

POWERING THE FUTURE

Learning Lab.

Hydrogen Hurry



SCIENCE
SKILLS
ACADEMY

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ASC
ABERDEEN SCIENCE CENTRE



GLASGOW
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CENTRE!**

Registered Scottish charity SC030809

Teacher Instructions

Resources

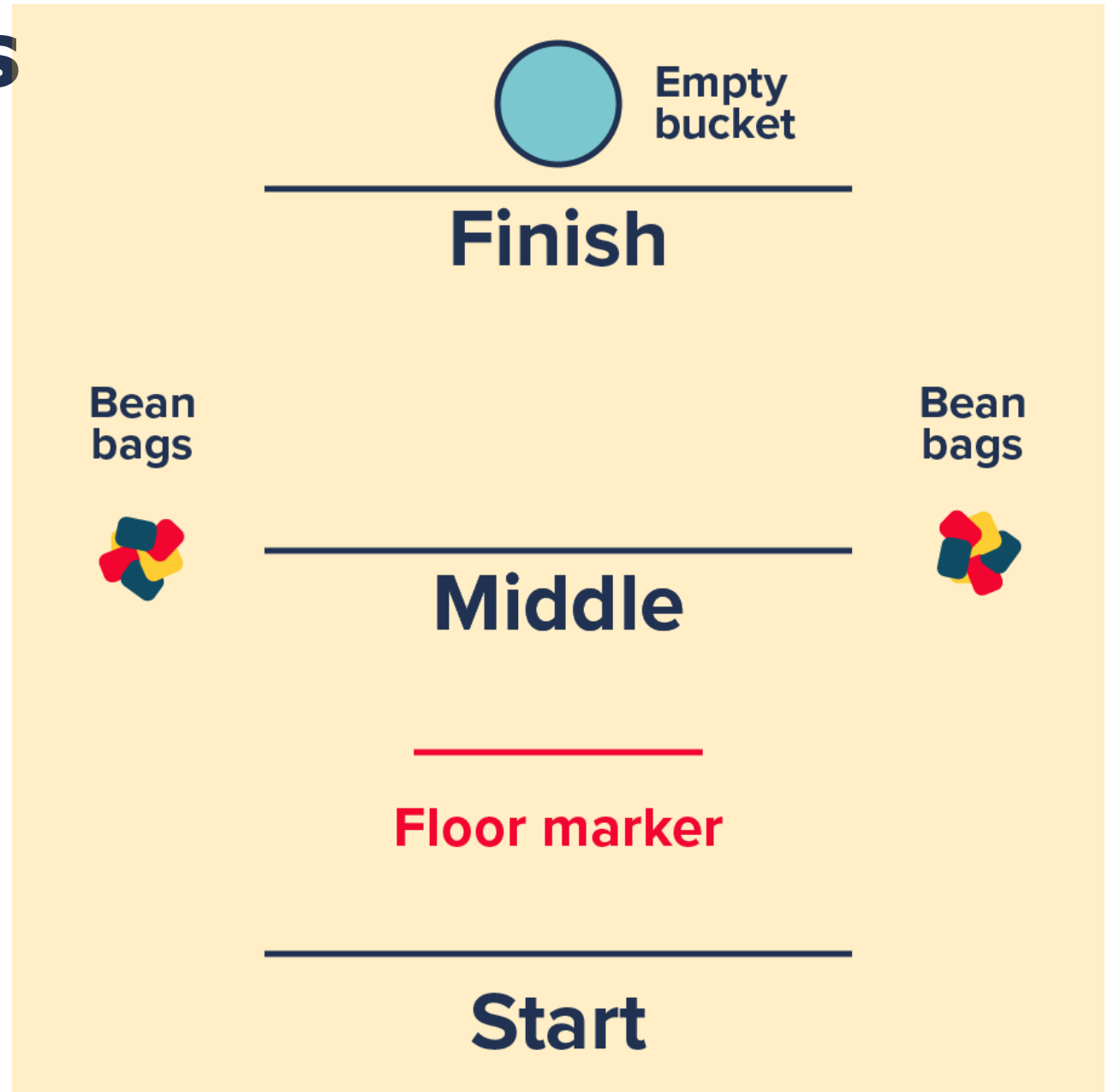
- Gym hall/large space
- A floor marker (e.g. cones or coloured sticky tape)
- Small bean bags
- Empty bucket for bean bags
- Vests/bibs

Teacher Instructions

Set up a gym hall/large space as shown here.

The activity can be run 2 ways:

- With larger classes, split the class into 2 teams and create 2 set-ups as shown.
- With smaller classes, create 1 set of the equipment as shown.

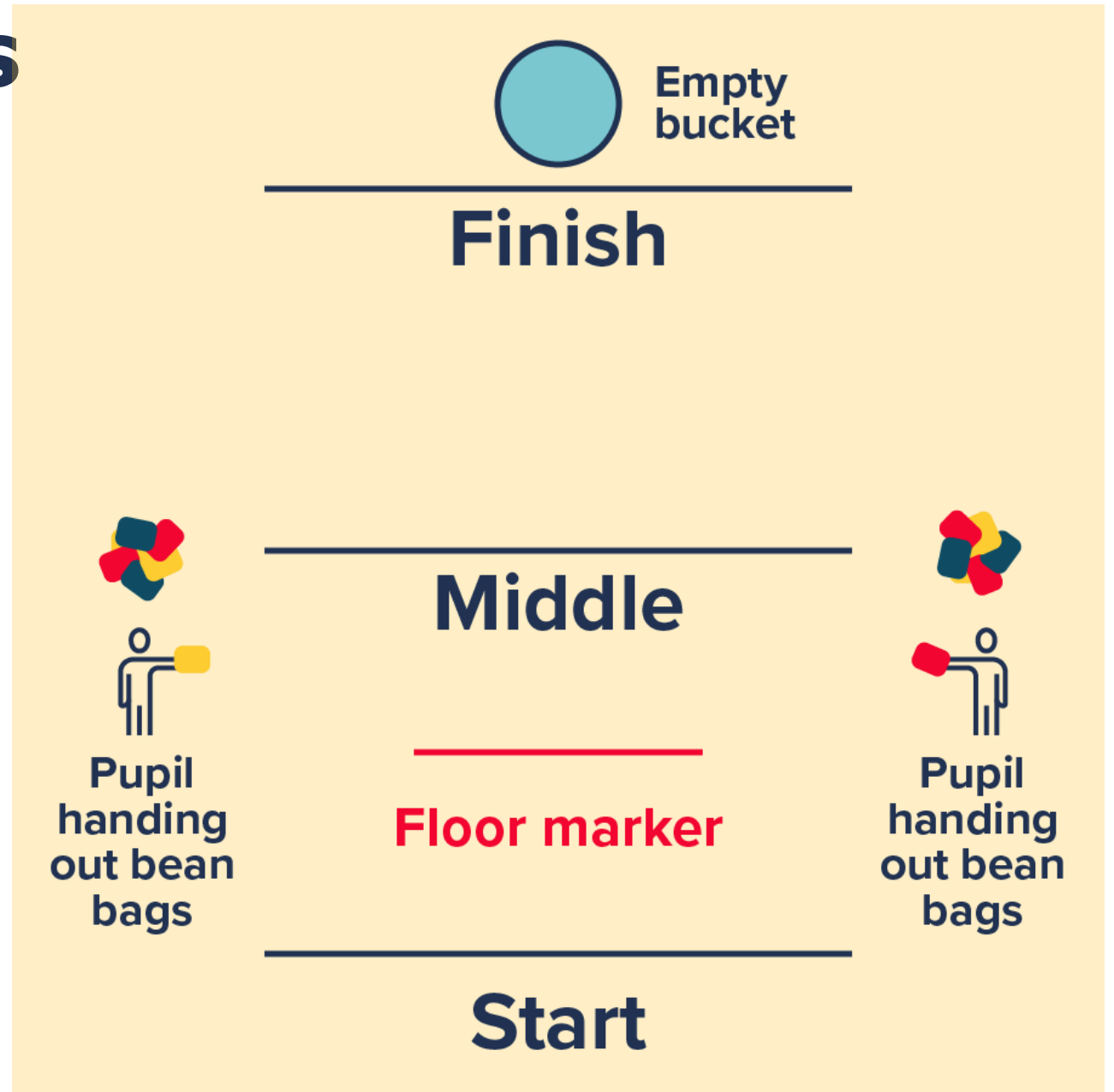


Teacher Instructions

In each team, pupils will run the race in groups of 3.

If numbers don't allow this, pupils can be placed at the bean bag station to hand out the bean bags, instead of asking groups to pick them up from the floor.

Or 1 pupil can be tasked with starting and timing the race.



Pupil instructions

You are going to run an electrolysis relay race.

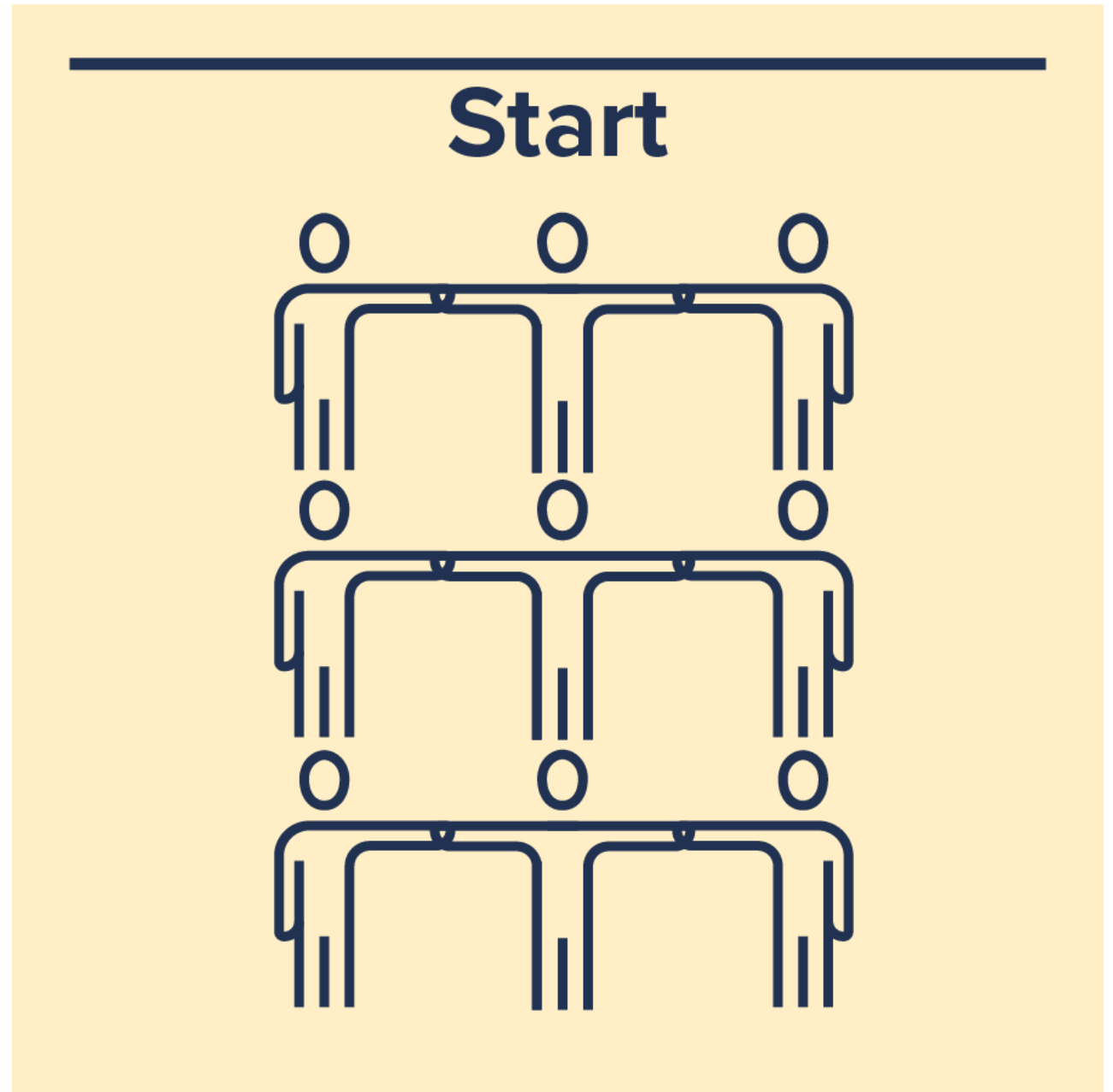
The first half of the race represents electrolysis, which collects hydrogen gas.

The second half of the race represents hydrogen being used in a fuel cell to generate electricity.

Pupil instructions

You will work in groups of 3.
Your group of 3 should be side-by-side, holding hands.

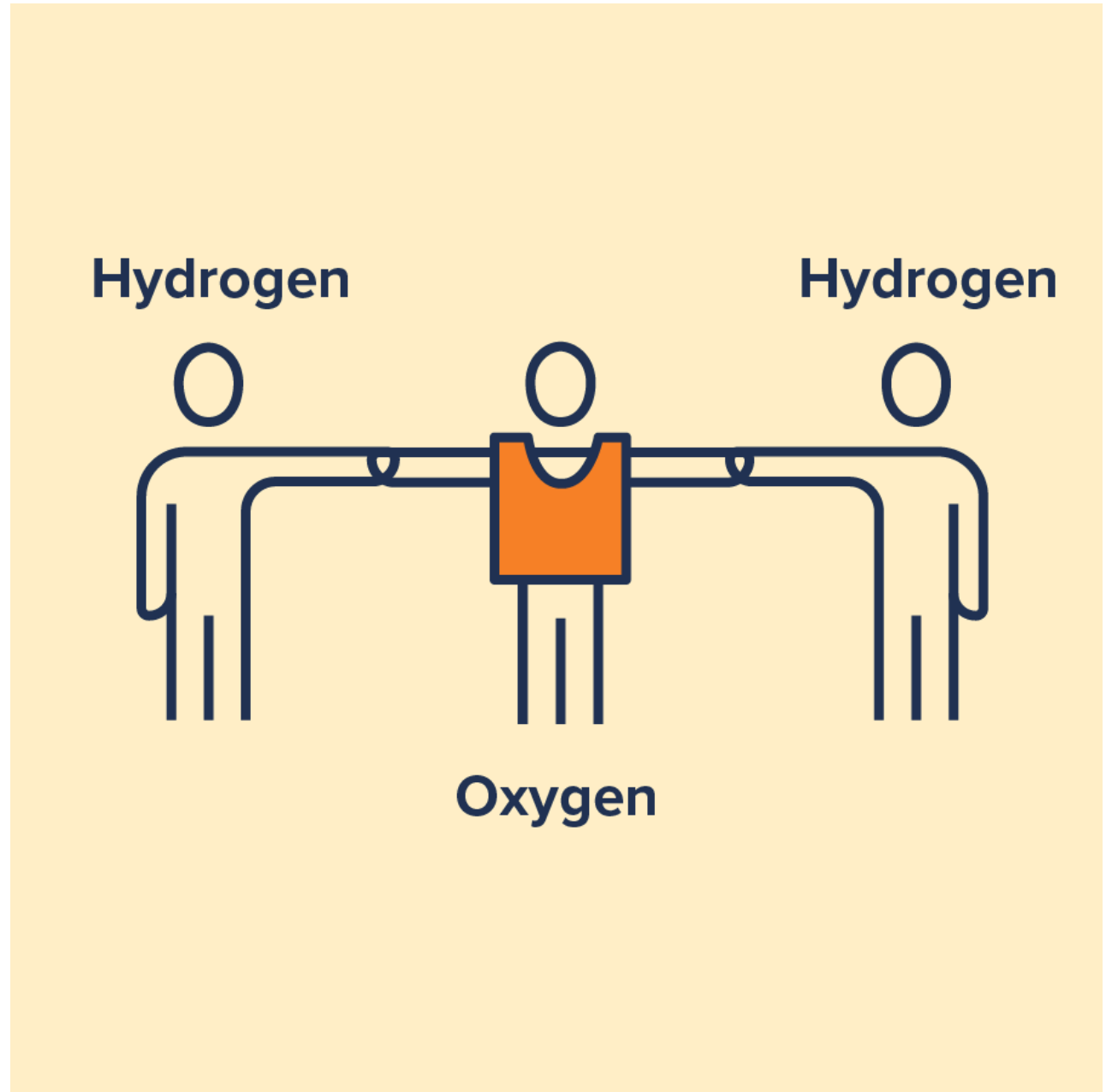
Form a queue in your group behind the start line.



Pupil instructions

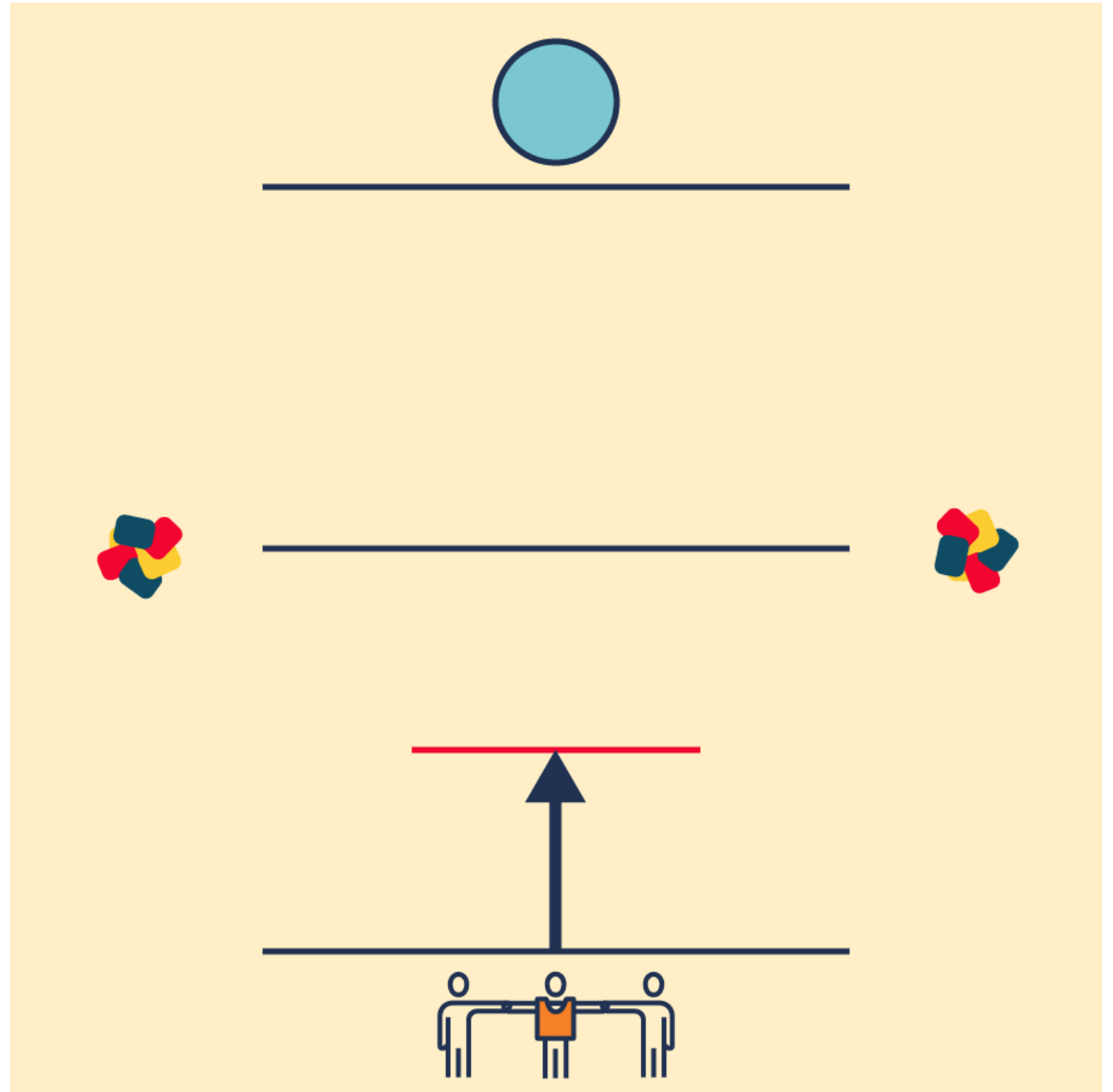
The middle person is oxygen, and the other 2 people are hydrogen. Together, you are a water molecule.

Your teacher will hand out a vest to be worn by the person in the middle of the group.



Electrolysis

When the race begins, the first water molecule in the queue can move. Keep holding hands, but get to the 1st floor marker as fast as you can.

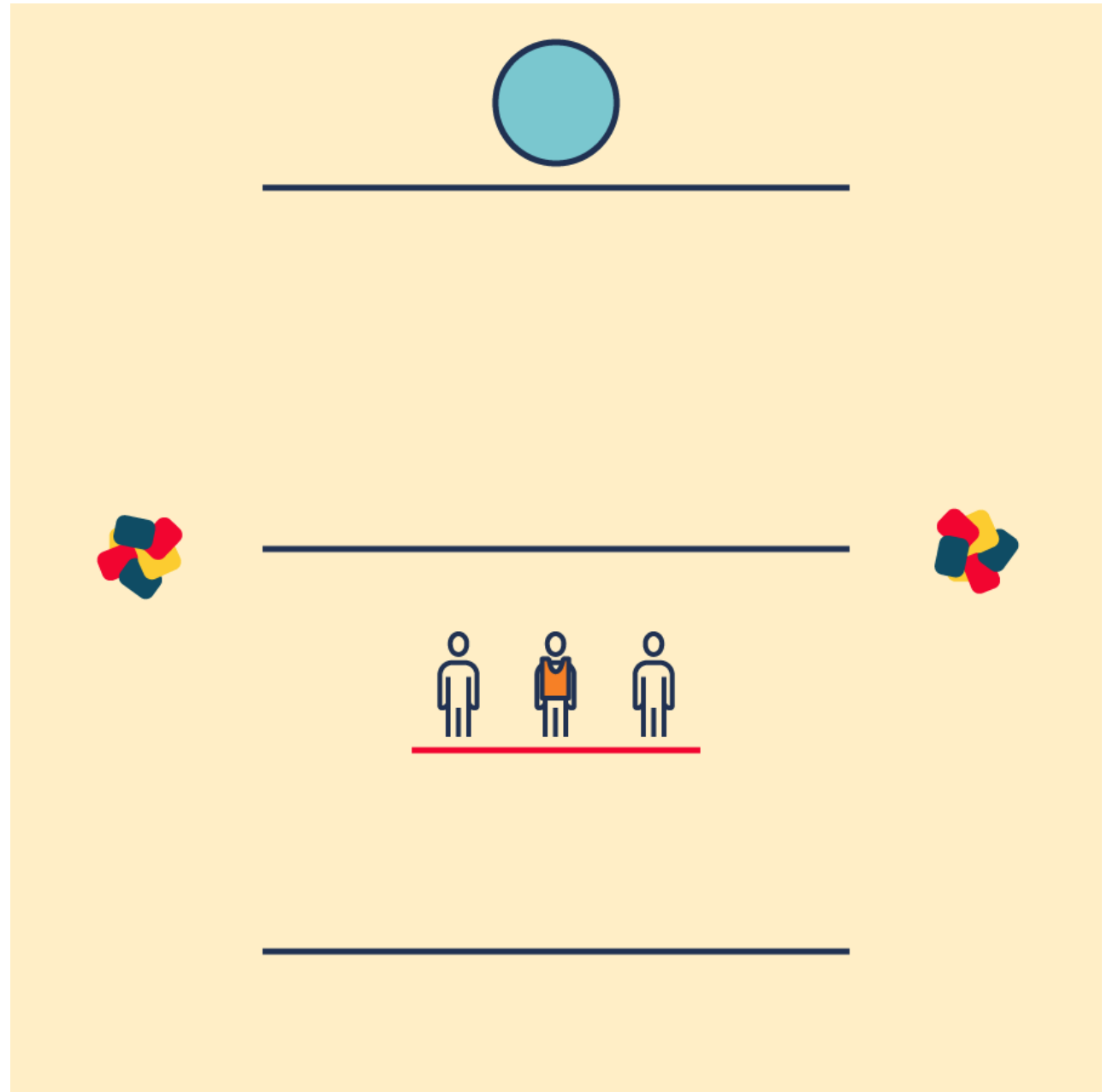


Electrolysis

This floor marker means that your water molecule has gone through electrolysis.

The oxygen and hydrogen have been split apart.

You can stop holding hands when you pass this mark.

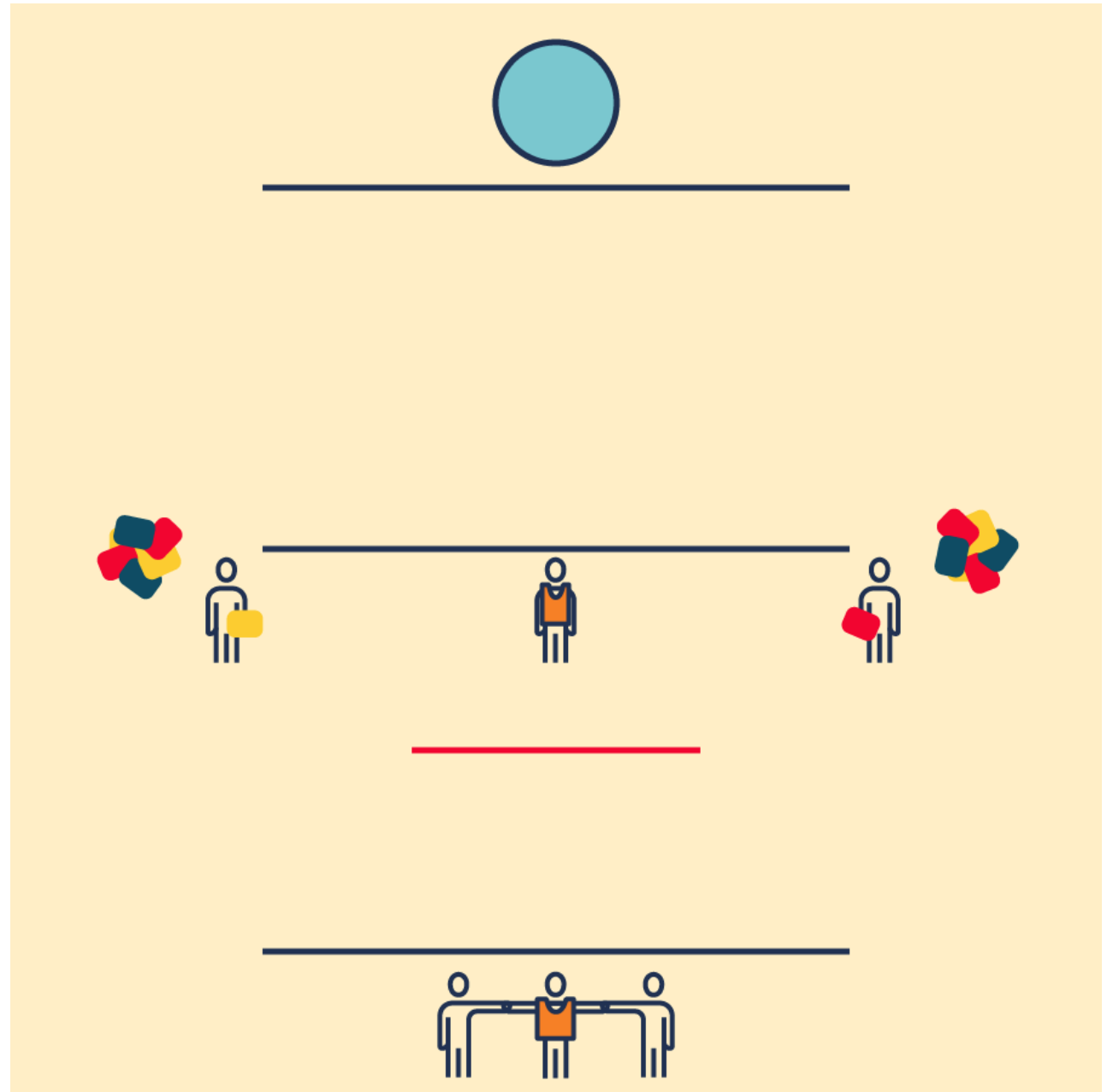


Electrolysis

When you get to the middle,
stop and wait.

Everyone who is a hydrogen
should pick up a bean bag.

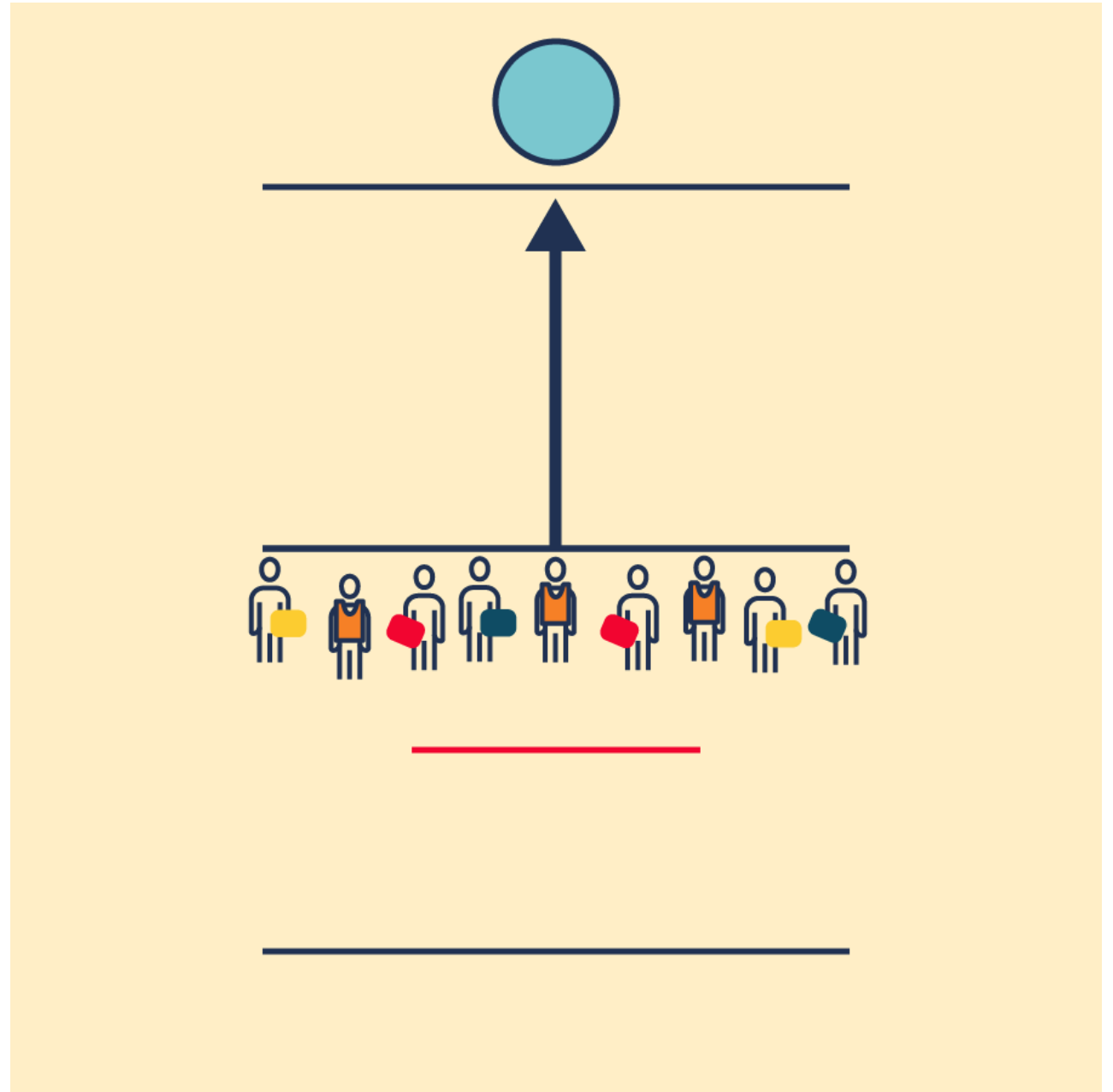
The next water molecule can
now move.



Hydrogen fuel cell

When every water molecule in your team has gone through electrolysis, it's time to use the hydrogen to generate electricity.

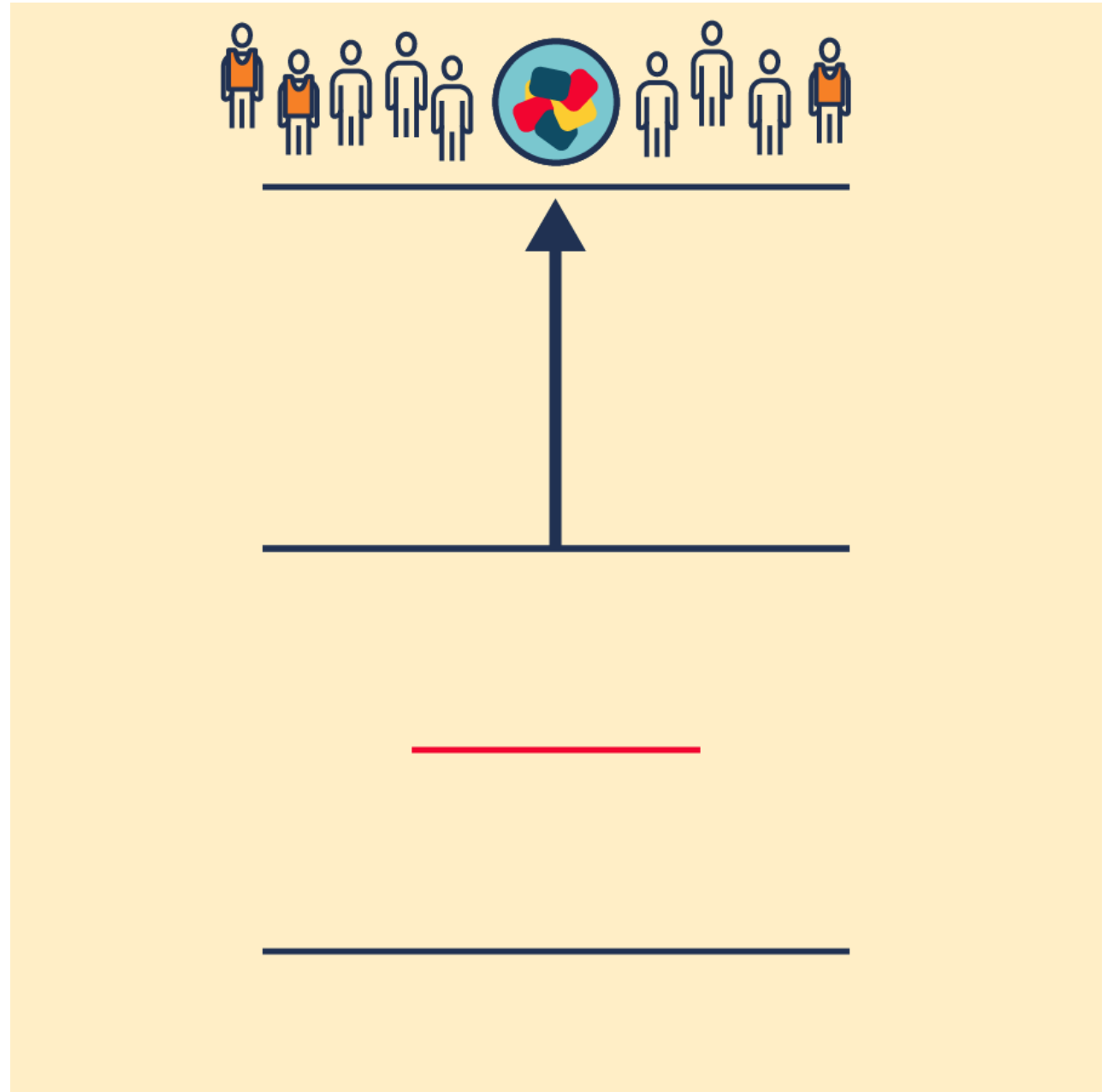
Everyone move to the bucket at the end of the room.



Hydrogen fuel cell

Hydrogen atoms should drop their bean bag in the bucket.

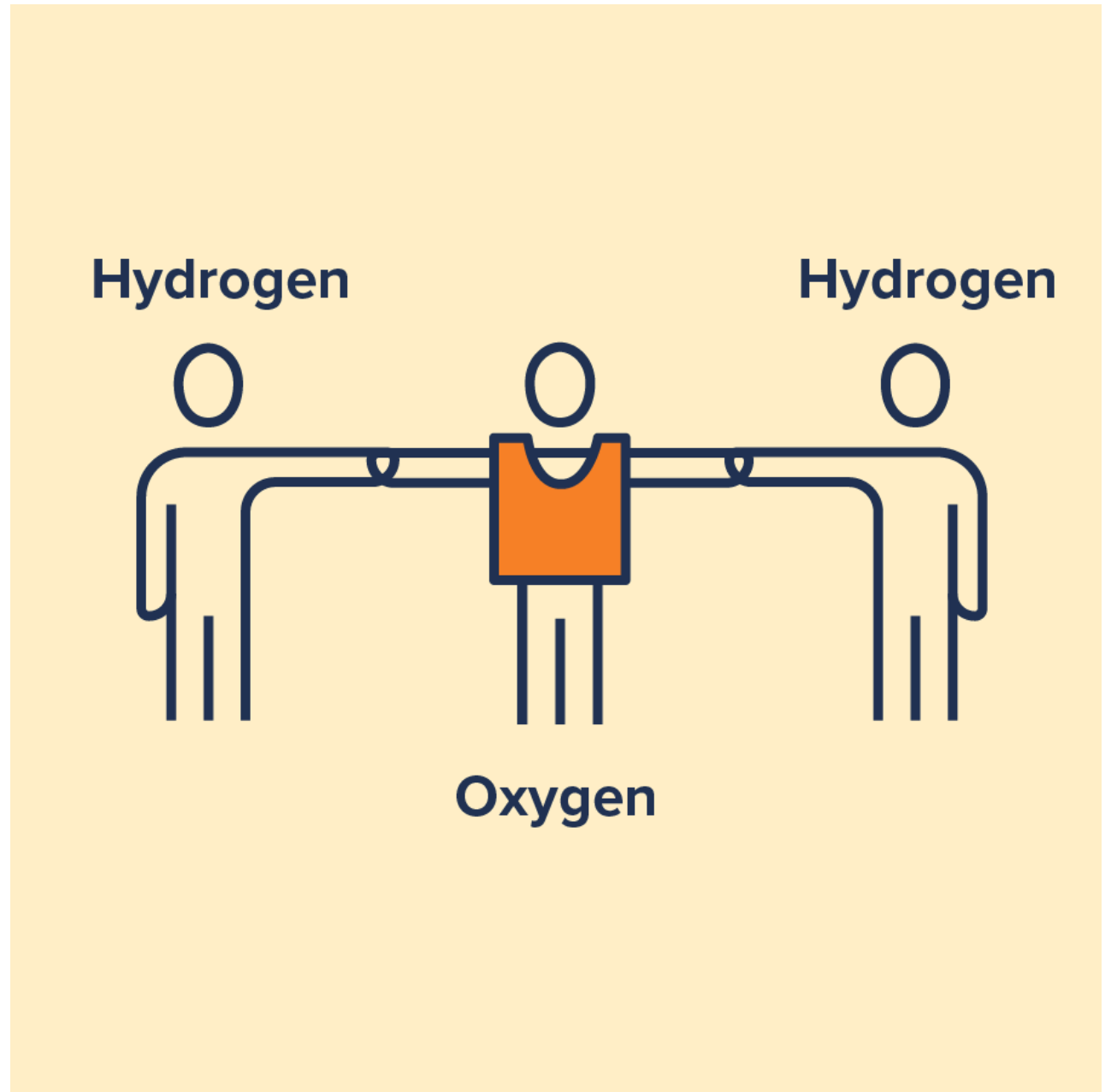
This represents electricity being generated using hydrogen fuel in a fuel cell.



Hydrogen fuel cell

As quickly as possible, everyone should form a water molecule at this end. You don't need to find your original group.

Remember, this should have an oxygen in the middle and two hydrogens at either end.



While holding hands, loop round the outside of the race and go back to the start line.

Repeat the whole thing until your teacher shouts stop, or you run out of bean bags.

