HOW MANY WAYS CAN YOU MOVE YOUR KNEE?

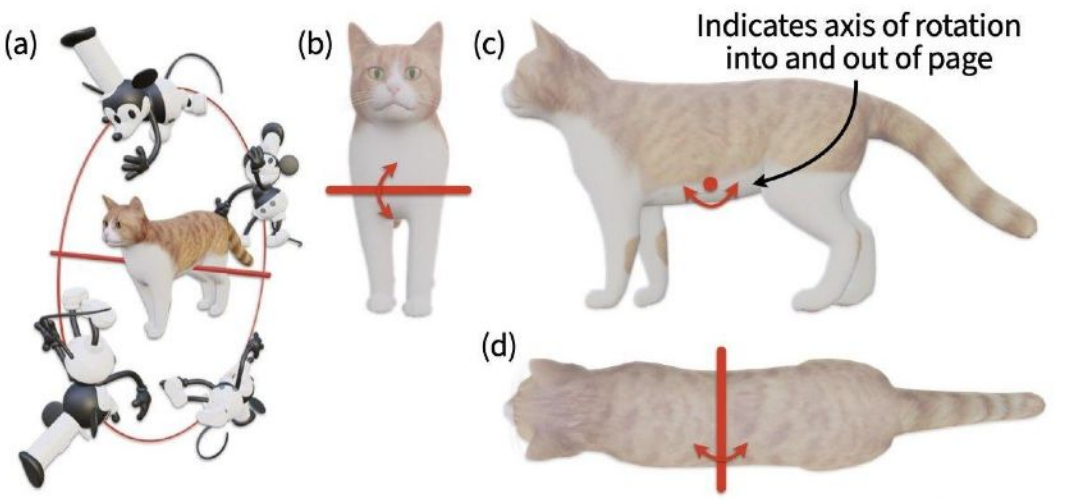
Instructions

In this activity, you'll use your knee kit to simulate all of the motions of the knee and draw the knee's motion axes.

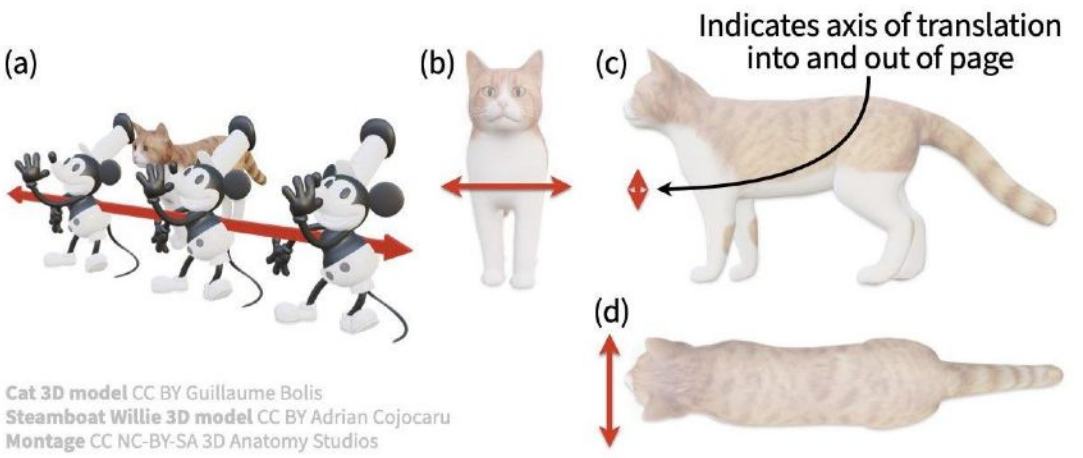
What are motion axes?

Motion axes can be used to describe the path an object takes as it moves relative to another object. Importantly, a motion axis is not the path itself, but a vector that can be used to describe the path.

For a circular path, the motion axis is an **axis of rotation**, a 3D vector oriented 90 degrees relative to the circular path that through its center (i.e., the "central axis" around which the object is "orbiting"). This 3D vector can be represented in 2D by **projecting** the vector onto multiple views, as shown in the figure below.



If the path the object takes is a straight line, the motion axis is an **axis of translation**, a 3D vector parallel to (aligned with) the object's direction of movement. For this activity, the *position* of the translation axis doesn't matter, only its *orientation*. This 3D vector can also be projected onto multiple 2D views, as shown in the figure below.



How to draw your knee's motion axes

Simulate each of the four motions of the knee using the videos on the webpage linked below to help you simulate each knee motion. For each motion, draw lateral, anterior, and superior projections of the motion axis on the diagrams on page 2 of your worksheet, using the diagrams above as a reference.

Find the motion videos at:
guides.3das.us/link/81

Find the station worksheet at:
guides.3das.us/link/142