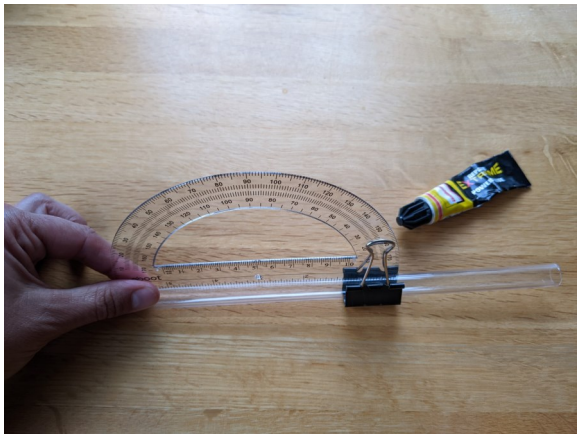
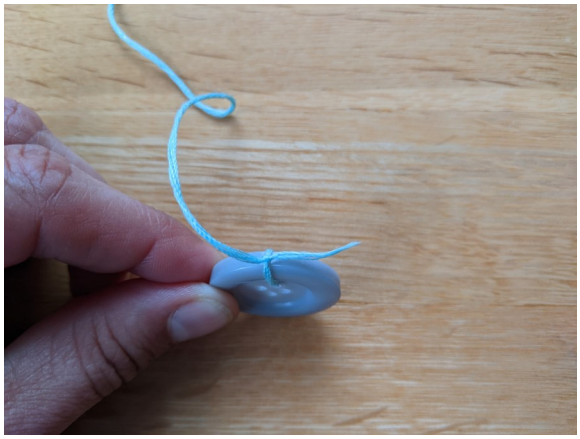
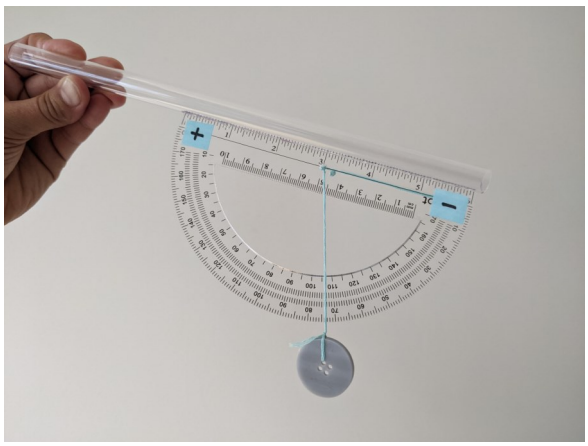
Make your own Clinometer

You will need:

- A large plastic protractor
- A jumbo plastic (reusable) boba straw (12mm diameter x 254mm length)
- A button (or thread-able weight)
- Embroidery thread (ideally in a bright colour)
- Superglue
- Sticky tape
- Large bulldog clips (optional)







Instructions:

1. Using a thin layer of superglue, fix the protractor to one end of the boba straw. Hold it firmly in place until it is fully dry and immovable. Check carefully that the protractor is precisely parallel with the sides of the straw. Two large bulldog clips may be useful here to stabilise the straw and hold the protractor in place while the glue dries.

2. Measure the distance from the straight edge of the protractor to the 90° mark on the curved edge. Multiply this distance by three and cut this length of embroidery thread. The excess thread is there to ensure that you have enough to tie off both ends securely.

3. Thread one end of the thread through your button and tie two overhand knots on the button edge to secure it in place.

4. Attach the other end of the thread to the exact middle of the straight edge of the protractor. In this example, a protractor with a makers hole has been chosen, through which the thread can be tied. If this is not available, use sticky tape to secure the thread, ensuring it can continue to swing freely. The button should hang around 2cm below the curved edge of the protractor. Cut off or secure the end of the thread with sticky tape so that it does not hinder the movement of the weighted thread.

5. Using a standard protractor like this means that a gradient of 0° will be read as 90°. When in use, ensure that students are recording the variance from 90°. You may wish to add '+' and '-' stickers to each end of the protractor's straight edge to remind them to record up and down gradients accurately.

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