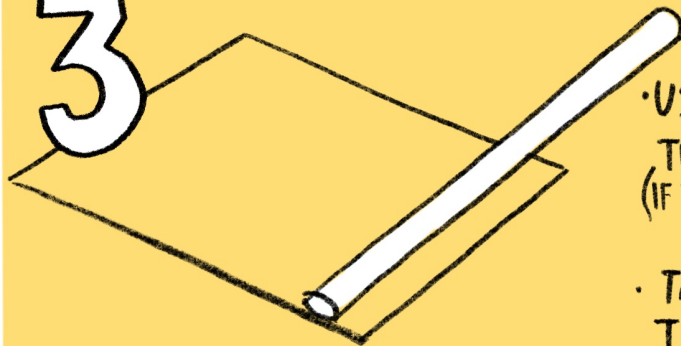


# 2

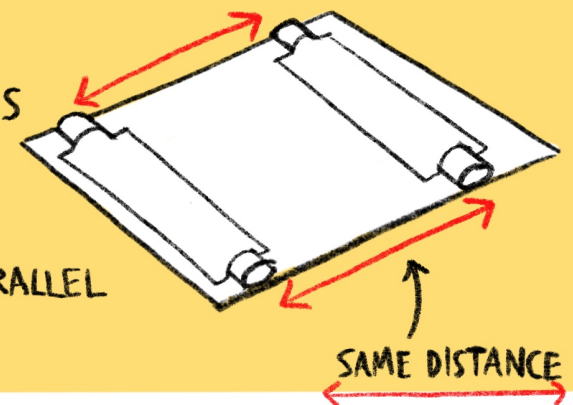


- HAVE A LOOK TO SEE WHAT DIRECTION THE CORRUGATION (THAT'S THE LINES ALONG THE CARDBOARD) AND DRAW AROUND YOUR FIRST RECTANGLE TO MAKE A SECOND ONE WHERE THE LINES RUN THE OPPOSITE WAY.
- TAPE OR GLUE THESE TOGETHER TO CREATE A STRONG BASE FOR YOUR AXLES

# 3

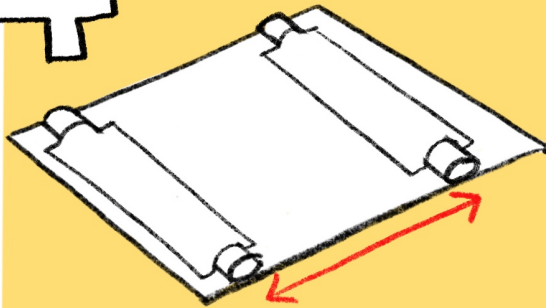


- USING THE WIDER ART STRAW CUT 2 LENGTHS THE SAME WIDTH AS YOUR BASE (IF YOU NEED TO MAKE THEM SEE PREVIOUS PAGES FOR METHOD)
- TAPE THESE SO THEY ARE STRAIGHT AND PARALLEL TO EACH OTHER





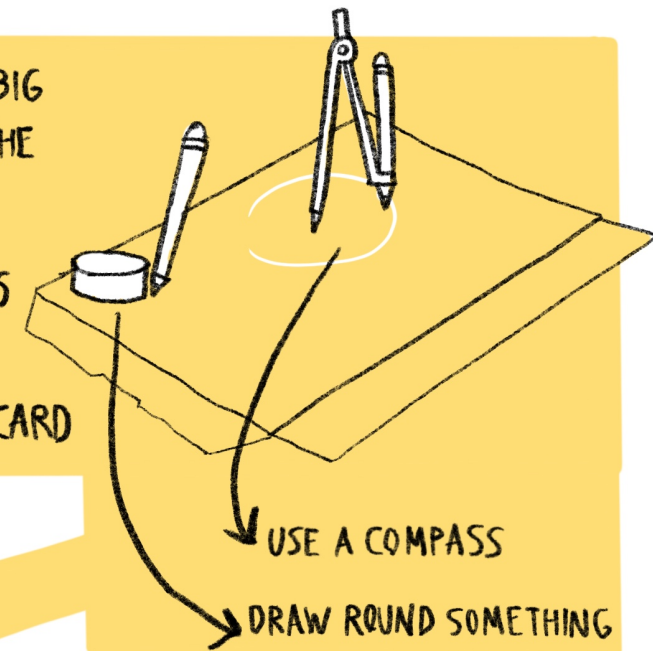
4



• TO MAKE SURE YOU DON'T MAKE THE WHEELS TOO BIG MEASURE THE DISTANCE BETWEEN THE 2 STRAWS ON THE BASE AND DIVIDE BY 2.

THE RADIUS OF YOUR WHEELS SHOULD BE LESS THAN THIS NUMBER SO THEY DON'T TOUCH.

• DRAW AND CUT OUT 4 WHEELS OUT OF CEREAL BOX CARD



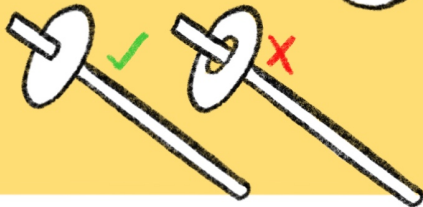
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• CUT 2 LENGTHS OF THIN ART STRAWS AT LEAST 8CM LONGER THAN THE ONES ATTACHED TO YOUR BASE.

6



USE A PENCIL TO MAKE HOLES SO THE STRAWS CAN PASS THROUGH THE CENTER OF YOUR WHEELS.



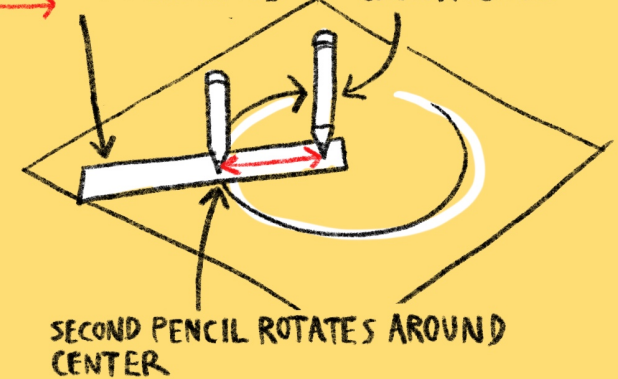
DO THIS A LITTLE AT A TIME AND CHECK AS YOU GO - YOU DON'T WANT THEM TOO BIG OR YOUR WHEELS WILL WOBBLE.

MAKE YOUR OWN COMPASS..

CARDBOARD STRIP WITH 2 HOLES FOR PENCILS

(DISTANCE = CIRCLE RADIUS)

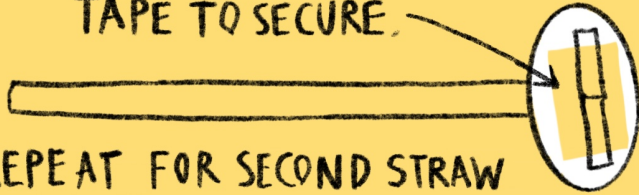
CENTER PENCIL





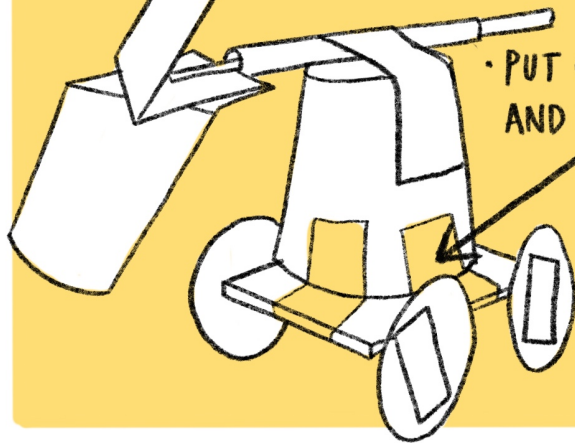
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- PUSH A WHEEL ABOUT 3CM ONTO ONE STRAW
- SQUASH END AND CUT UP THE MIDDLE
- FOLD EACH SIDE IN OPPOSITE DIRECTIONS AND TAPE TO SECURE.
- REPEAT FOR SECOND STRAW



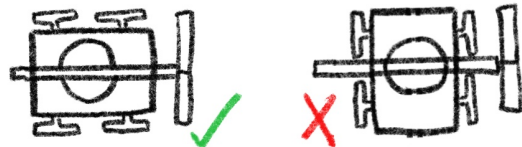
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- PLACE BASE FLAT WITH STRAWS UNDERNEATH.
- TEST IT ROLLS!



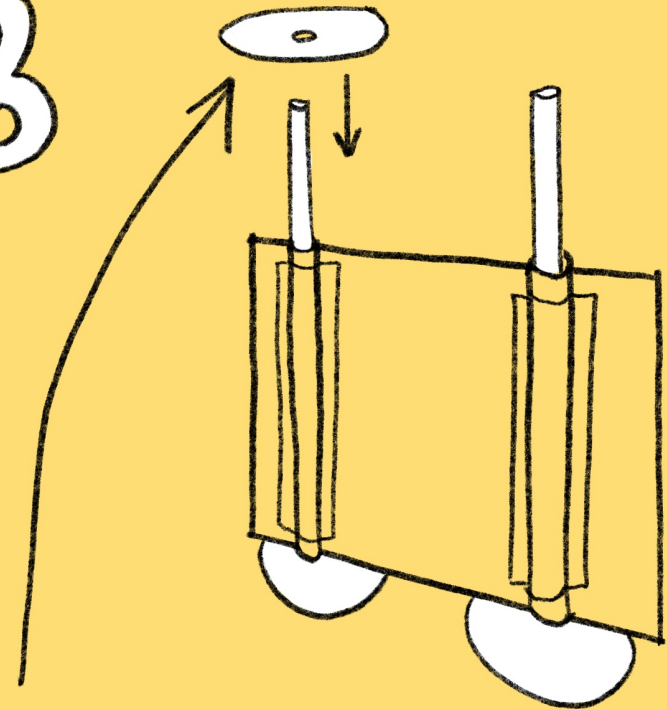
- PUT CUP WITH PROPELLER ON BASE AND TAPE TO FIX IT IN PLACE.

MAKE SURE ATTACH THE CUP SO THE PROPELLER WILL PUSH THE WHEELS!



8

- PUT THESE THROUGH YOUR BASE STRAWS AND STAND THE WHOLE THING ON IT'S SIDE LIKE THIS



- PUT THE REMAINING WHEELS ON THE OTHER ENDS AND CUT/FOLD/TAPE USING THE SAME METHOD.



- YOU DON'T WANT YOUR WHEELS TO BE TOO TIGHT OR THEY WON'T TURN, OR TOO LONG SO THEY WOBBLE