Flappy bat

Why do this?

This activity provides a context for children to make a moving picture using a simple combination of levers. The art work could be replaced to reflect any celebration or event while still supporting children to make, explore and use a mechanism in a product.

Curriculum links: D&T, art, linkage, products, mechanisms

Suitability

Years 5 & 6

Practical details

This activity has been prepared using CLEAPSS guidance. If in doubt, or for further information, contact CLEAPSS.

Safety

- Paper fasteners have sharp points, and are fiddly to use.

Equipment per child

- 1 set of templates
- Scissors
- Glue sticks
- Breakfast cereal box
- *Plasticine* or *Blu tack*
- Sharp pencil
- 5 Paper fasteners

Notes

- Our template will fit a medium-sized cereal box.
- The activity requires the children to make holes in card. They can achieve this by using a small ball of *Plasticine* or *Blu tack* to support the card as they press the pencil through.

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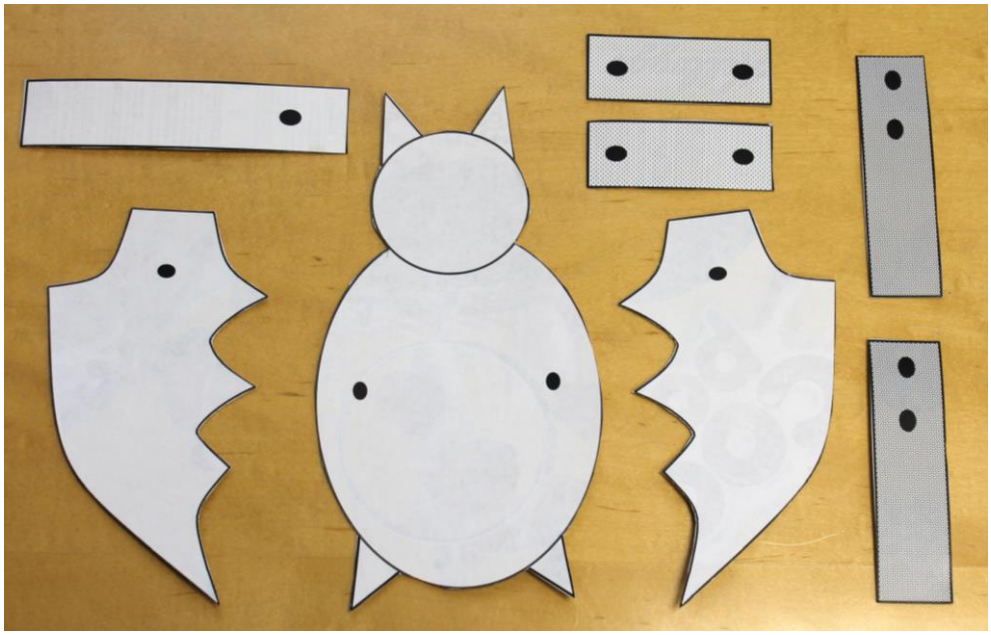
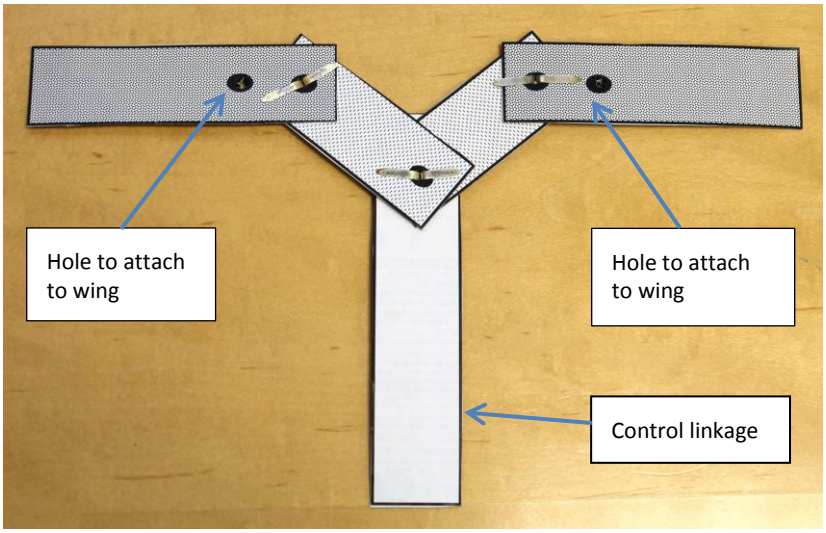
Procedure

1. Roughly cut out and stick the paper templates on to a cereal packet and allow to dry.



2. Cut out the bat body, wings and levers.

3. Place the *blu-tak* or *plasticine* under the cardboard and make the holes by pushing a sharp pencil through the marks.



4. Lay the levers out in the pattern above and fix the overlapping links together using paper fasteners.

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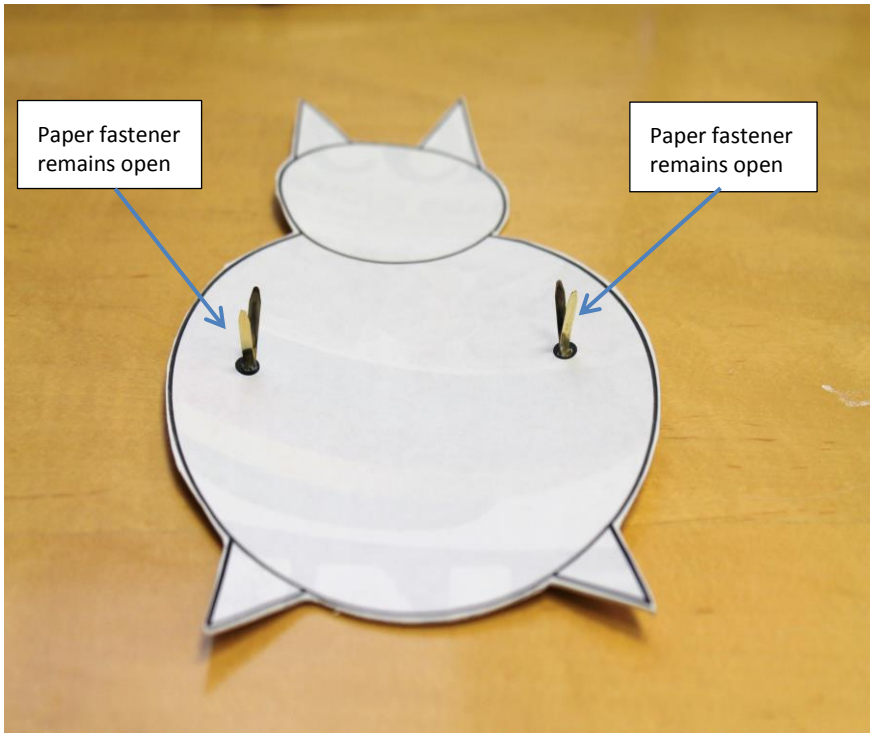
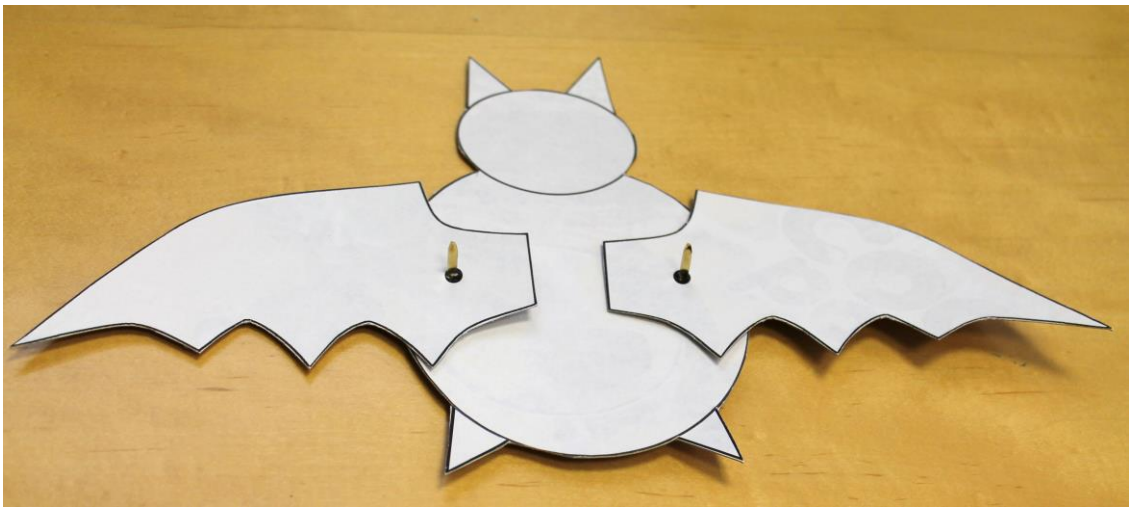


5. Push paper fasteners through the holes in the body from the brown side (don't shut the fasteners yet).



6. Add the wings on to the fasteners (don't shut the fasteners yet).

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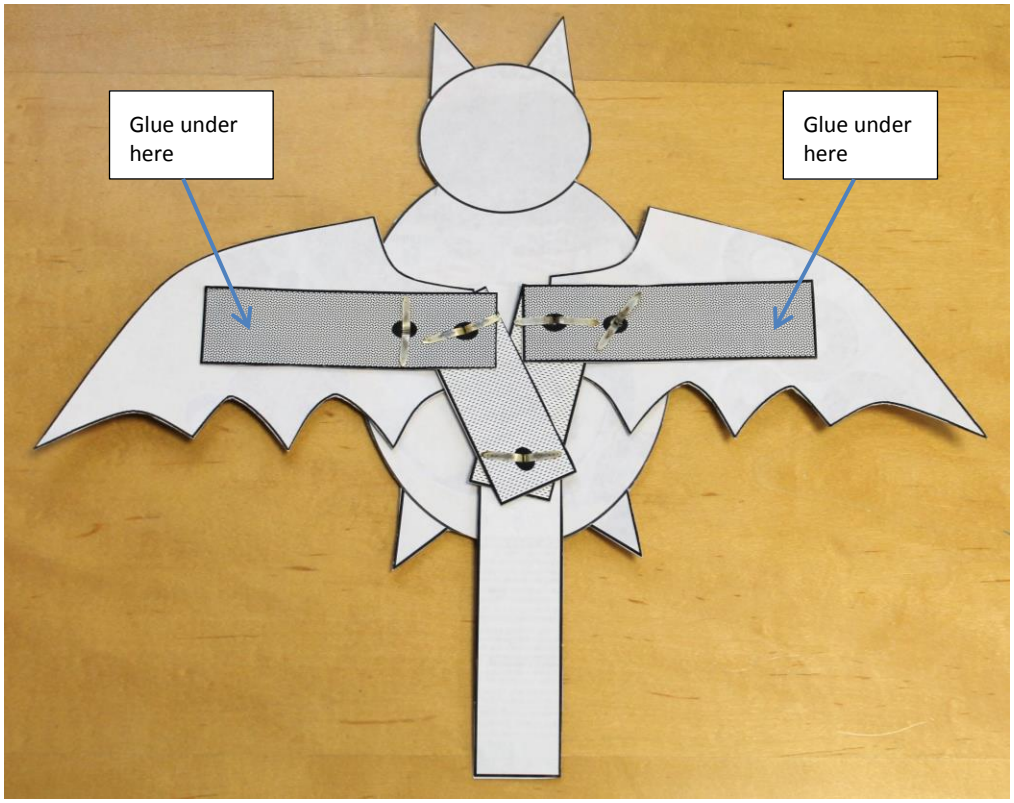


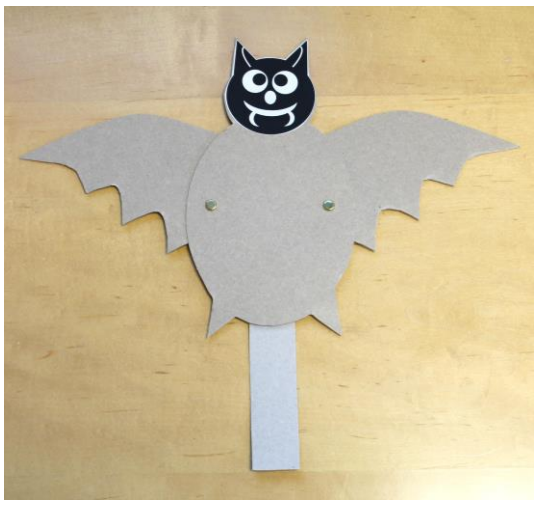
7. Attach the levers to the wings using the remaining holes and shut the fasteners. Secure the end of each side lever to the wing using a glue stick. Do not go beyond the paper fastener.

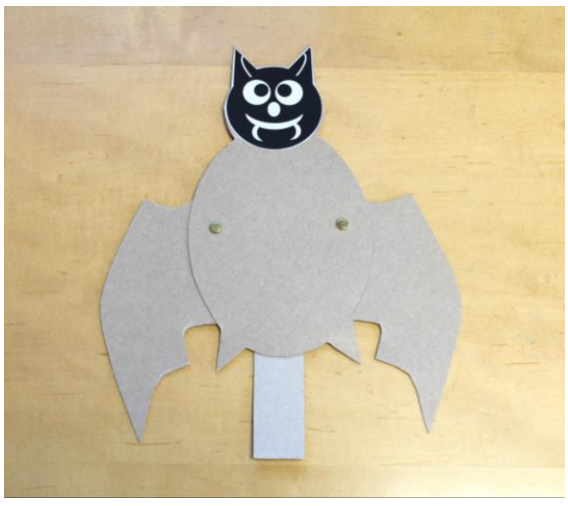
Be aware when doing this practical:

The children will need to check that their mechanism is functioning properly, and may need to adjust it before they stick it down.

Expected observations and results

Pushing the control linkage up and pulling it back down again will make the bat's wings flap.





Possible further activities

- Make other creatures using the same basic body template e.g. an owl puppet to be used in learning about the poem The Owl and The Pussy-Cat.
- Research the movement of other animals and use the same, or similar, linkage to create an alternative animal biomimicry moving picture.
- Make a gauge by hanging a clean yogurt pot from the bottom of a laminated linkage mechanism. As the pot is filled the linkage arms rise against a chosen scale drawn on to a background card.

Background notes

The bat's wings move because of levers. A lever is a rigid bar which moves around a pivot point and is a simple machine. A machine makes a task easier. Here the card strips are levers and the paper fasteners act as the pivots. Levers joined together are called linkages. Simple linkages change the direction of motion and the amount of force. The linkage used in this activity is a reverse motion linkage which means that applying force to the linkage in one direction causes the load to move in the opposite direction (as you pull the central stick downwards the wings move upwards).

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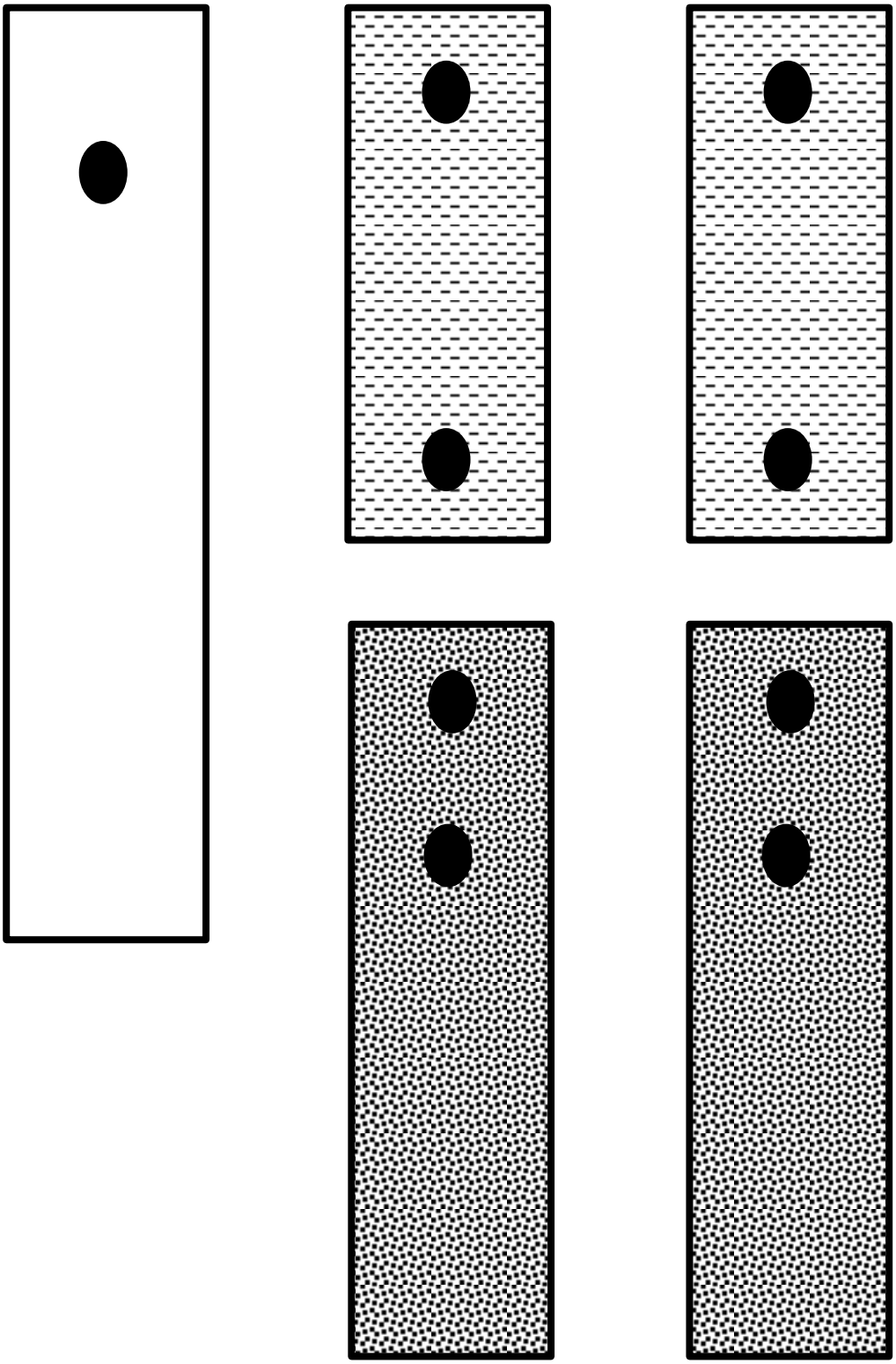
Levers template



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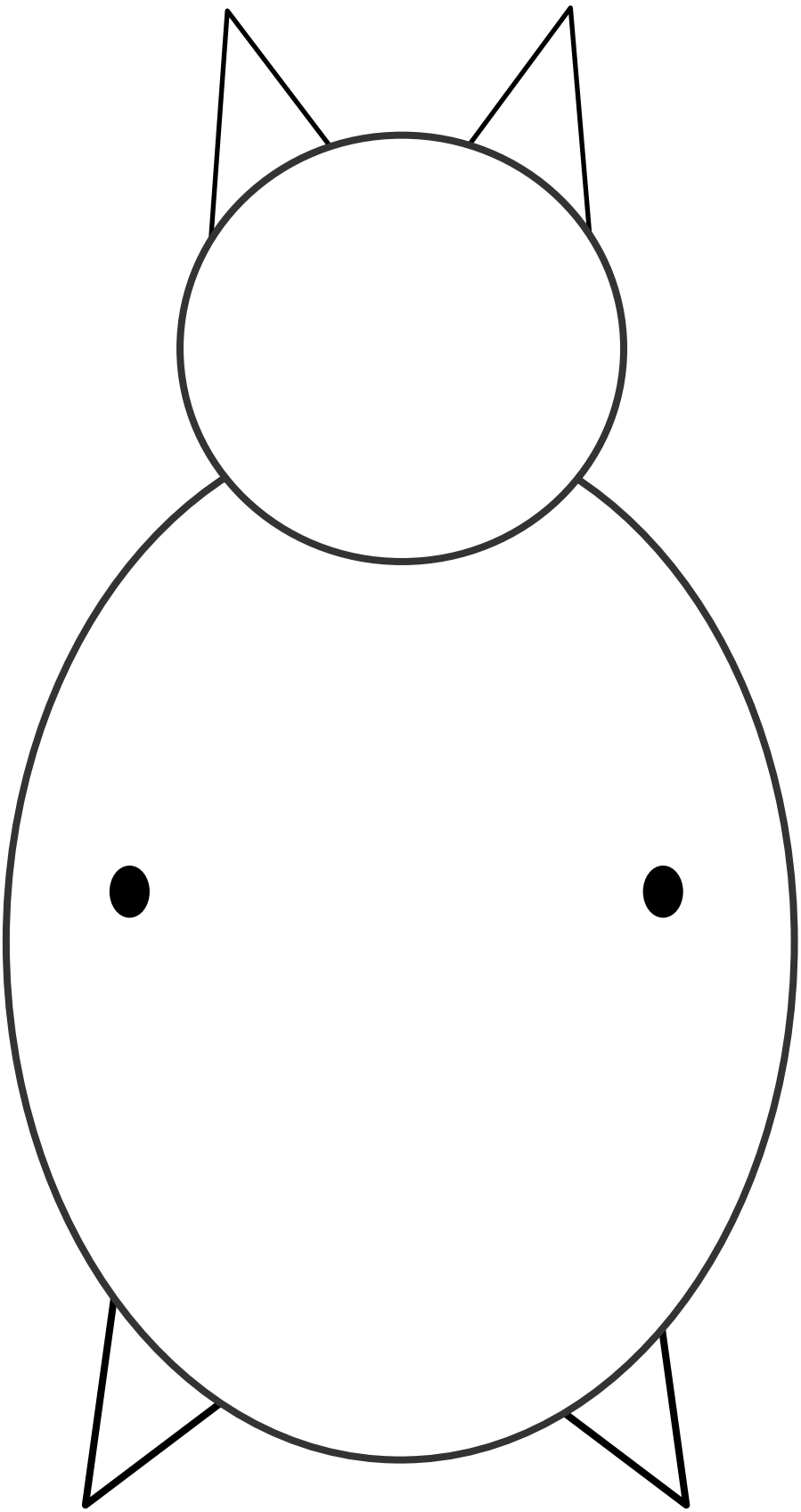
Bat body



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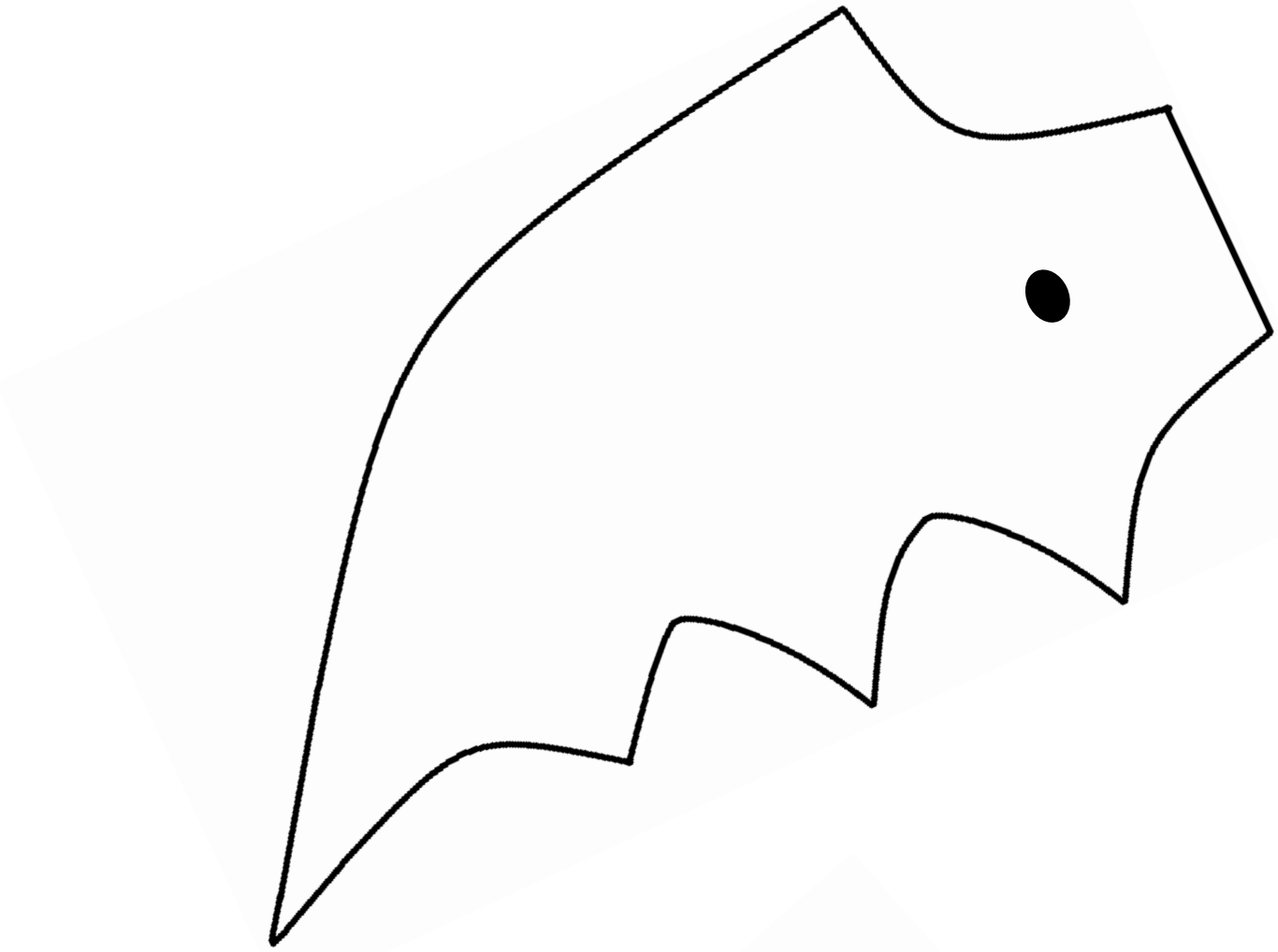
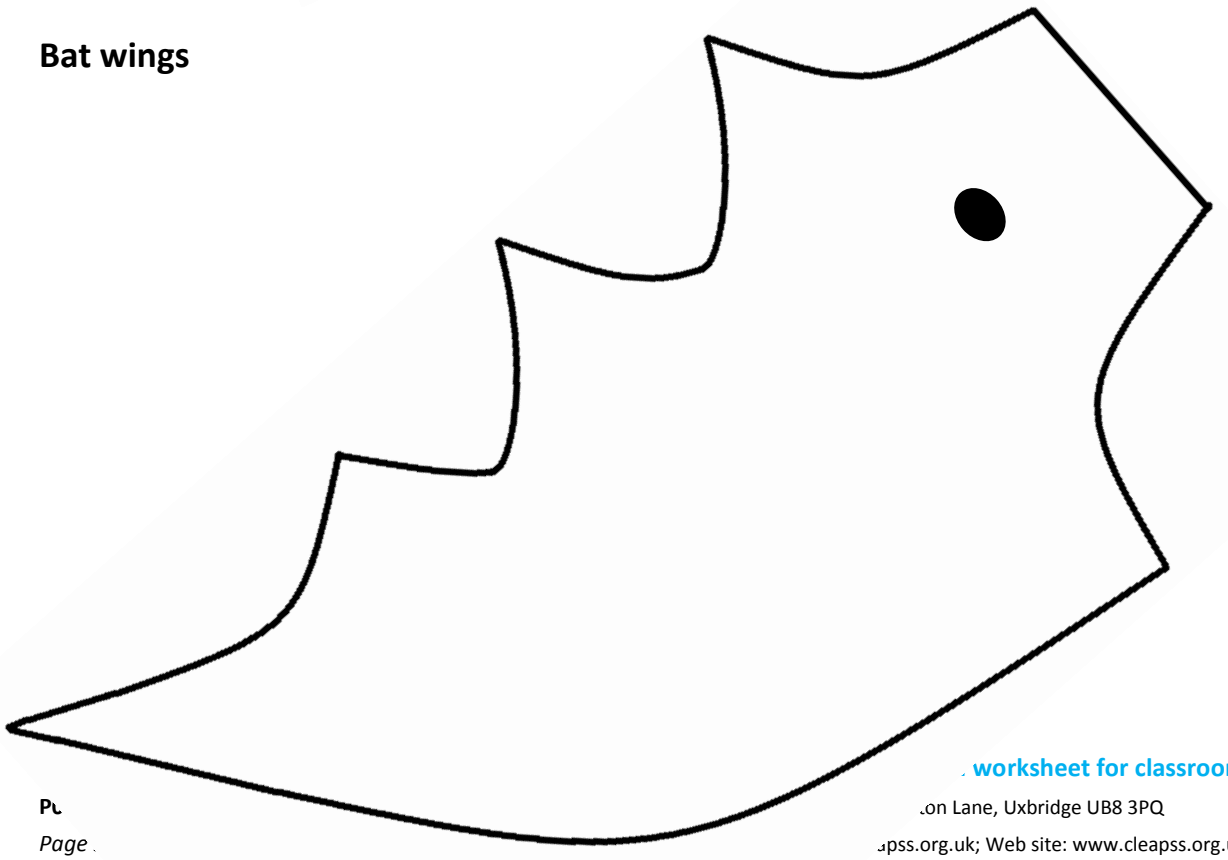
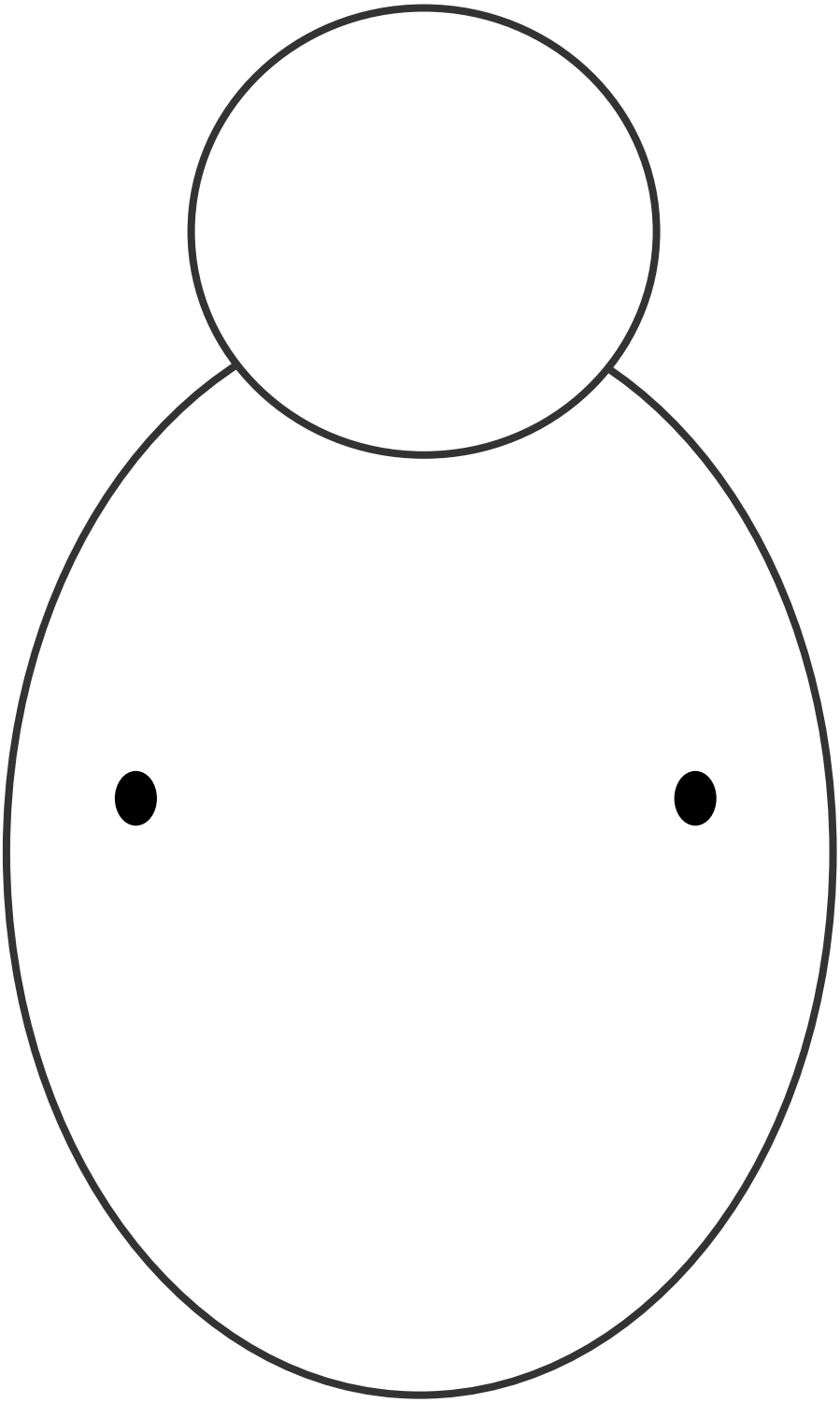
Bat wings





General body template for levers work



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