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## Activities

Assemble this model using instructions then control it using batteries or using a controller such as the Kre8 BrainyMotor.

### Making activities:-

- 1) Make the structural frame out of Kre8 connectors and tubes.
- 2) Attach the geared down motor to the body frame.
- 3) Cut out the decorative parts used for the podules and the top.
- 5) Wire up and test.

## Key Words

Electric circuit, balance, control, power, voltage, rotation, position control, assembly using a Kre8 kit.

Safety - using of basic tools.

**Optional** - Motor control using microprocessor to replace battery pack.



electric motor drive at back



305mm high (12inches)

Battery pack with on/off switch operates rotation of bigwheel  
(or use a Microprocessor to control it)

## Educational Benefits

Making and understanding a construction kit. Reasonably complex product that combines simple electrics (electric motor), mechanism (speed reduction) and structures (frame and decoration).

**Personal Skills** - Sharing in a practical making experience, accuracy, quality outcome, testing, successful working towards an defined outcome. Making a technical product. Co-operation and teamwork, able to follow instructions, role-play, problem solving, testing and evaluating. Possible links with science, maths and computer control.

## Extra / Alternative challenges

- a) Make own people podules.
- b) Change the design as wanted.  
(perhaps add on / off safety lights / add sound and payment system to start it.

## Computer Control

Control it using a microprocessor capable of driving the motor, such as the Brainy-USB or the Brainy-Motor microprocessor kits.







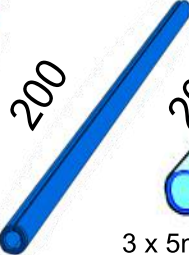
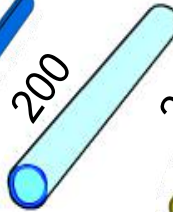
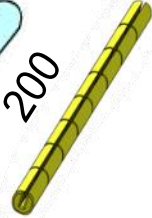



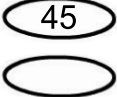
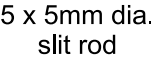
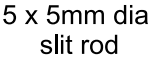
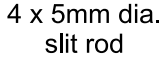

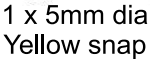




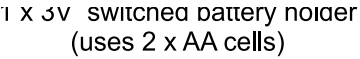








## Design opportunities

Design and decorate as you want instead of using the top provided.

**Tools and equipment needed**  
**See next page called 'Parts'**

# Kre8 Big Wheel - Parts List



-  4 x green connectors
-  4 x Blue clip connectors
-  3 x 4mm grey tube
-  1/2 x 4mm grey(gray) snap rod
-  80
-  100
-  200
-  200
-  200
-  7 x small gear 20mm (for top decoration only)
-  1 x 70mm gear
-  2 x 28mm gear
-  3 x elastic bands
-  4 x 5mm dia. slit rod
-  5 x 5mm dia. slit rod
-  4 x 5mm dia. slit rod
-  3 x 5mm dia. light blue tube
-  1 x 5mm dia. Yellow snap
-  **Abrasive paper**  
(Use to round ends of tubes)
-  1 x 30cm ribbon cable (2 wires wide)
-  heat shrink  
1 x about 40mm long
-  Battery Holder
-  1 x 3V switched battery holder (uses 2 x AA cells)
-  12 x cap end
-  1 x geared motor
-  6 x metal bearings
-  1 x Decoration (laminated)
-  2 x podule cut out sheets (laminated)
-  2 x blue collars
-  6 x grey collars
-  Plastic Bag  
1 x resealable bag

## Tools



ruler



Snips

Hole punch



Tape

Clear adhesive tape

Go to  
[www.kre8.com](http://www.kre8.com)  
for your free  
**instructions**  
1 x paper insert

Hole in card  
Can use scissors but easier with hole punch or 4mm or 5mm diameter drill.

All sizes in mm

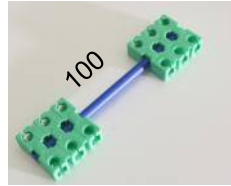
### TO MAKE

Use these 'step-by-step instructions' as a guide and adapt as you want.

### NOTES

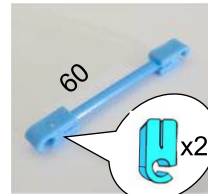
- 1) Use metric ruler for measuring
- 2) For **EASY assembly** -
  - a) Smooth and **round the end of the rods** with abrasive paper then
  - b) **Push and twist** the rods into place.

1



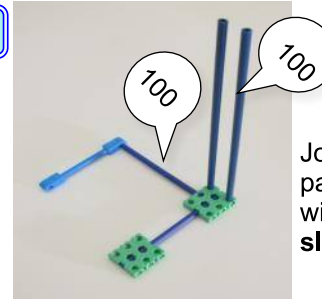
Add green **multi-blocks** on a **100mm long slit rod**

2



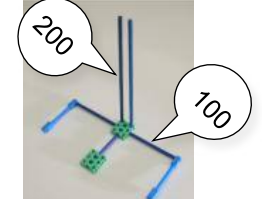
Add **clip connectors** on ends of **60mm long light blue tube** (cut to length)

3



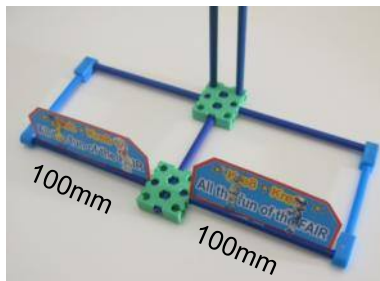
Join together parts just made with **100mm slit rods**

4



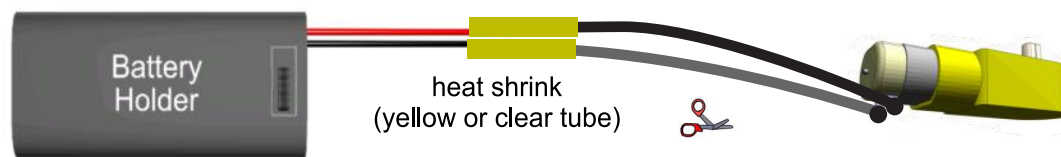
Add second side then add upright slit rods in back holes

5



Complete base by adding **100mm slit rods** to front (later you can add decoration as shown)

6



**Manual control make this circuit** - For computer control no battery holder needed.

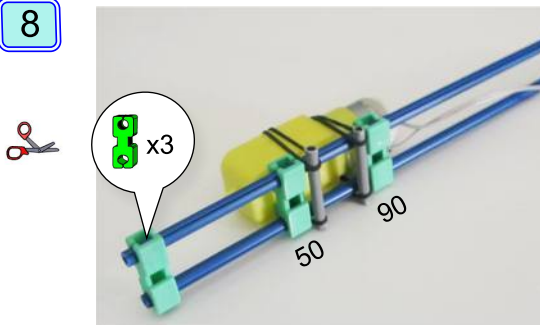
- 1) Cut heat shrink tube about 2cm then slide along battery wires.
- 2) Join wire end by twisting as shown (strip wires ends if needed)
- 3) Slide the heat shrink tube over the twisted joints.
- 4) Heat the heat shrink plastic to shrink over joint. (or glue if no heating method is available)

7



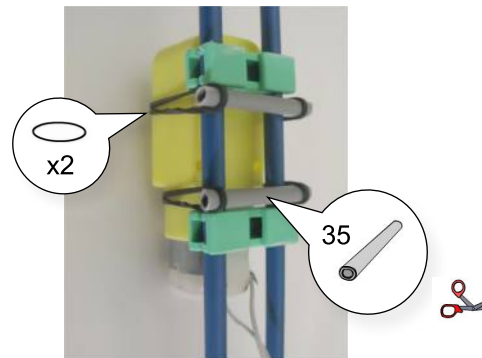
Slide **blue collar** half way down the geared down **motor**

8

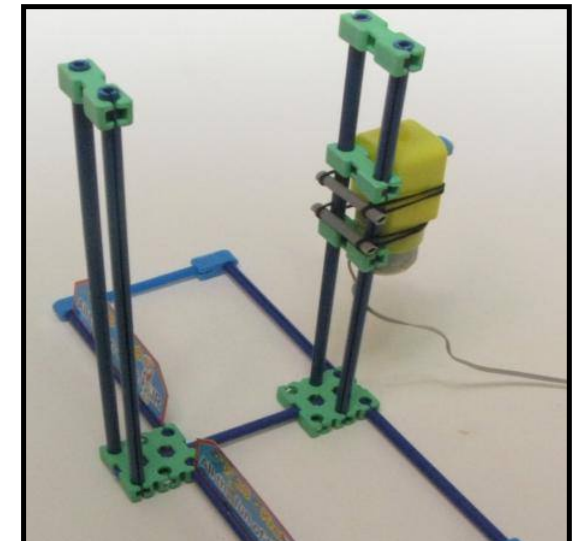


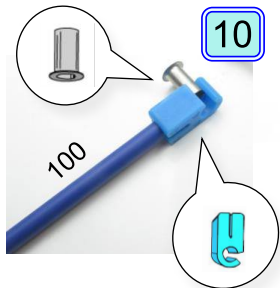
Slide 3 **multi-block connectors** along the upright **200mm long slit tubes**. Place second one 50mm from end and third 90mm from end.

9

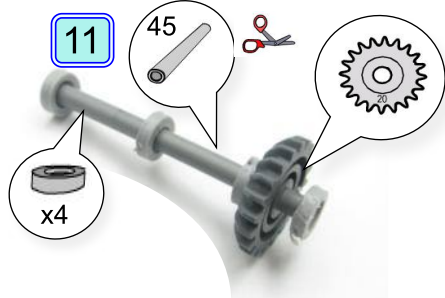


Attach **motor** using **two elastic bands**. Hook elastic bands onto two pieces of **grey(gray) tube** cut 35mm long.

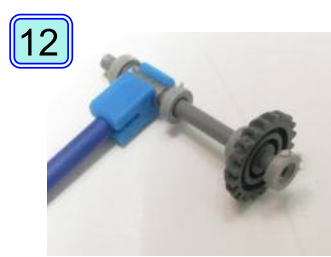




10 Add **clip connector** onto end of **100mm slit rod** then push **bearing** into end.



11 This is the assembly needed next. Make on 45mm long **3.9mm grey (gray) tube**.



12 Temporarily remove end **grey collar** and insert **tube** through **bearing** then replace collar.

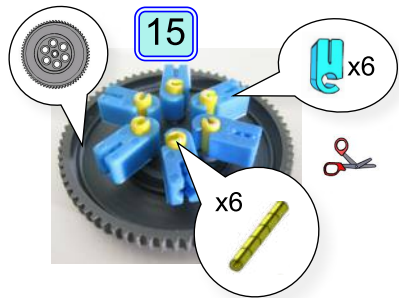


13 After making **person podules** (see cut outs) add onto to part just made in [12]

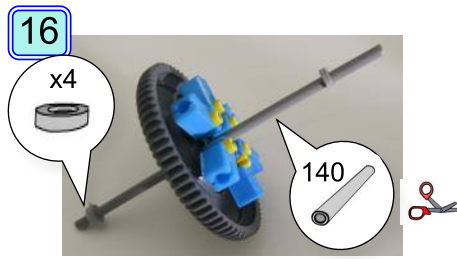


14 **Make 6 of these**

The completed **person podule** can now freely pivot on the **bearing**. Add **grey collar** to hold podule on.



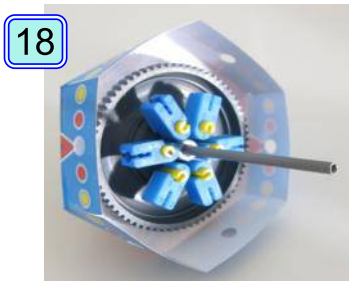
15 Snap off **20mm yellow snap rods** insert in **70mm wheel** then add six **clip connectors**.



16 Slide **140mm long grey tube** through large **wheel** then add **2 grey collars** on each end.



17 Cut out **main decoration part** and make **hole in centre** using drill, punch or scissors as show. ALSO punch **6 holes** round the edge using **paper punch**.  
Note- A large **dual hole paper punch** can be used - first remove back of paper punch so you can see hole to be cut.



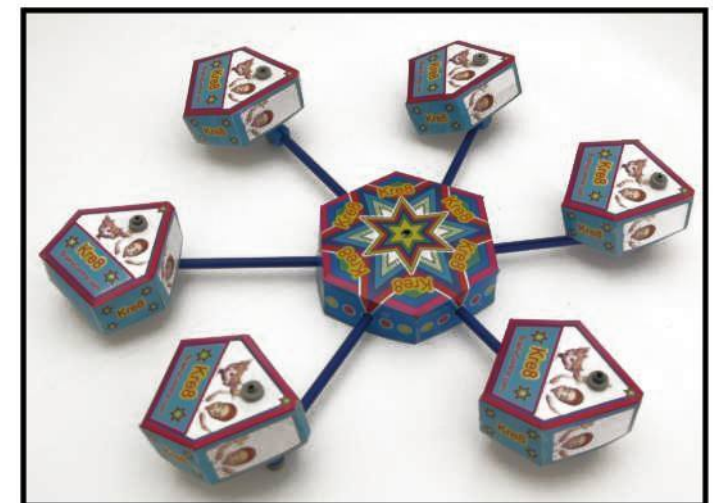
18 Temporarily remove end **grey collar** then slide **main decorative part** on as shown.



19 Add the six **person podules** assemblies made earlier. **Connect via the holes**

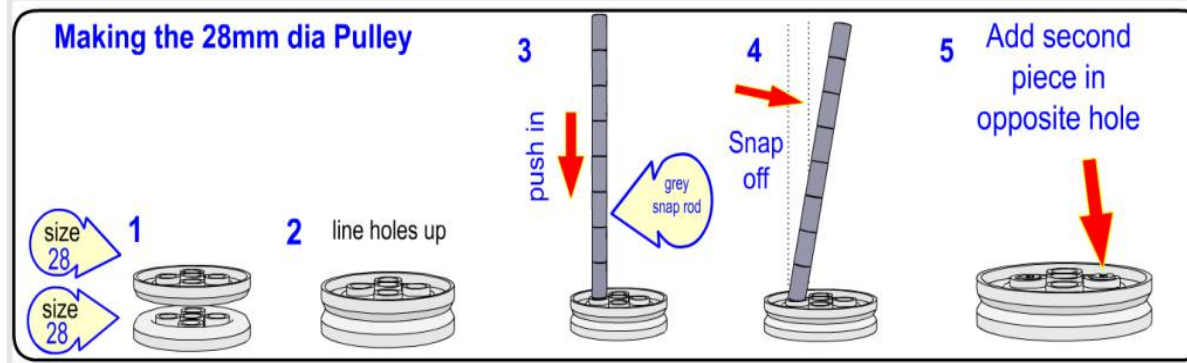


20 Adjust the **person podules** so they are all face the same way round (back view shown above)

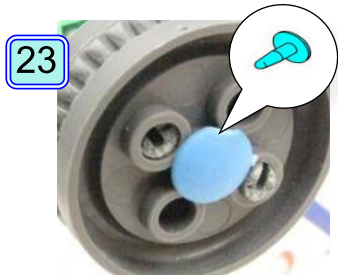




21 Make a **pulley** from **two wheels** as shown on the right. Joining using **grey snap rod**.



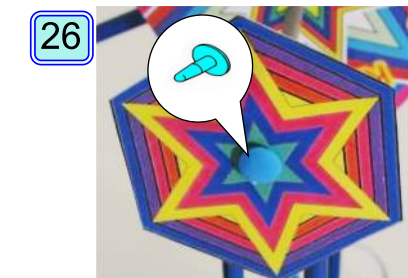
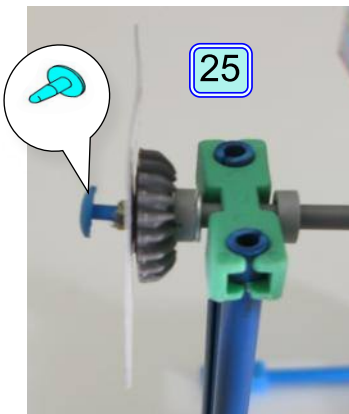
22 Place **grey tube** in the frame by threading through **green connector hole** then push **pulley** on tube end



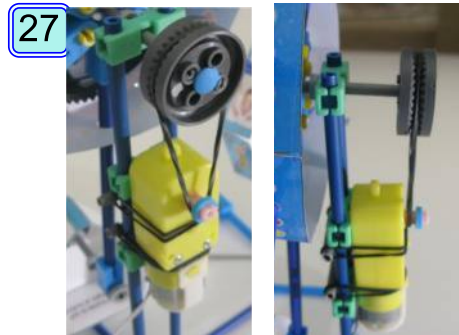
23 Check the **pulley** is added to the back then fix on axle by pushing a **blue cap** into the hole of the **grey tube**.



24 The front axle fixing is shown above and in the next picture (side view) *Adjust grey collars to ensure the **bigwheel** turns without hitting the frame.*

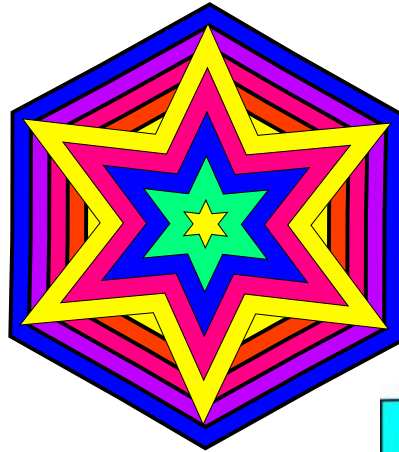


26 Fix front **decoration piece** against the **small gear** and fix by using a **blue cap** as in [25] and [26]

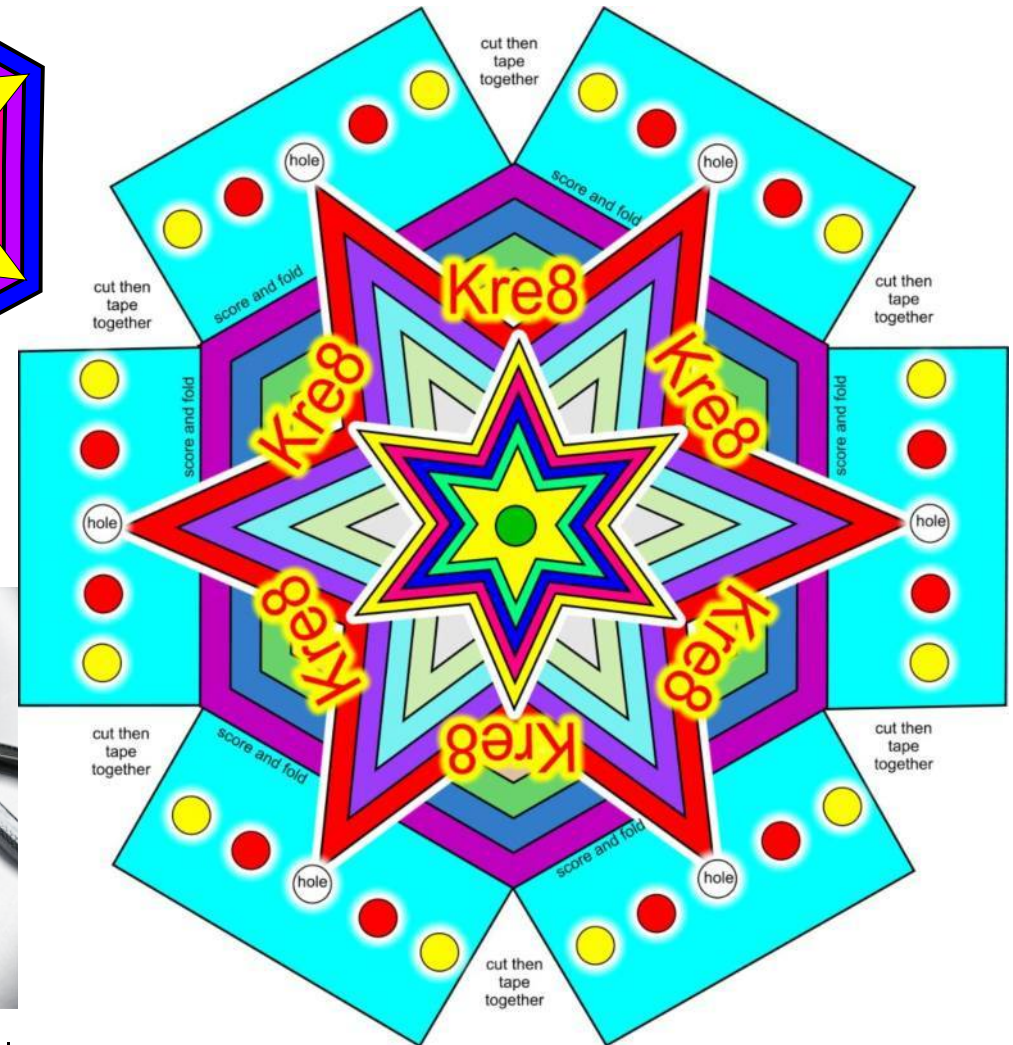


27 Add **electric band** connecting **motor** to **pulley**. It must be in-line as shown in second image.





Front Decoration



Main Decoration Part

Cut out laminated sheets then **fold** as instructed on page then **tape** edges with clear tape



Making centre hole with scissors (or use drill or hole punch)  
TIP It is easier to see holes to cut if the back of hole punch is removed

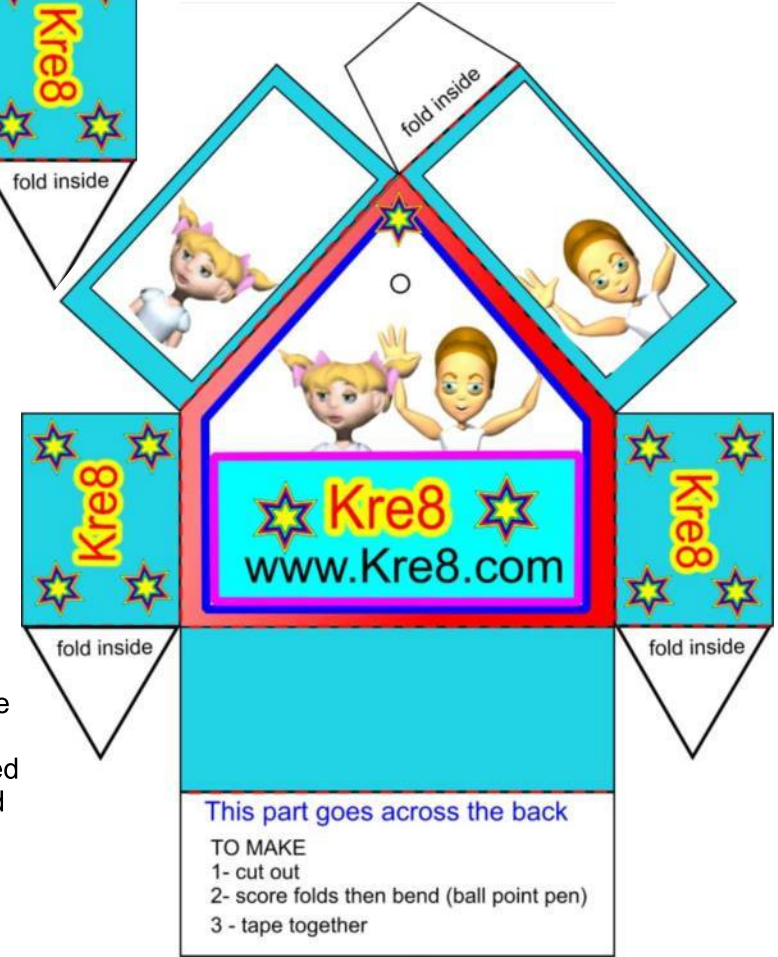
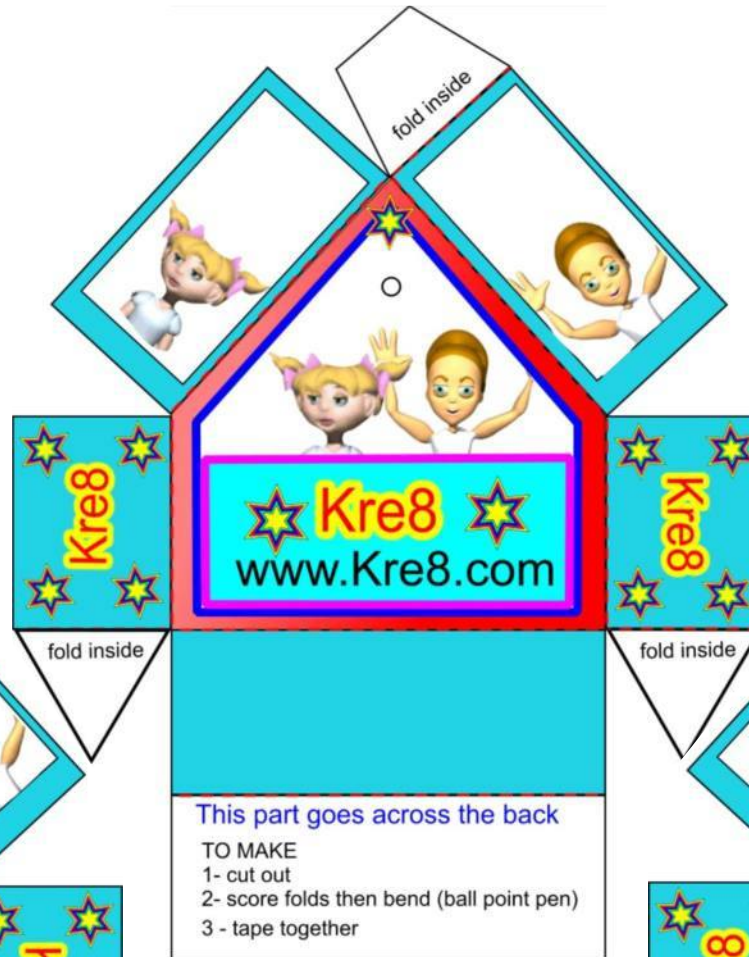
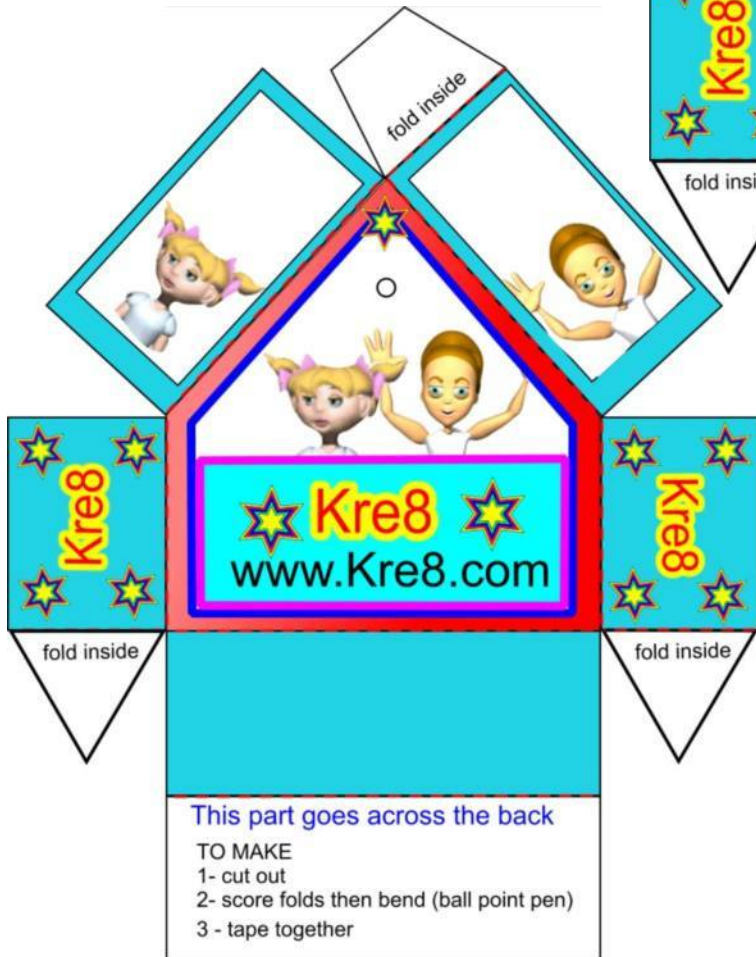


# Bigwheel Podules

page 2/2



**Kre8 Bigwheel Cut Outs**  
2 of these sheets needed



## Note

The hole can be punched using a standard paper punch  
 a) remove punch back so you can see where hole will be punched  
 B) To reach hole position you may need to fold flap over (with girl on) and punch through both parts  
 (Note- the extra hole made will be hidden by flap)

