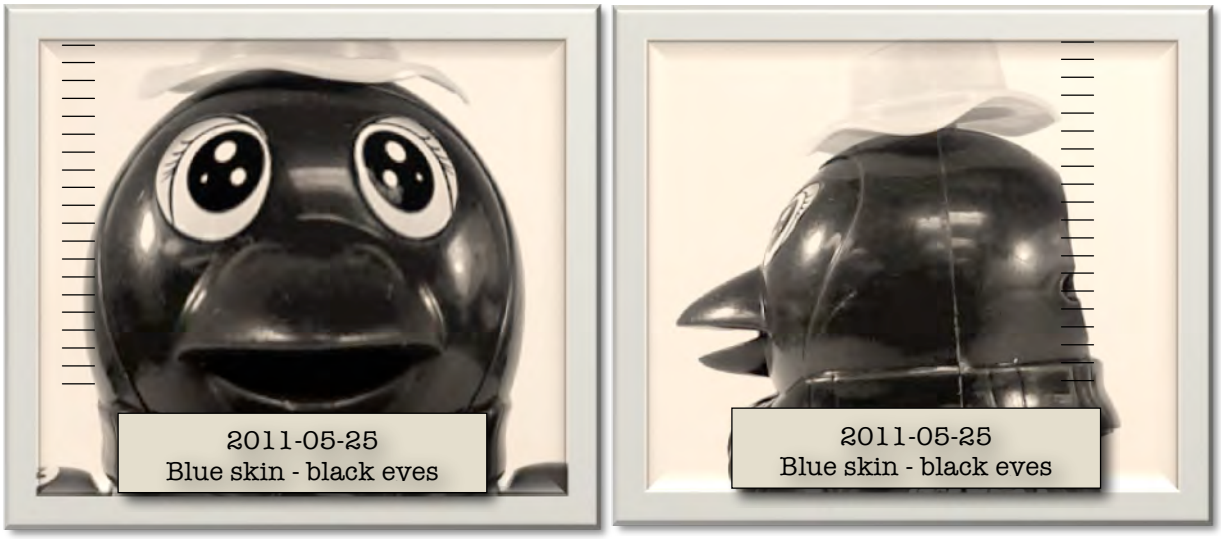
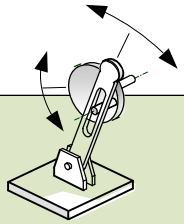
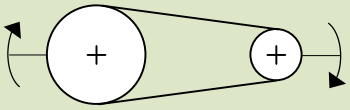
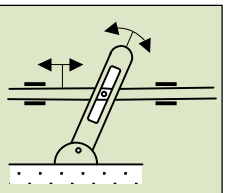
centre de développement pédagogique
pour la formation générale en science et technologie



ANIMATED PENGUIN FILE

June 2011

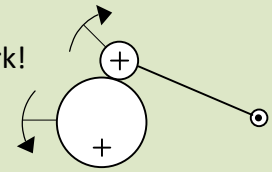
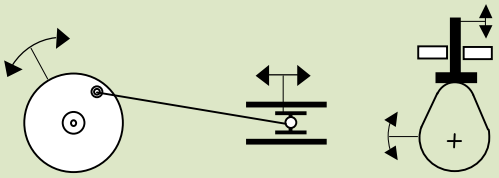




Your challenge:

Using your scientific and technical knowledge, you must carefully observe the main exhibit: a video sequence featuring the animated penguin.

With the help of your colleagues, you must imagine the mechanisms involved and the arrangement of these mechanisms.

Investigators, get to work!

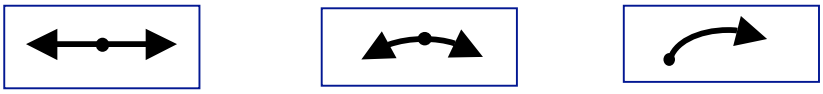



1. View the video sequence and note the movements observed on the images below.

2. As a team, imagine the mechanisms that would allow the production of the movements you have observed.

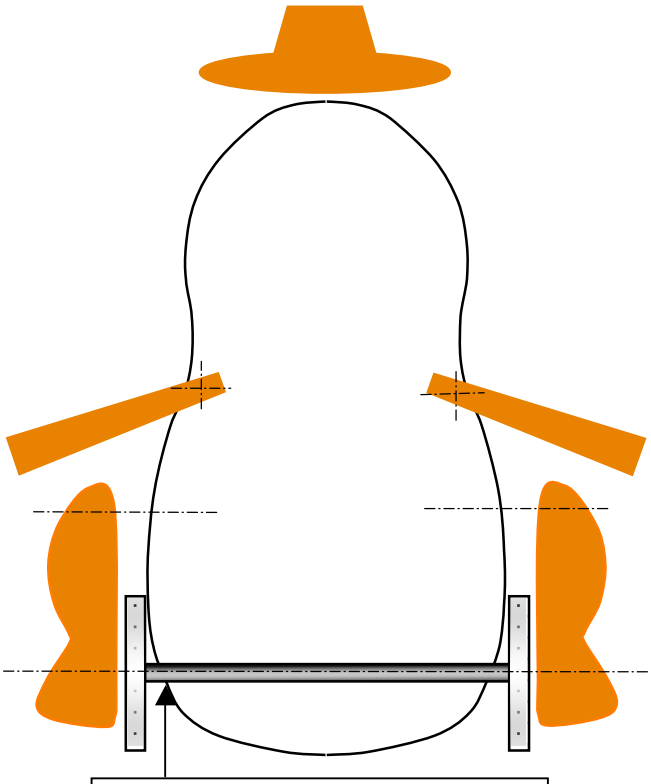
3. Represent your solution using the tools and the available materials.


To guide the thinking...

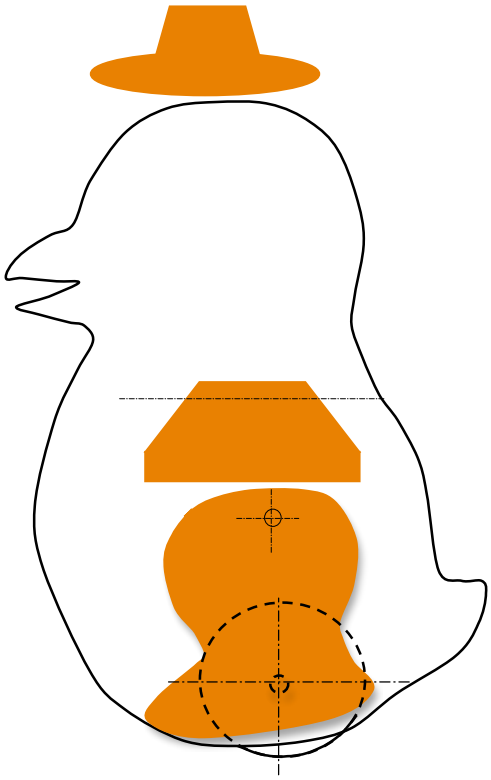


The hat and the wings

1. Indicate the movements of the hat, the wings, the legs and the axle on the diagrams below.

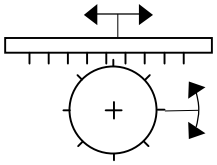


The axle is driven in rotation by a motor, not shown on the diagram.



3. Now here are some mechanisms for transformation or transmission of movement. For each, indicate whether it is a possible soultion for one of the movements observed and explain your answer.

a) Rack and pinion



❑ Yes, for what part? Explain your answer.

_____

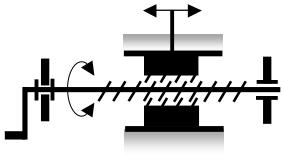
_____

❑ No. Explain your answer.

_____

_____

b) Nut and bolt



❑ Yes, for what part? Explain your answer.

_____

_____

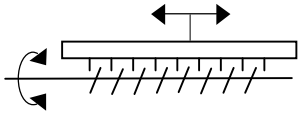
❑ No. Explain your answer.

_____

_____

c)

Bolt and rack



❑ Yes, for what part? Explain your answer.

_____

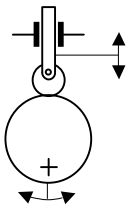
_____

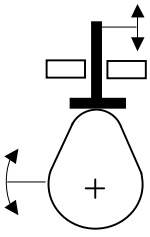
❑ No. Explain your answer.

_____

_____

d) Cam and roller





❑ Yes, for what part? Explain your answer.

_____

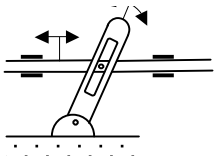
_____

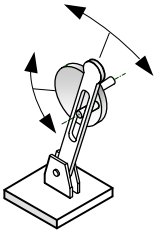
❑ No. Explain your answer.

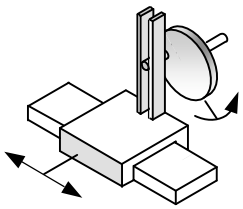
_____

_____

e) Crank and slide







❑ Yes, for what part? Explain your answer.

_____

_____

❑ No. Explain your answer.

_____

_____

You're now ready to built your articulated model using the equipment and materials provided.

4. Explain the working of your model using appropriate terms. We offer a library of words to use, if necessary, in your explanation.

Guiding in translation

Guiding in rotation

Free for rotation

Free for translation

Linked for rotation

Linked for translation

Partial rotation

Transmission of movement

Transformation of movement

Motion part

Receptor part (driven part)

Clearance between the parts