Kre8® 'Pop' Robot

Tip - Visit **www.kre8.com** for movies and other support

Contents

Keywords

Wheels, axles, pulleys, robots, control, power, voltage, balance, friction, ICT, loose fit, tight fit, frame, laminate, chassis, reversing switch.

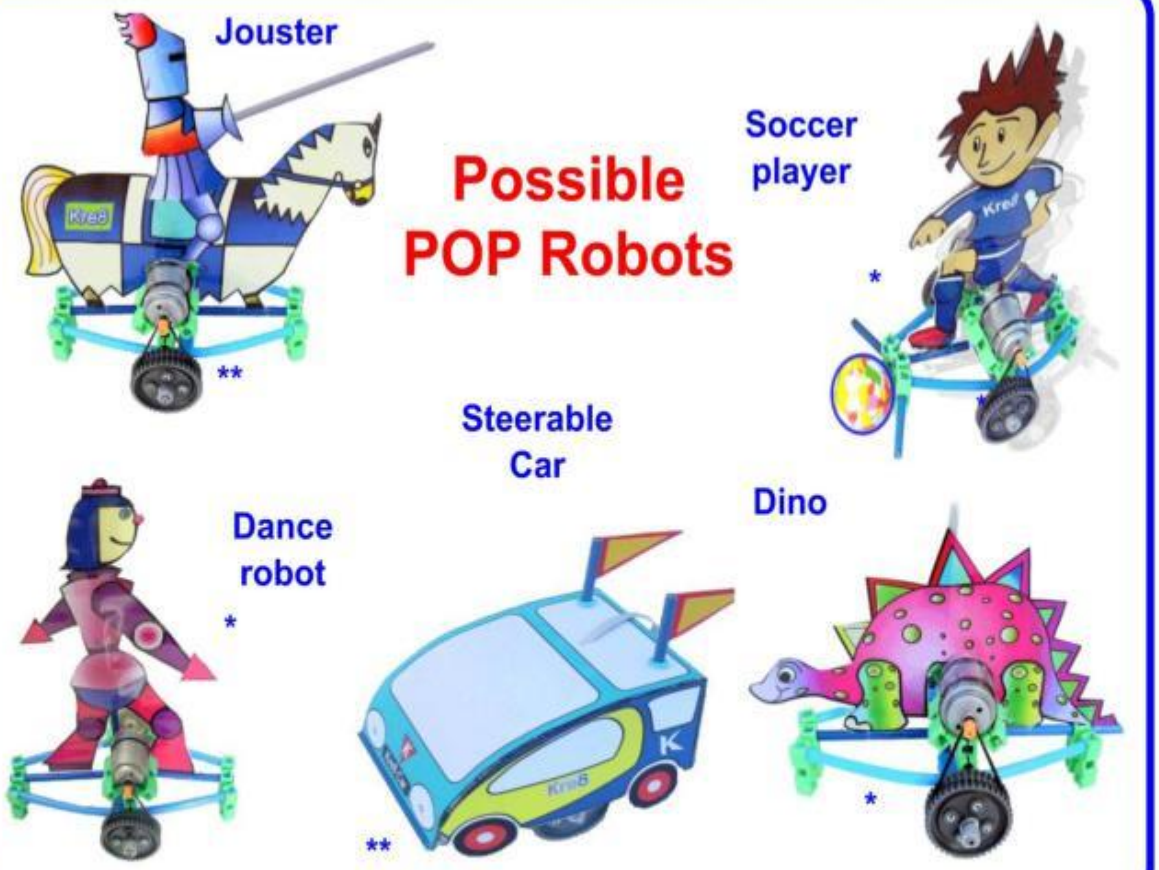
Tasks

Make the basic frame that is common to all the POP robots using these instructions.

While doing this, decide which robot top you want and cut it out laminate ready for use later.

Note - If possible borrow a plastic laminator to make your top look better

Possible POP Robots



* easiest to make ** harder to make

Extra Challenges

a) Organise a game or competition using your robot

b) Make improvements after testing and using it.

c) You could even control it using a computer instead of the hand controller (e.g, using the IQ Controller from Rapid)

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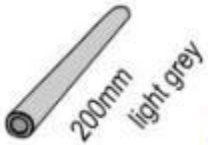
Parts for Kre8® 'Pop' Robot

Kre8 Kit K073

Tip - Visit **www.kre8.com** for movies and other support

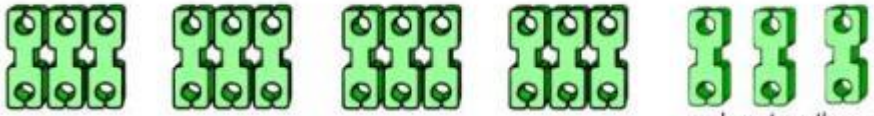
1 x clip connectors

Trim all sharp edges after cutting



1 x 3.9mm dia.

1/2 blue 5mm snap rod



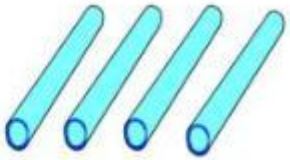
only cut up three

5 x Multiblocks (green) - **IMPORTANT** - Keep FOUR of the **blocks uncut as supplied**

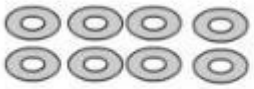
1 x blue slit rod

Use to join pulley wheel parts

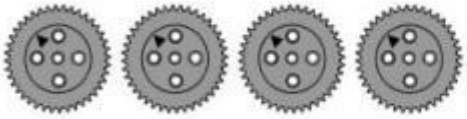
1 x 4mm dia,snap rod 160mm long - dark grey



4 x 200mm long 5mm dia. light blue tubes



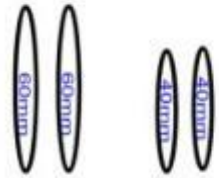
10 x 4mm steel washers



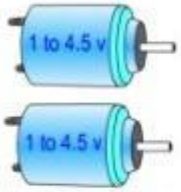
4 x 40mm dia. wheels (used to make the pulley wheels)

2 x 5mm dia. bendy dayglow tube

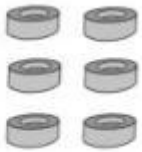
2 x 5mm blue collars



2 x 60mm and 2 x 40mm long rubber elastic bands



2 x Small motors 1.5V to 4.5 volts



6 x 4mm grey collars

Default top

Easy Assembly

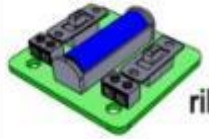
The rods are easier to insert into the connectors if twisted as they are pushed into place. Younger students should 'round off' and smooth the tube and rod ends before pushing into holes.

A5 Paper insert
Assembly help

HELP

More support on the Kre8.com website or email us info@kre8.com

Kre8® Manual Controller



and ribbon cable

There is help on 'Connecting Up' the Kre8 Manual Controller' on Kre8 website

Tools

Snips (or wire cutters and string sharp scissors)
Use to cut Kre8 connector hinges, plastic sheet, light blue tubing (the serrated blades are better than smooth blades).

Emery Cloth
Assembly is easier if you use fine 'emery cloth' or other 'abrasive paper' to round and smooth the slit rod or blue tube ends.

Pencil and Rule
Use to mark lengths of blue tube or slit rods before cutting. Can also be used on plastic sheet before shapes are cut out. (FREE rule at bottom of page)

4mm dia. Drill Just in case the pulley wheel is too tight.
DRILL SAFETY
Keep hands away from sharp edge when drilling

OTHER - Clear tape, paper punch and small , Glue stick (possible) , screwdriver for the Kre8 manual controller.

3

1 - How to make the Kre8® 'Pop' Robot Frame

Tip - Visit **www.kre8.com** for movies and other support pages

Kre8® Making System

To Make

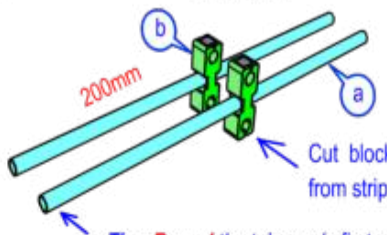
Follow the 'step-by-step' instructions provided and adapt as you want.

NOTES

*(1) **Only** cut the **connectors** up when needed.*
*(2) Use a **ruler** for measuring.*
*(3) **For easier assembly** - smooth and round the rod ends with abrasive paper then push and twist the rods into the connectors.*

1

FRAME

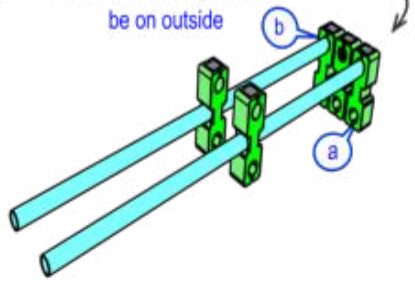


*Tip - **Round** the tube ends first so they enter the connectors easier*

Select two of the **200mm** long light blue tubes(a) then slide two green connectors (b) to the centre.

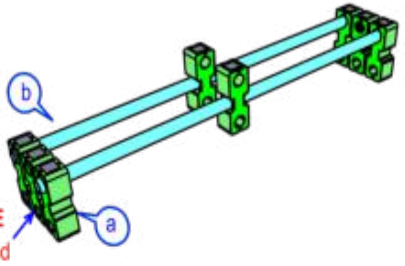
2

Triple Block Hinge MUST be on outside



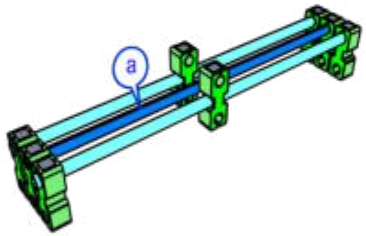
Push a triple green multiblock (a) onto the end of the two light blue tubes (b) as shown.

3



Push a second triple multiblock (a) onto the other end of the two light blue tubes (b).

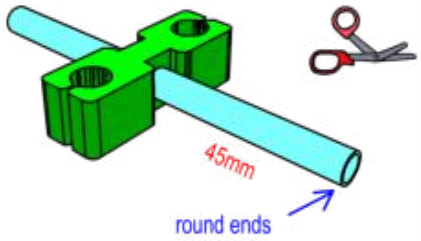
4



Add a blue slit rod **200mm** long(a) in the centre as shown.

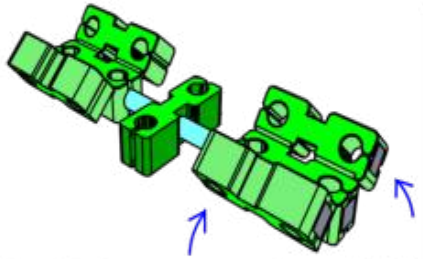
5

Start Making MOTOR HOLDER



Cut a **45mm** long light blue tube then slide a single green connector along it - Using centre hole.

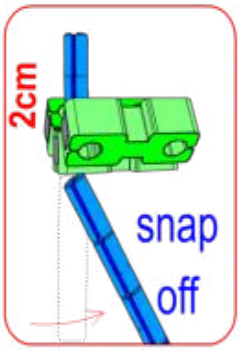
6



1) Add two 'triple green connectors' on a SHORT distance the ends of the light blue tube -
2) Bend connectors UPWARDS as shown.

7

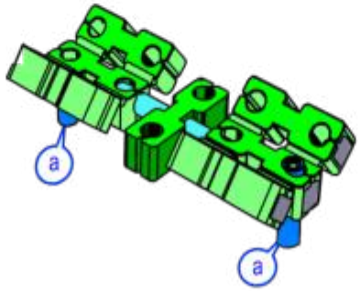
'Snap' Off Pieces



Get the 5mm dia. 'blue snap off' and 'snap off' two pieces' **2 cm long.**

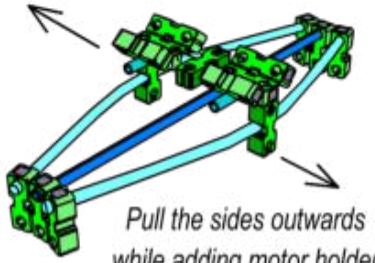
Tip - Use a green connector to hold 'blue snap off rod' when snapping off as shown.

8



Place the two short pieces just made (a) into the end centre holes of the green connector.

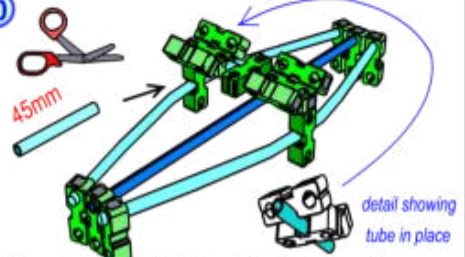
9



Pull the sides outwards while adding motor holder

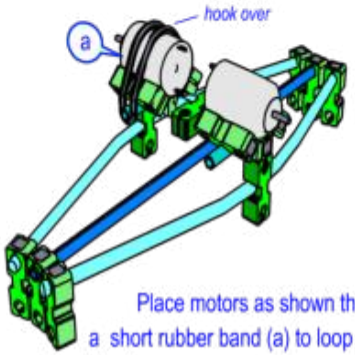
Fix the motor holder assembly in place onto the frame by pushing the 5mm blue snap pieces in place.

10



Cut two pieces of light blue tube 45mm long then push them in the centre holes of the green connectors.
NOTE - Temporarily move the other rod sharing the same hole out of the way.

11



Place motors as shown then use a short rubber band (a) to loop over them and hold in place.

Continued .....

2 - How to make the Kre8® 'Pop' Robot Frame

Tip - Visit **www.kre8.com** for videos and other support pages

Kre8® Making System

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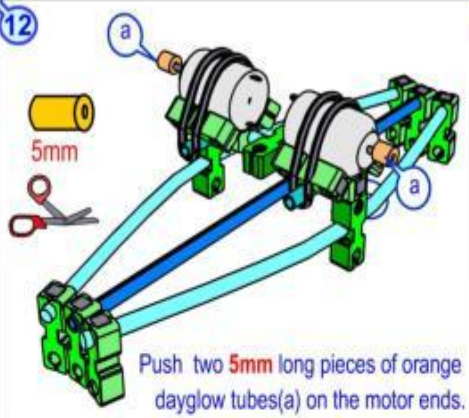
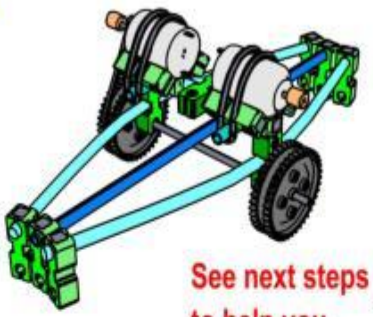


Push two **5mm** long pieces of orange dayglow tubes(a) on the motor ends.

13



See next steps to help you.

Adding Wheels - after looking at next step

14

Making the PULLEY WHEELS

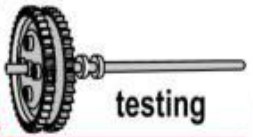
Leave 'centre hole' empty

Make by joining two wheels so they form a 'V' groove.
(1) Push the 'grey snap rod' into the outer holes then
(2) snap off **1cm** long snap rods by bending over.

15

Important

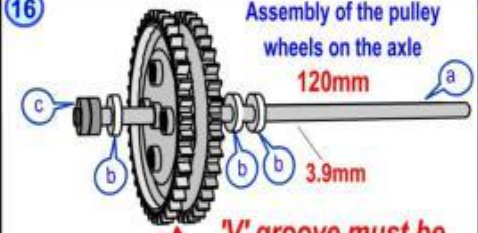
Check the wheels 'spin' on the axle if not redrill wheel hole **4mm.**



SAFETY If the axle hole needs enlarging, redrill over a block of wood **NOT** into your hand.

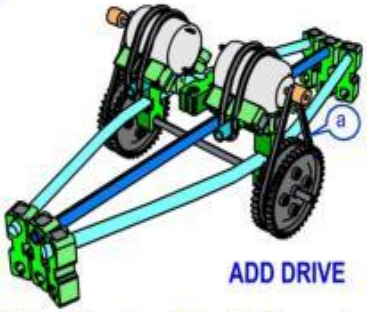
16

Assembly of the pulley wheels on the axle



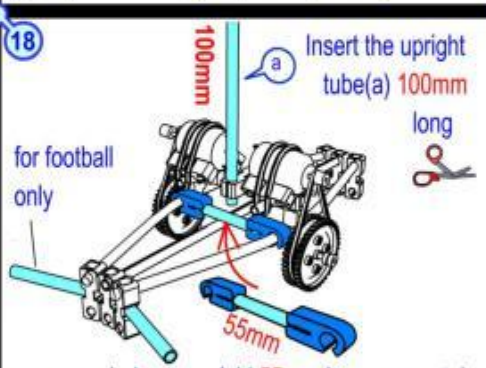
This drawing shows how to assemble the 'pulley wheels' onto the **3.9mm light grey tube** (a) adding 3 metal washers (b) and 2 grey collars (c).

17



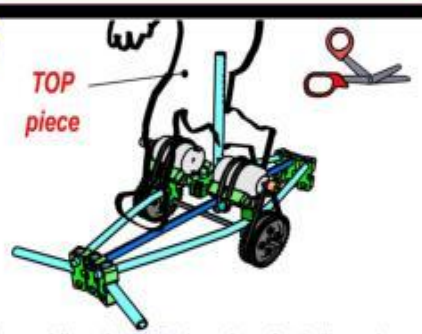
Add the rubber band drive (a) from motor pulley to pulley wheels.

18



recommeded extra - Add **55mm** long spacer tube. (Bend the 'long slit rod' down a little to add)

19



Before adding the TOP piece (e.g. footballer - shown in outline) follow the itop nstructions then slide it over the upright rod.

20

Ribbon Cable - The ribbon cable can be hidden by passing it through the 'TOP' to on its way to the electric motors.

Use of clear TAPE

(a) When the cable has been added the wire can be taped to the vertical rod to stop the wires being pulled off the motors.
(b) When all is correct the TOP part can be taped to the long blue slit rod.

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Adding the Ribbon Cable

See 'Steering Electrics'

Page available from Kre8.com if not provided

Note

Ensure the ribbon cable is passed through the **TOP** used **BEFORE** wires are all joined up.

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Dancer

(more versions provided on website)

or you can design your own top if you prefer

23

Footballer

About to 'kick' a 'table tennis' ball

* **Rods added for football use**

5 Ideas for Kre8® 'Pop' Robots Version 2

Examples organised by difficulty using the ready-made handouts provided on the web.

The ready-made printouts are on the Kre8 website under Robots > 'POP Robot Tops'

Dancer - Easy to make

Dino - Easy to make

Mars Rover - Medium difficulty

A similar kit - see seperate Mar Rover details

Design and make your own

Instead of making the models shown, you can design and make your own robot by adding you own top variation.

Footballer - Fairly Easy

requires (ping pong or similar ball)

Jouster - Fairly Easy

but requires accurate cutting out

Car - Medium difficulty

Note - Best to get the top plastic laminated then the top parts can be joined using clear adhesive tape

Ideas

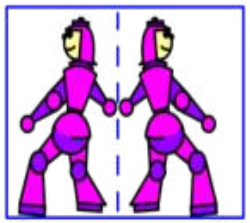
Sports
Animals
Name
Logos
Games
Future robots
TV characters
Historic people
Racing

6 Making your Kre8® POP Robot Tops (make your own)

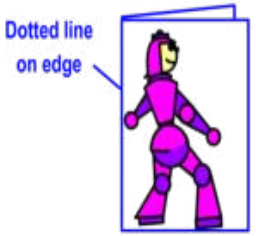
Plastic laminating technique

How to (Plastic) Laminate your Printout Top (web printout)

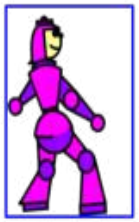
If you do not have a laminator, borrow one from your resource centre or ask them to do the following for you.



(1) Choose your design (selected from the website) or design your own.

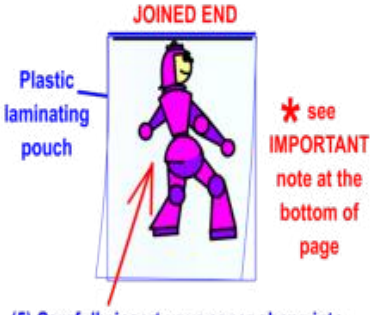


(2) Carefully fold paper in half along the dotted line.



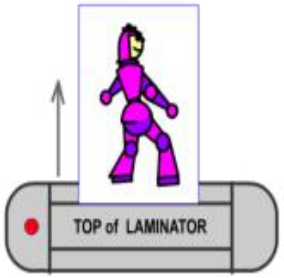
(3) Hold edges together - to stop pages moving about when being cut.

(4) Cut out the front and back parts together.

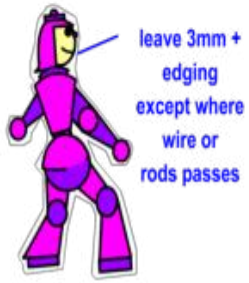


(5) Carefully insert your paper shape into the top end of the laminating pouch.

(6) Turn on laminator - When hot enough insert your pouch (light comes on).



(7) When cool remove



(8) Cut out shape

(9) open inside then place on your vertical robot rod

If you prefer to Design your own POP Robot Top

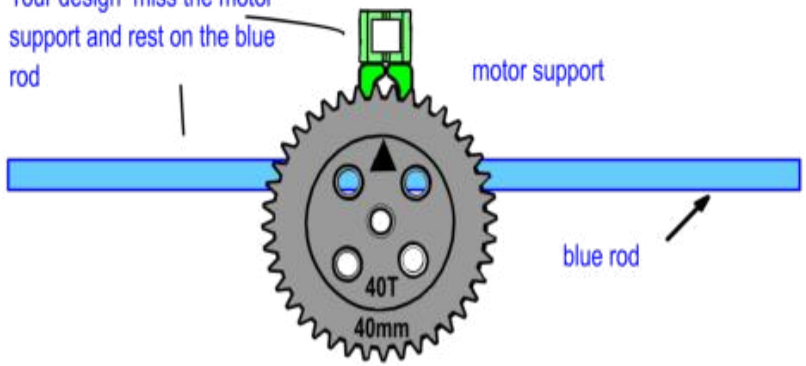
Using the following method to ensure your design will fit your model

1) Fold a piece of A4 paper in half. Design your idea on one side (use pencil to start with) then check it against the **'Full Size Guide' below** to make sure it fits properly (adjust or redo if too small).

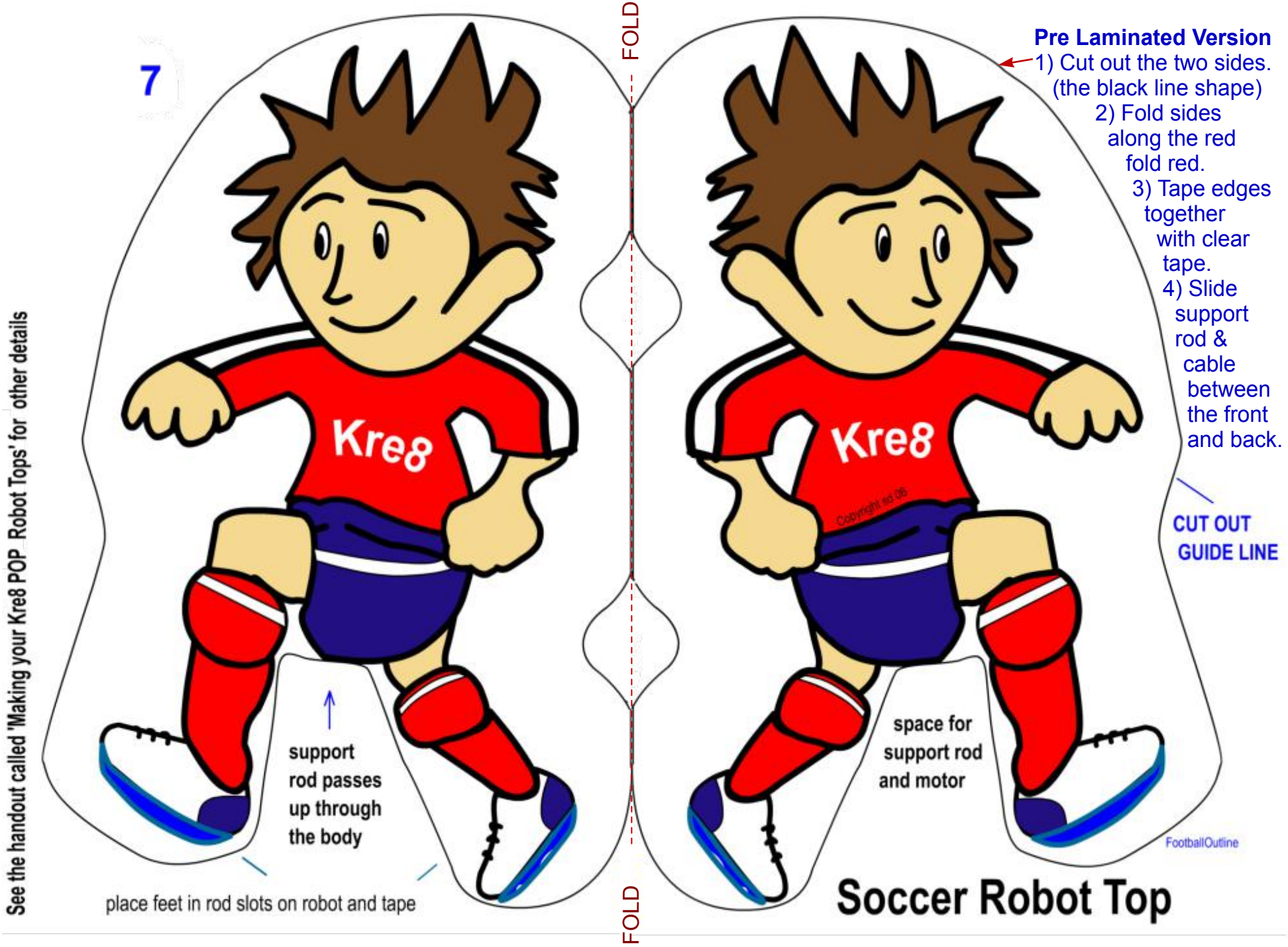
2) Cut both sides together
(edges can be glue sticked while cutting out your design).

3) Decorate the front and back of your design, then go to step (5) of '*How to Laminate your Top*' opposite.

Place your design here to check it fits as you want it to



Laminated sheet



8

Dancing Robot Top

See the handout called 'Making your Kre8 POP Robot Tops' for details

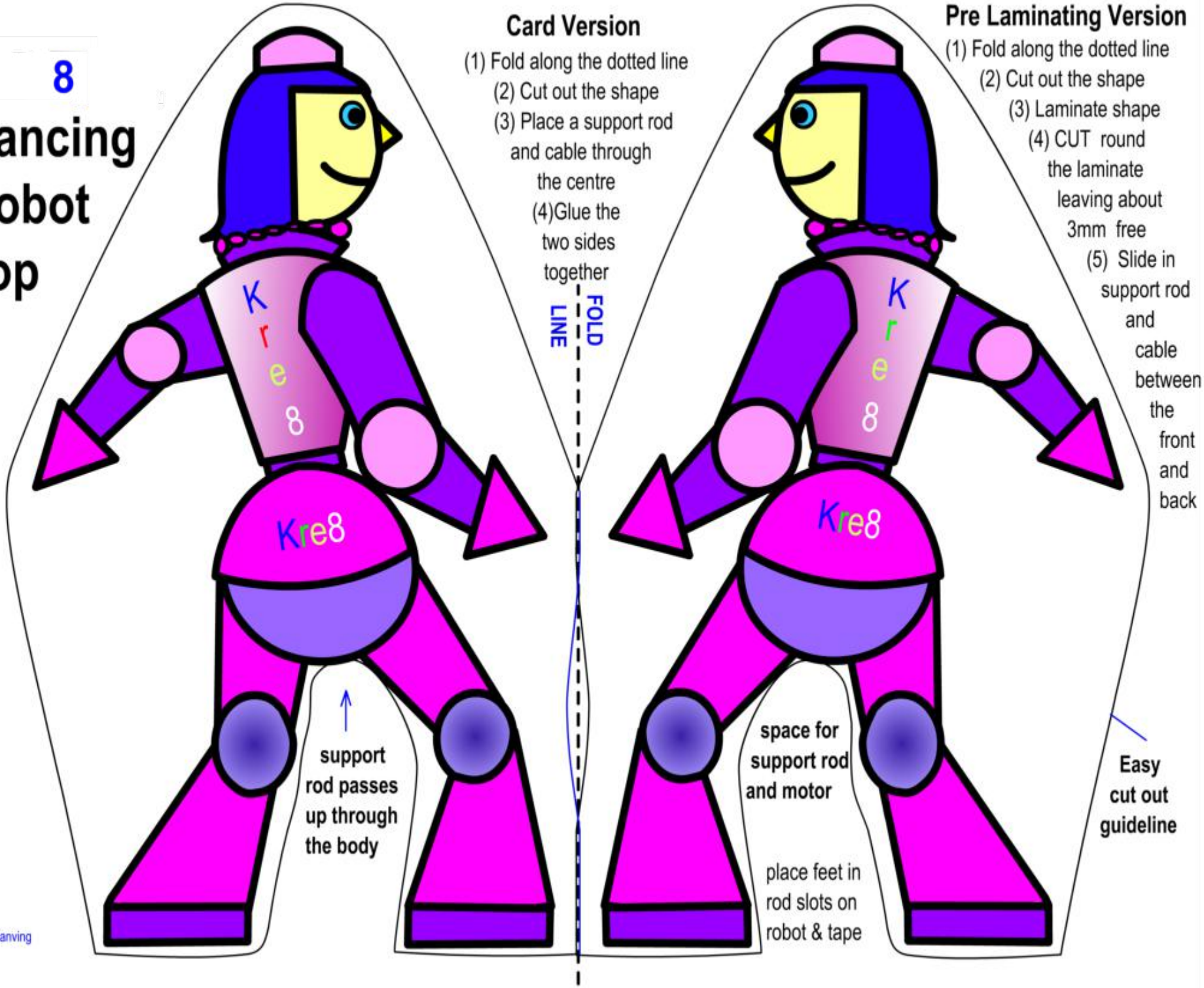
Card Version

(1) Fold along the dotted line
(2) Cut out the shape
(3) Place a support rod and cable through the centre
(4)Glue the two sides together

FOLD LINE

Pre Laminating Version

(1) Fold along the dotted line
(2) Cut out the shape
(3) Laminate shape
(4) CUT round the laminate leaving about 3mm free
(5) Slide in support rod and cable between the front and back



Shedanving

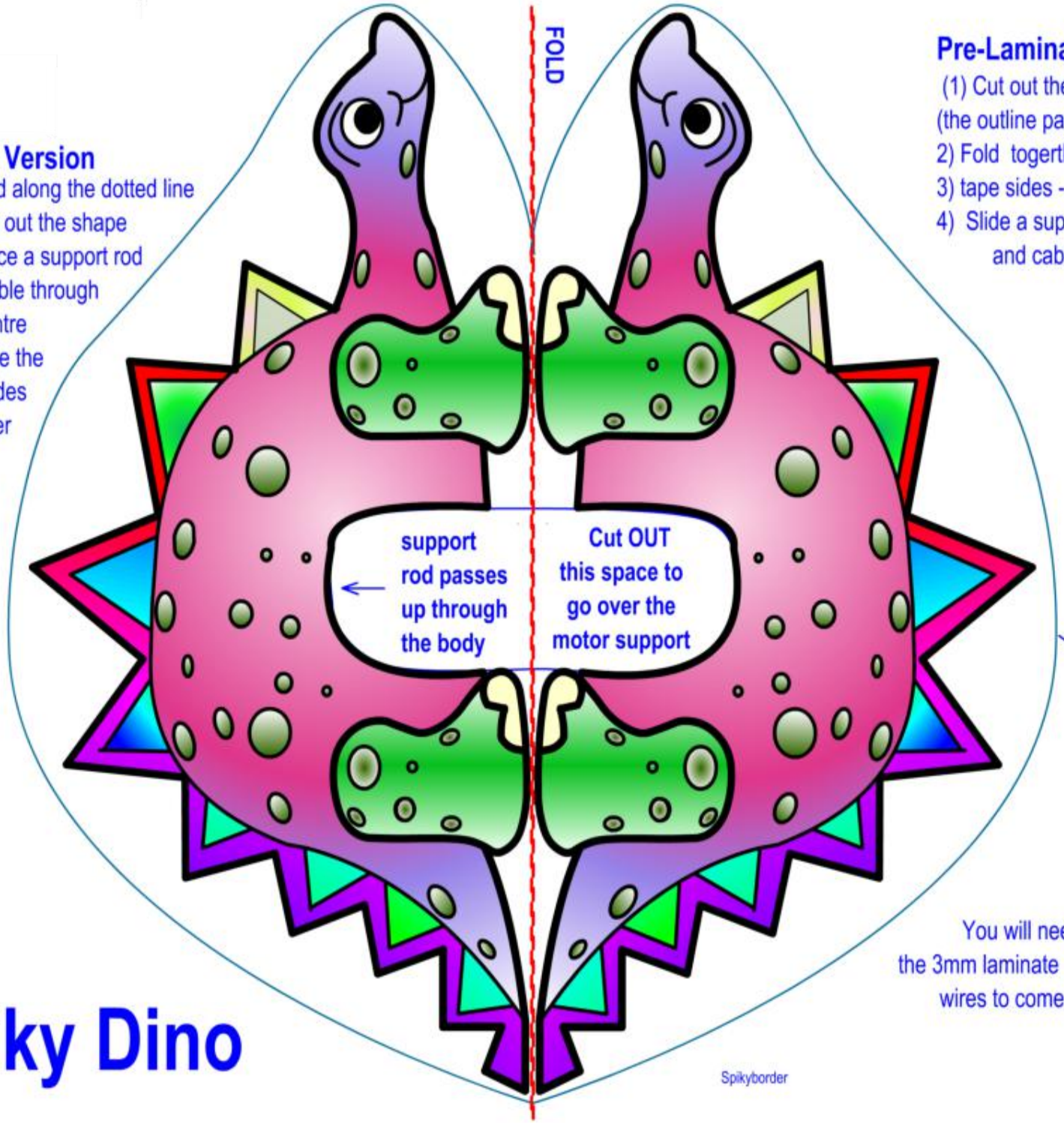
9

Card Version

(1) Fold along the dotted line
(2) Cut out the shape
(3) Place a support rod and cable through the centre
(4) Glue the two sides together

Pre-Laminating Version

(1) Cut out the shapes (the outline part
2) Fold togerther
3) tape sides - clear tape
4) Slide a support rod and cabl **between** the front and back



Note
You will need to remove the 3mm laminate to allow the wires to come through top.

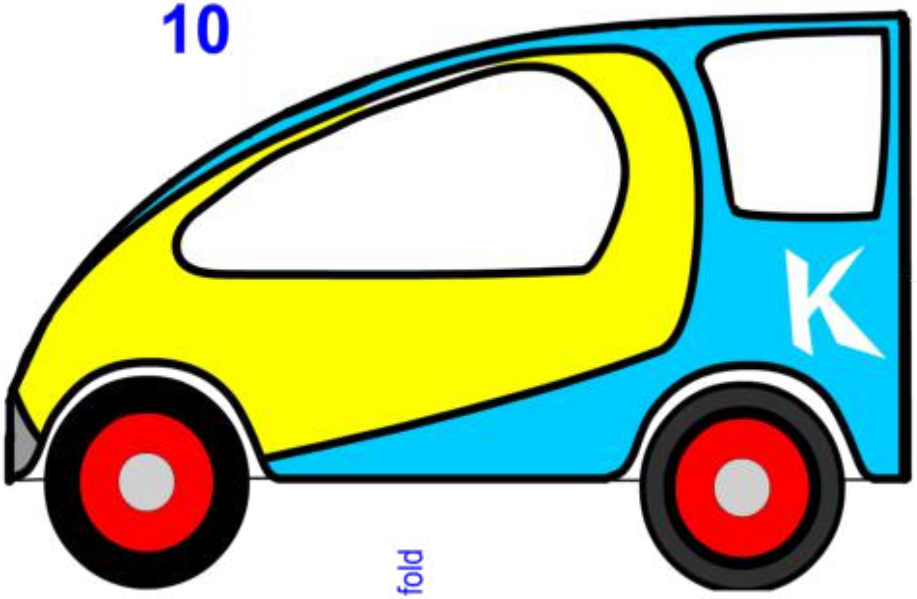
See the handout called 'Making your Kre8 POP Robot Tops' for details

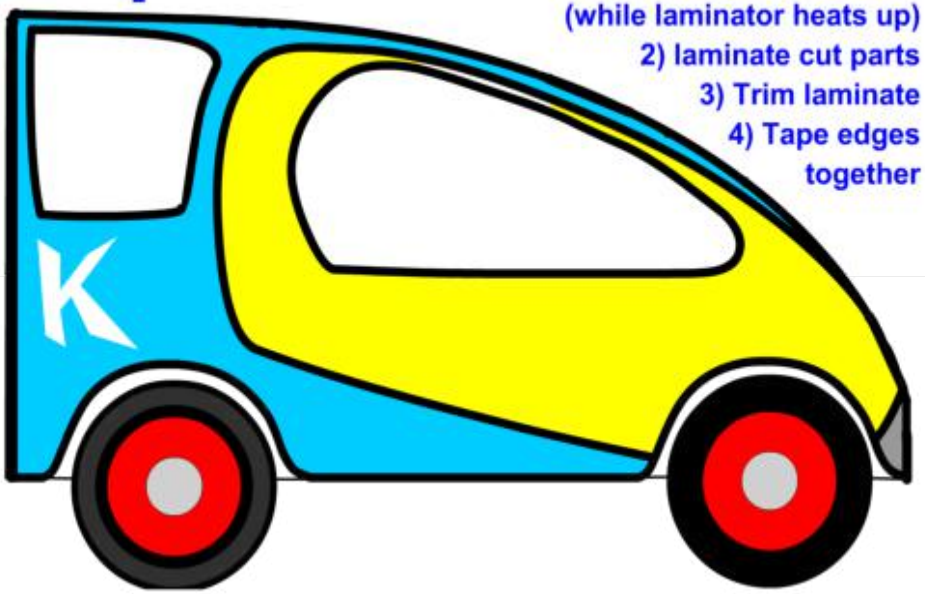
Spiky Dino

Car Top

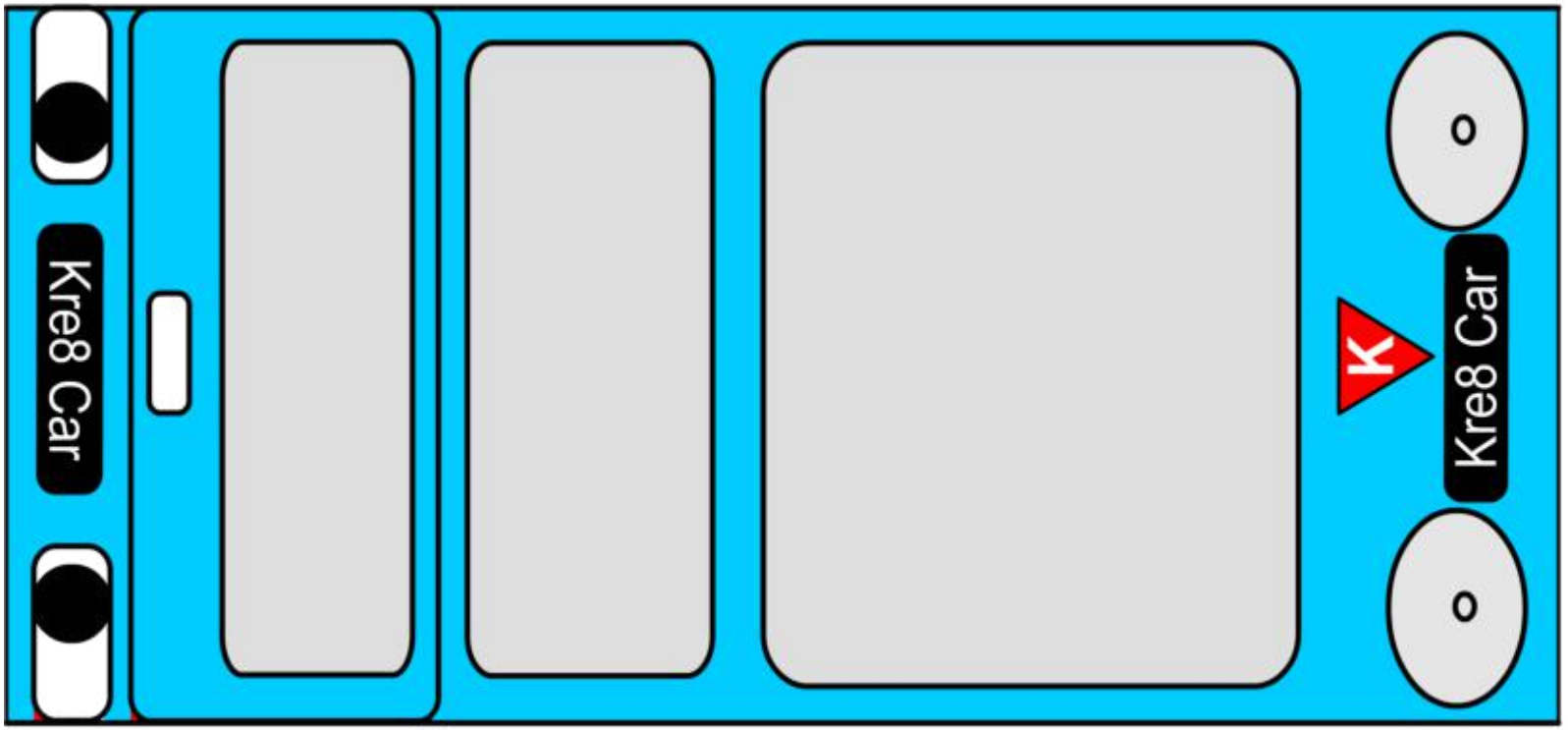
10

If self Laminating
1) Cut parts out.
(while laminator heats up)
2) laminate cut parts
3) Trim laminate
4) Tape edges
together





fold

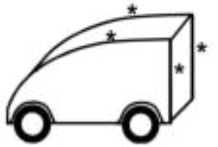


fold

Pre - Laminated Version
****

1) Cut parts out.
2) Tape edges together.

OR
join edges *
using old cards pieces
to make 'glue tabs'
and glue on the inside
using hot or cold glue.



cartop
swf

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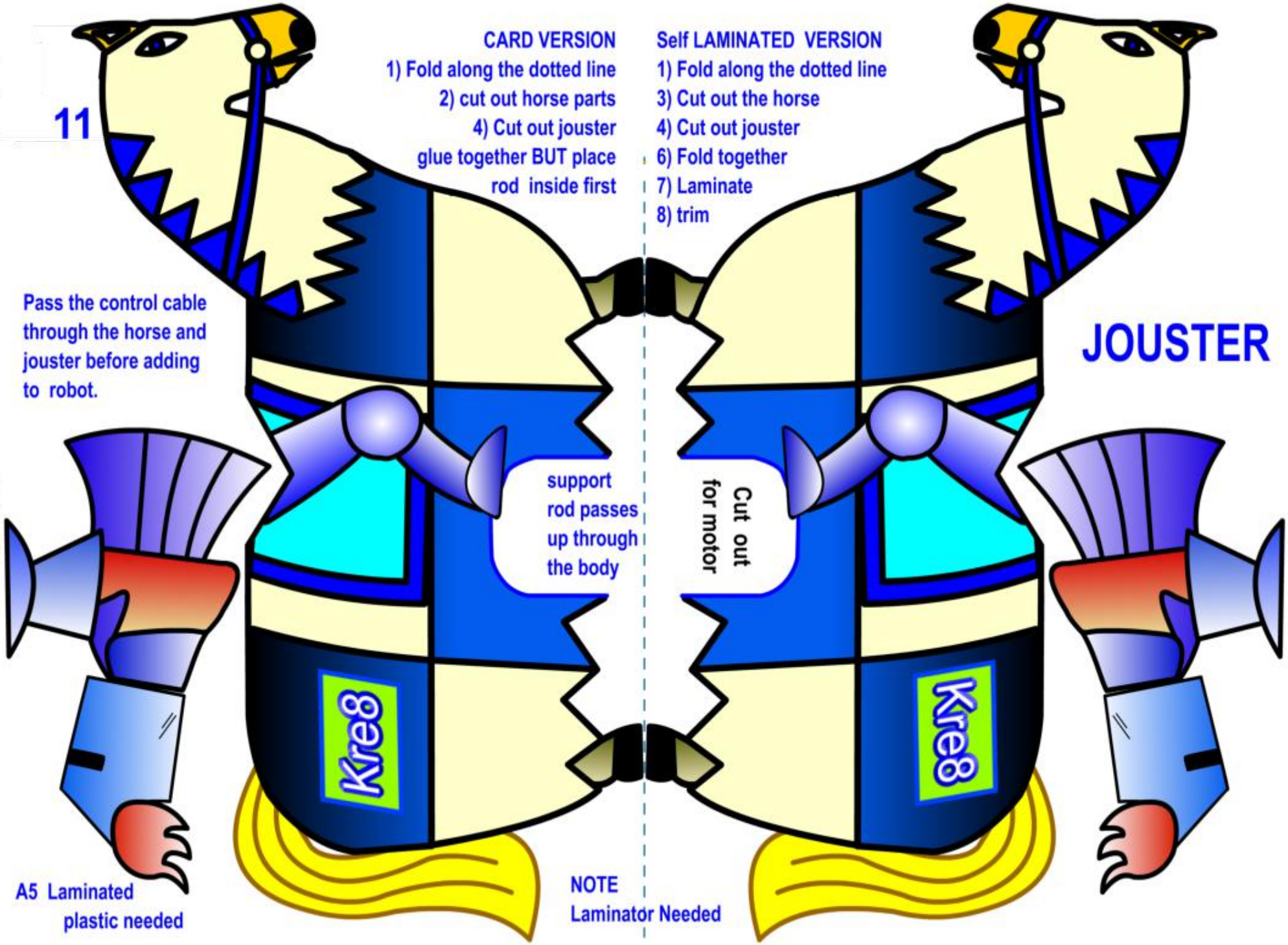
CARD VERSION
1) Fold along the dotted line
2) cut out horse parts
4) Cut out jouster
glue together BUT place
rod inside first

Self LAMINATED VERSION
1) Fold along the dotted line
3) Cut out the horse
4) Cut out jouster
6) Fold together
7) Laminate
8) trim

Pass the control cable through the horse and jouster before adding to robot.

JOUSTER



A5 Laminated plastic needed

NOTE
Laminator Needed

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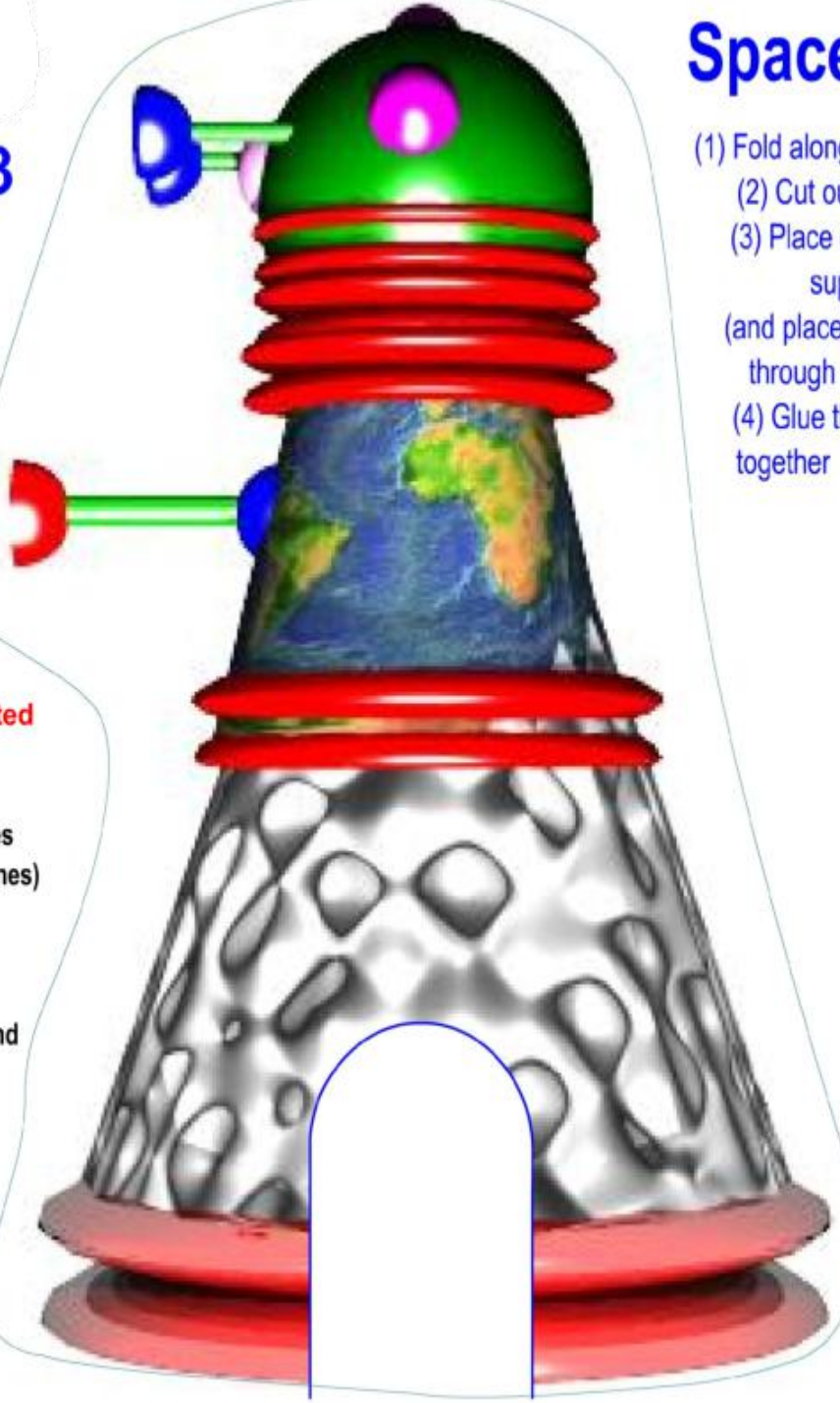
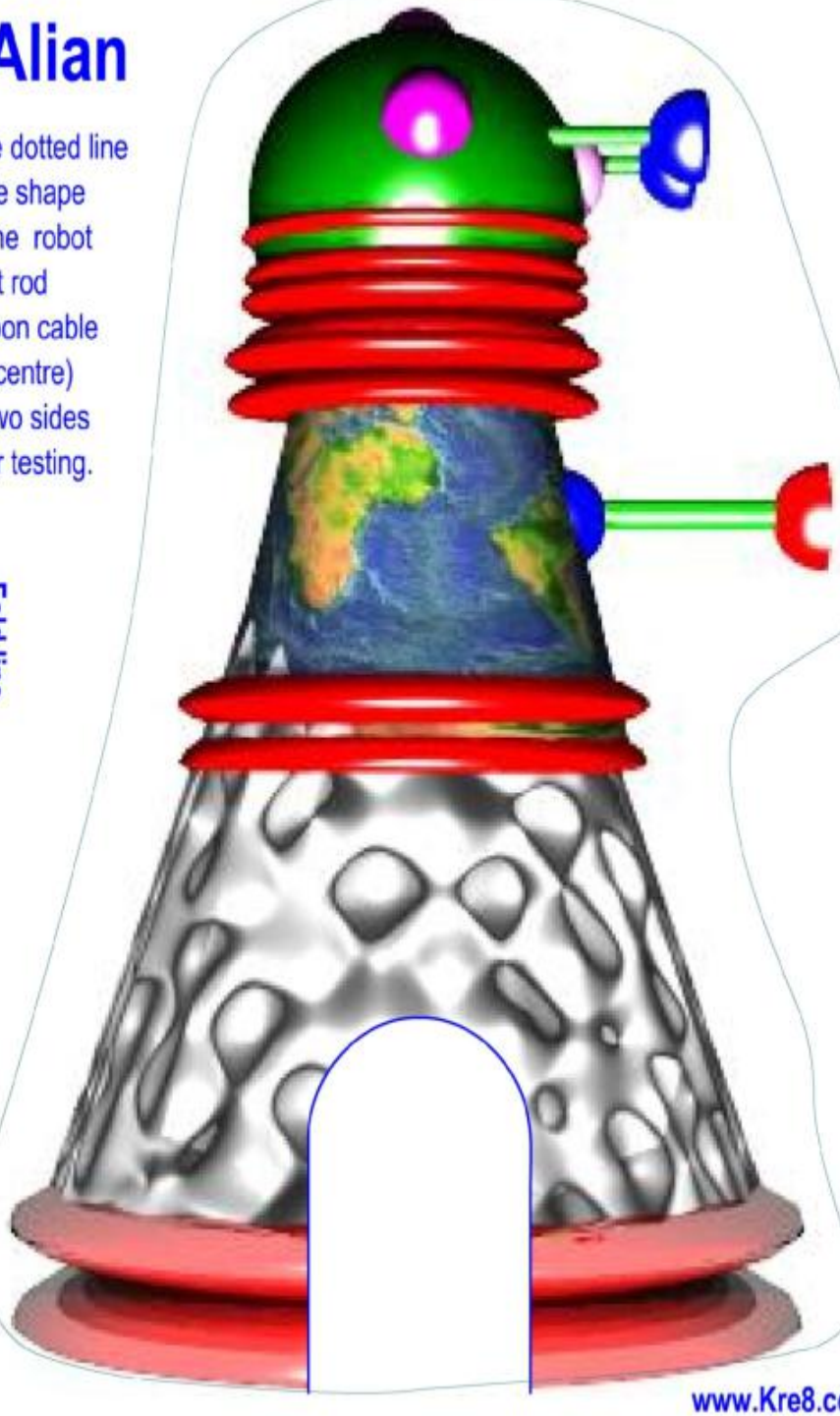
Space Alian

(1) Fold along the dotted line
(2) Cut out the shape
(3) Place on the robot support rod
(and place ribbon cable through the centre)
(4) Glue the two sides together after testing.

Fold line





Pre- laminated Version

1) Cut out sides (along outer lines)
2) tapes sides together (clear tape)
3) Place rod and wire in centre