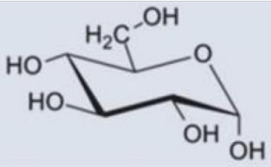
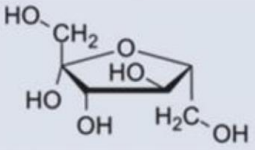
Sequence 1: spatial structure of chemical species (test)

Objective: testing your knowledge on optical properties of chiral molecules

DOCUMENT 1: Specific rotation of sugars

Sugar	Structure	Specific Rotation
Glucose a.k.a 'D-glucose' or 'dextrose'		+52.7°
Fructose a.k.a. 'levulose'		-92°

Source: Royal Society of Chemistry

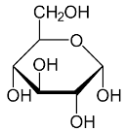
Testing your vocabulary: /10pts

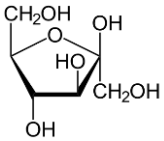
Find a translation for the following expressions:

English	French
specific rotation	
	chiralité
	sucre
	filtre polarisant
	bécher
dextrorotatory	
	polarisé
	lentille
	réactif
	réaction chimique

Reinvesting: /4pts

Explain why fructose and glucose are chiral molecules.

Glucose 

Fructose 

Which physical property of chiral molecules was illustrated in the video we studied?

_____

_____

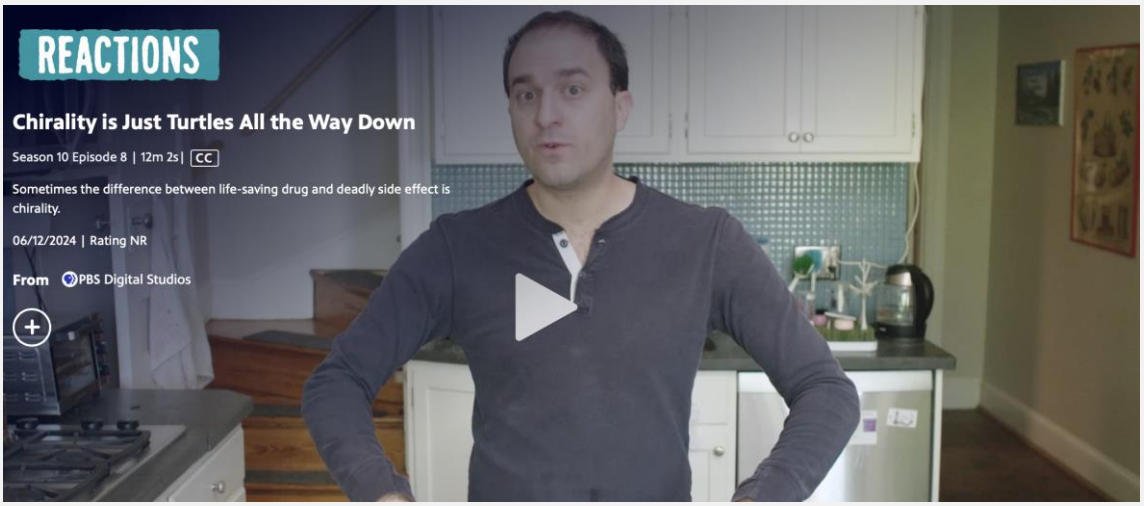
What happens when the scientist rotates the polarising filter behind the two samples? Do both samples behave the same?

_____

_____

■ Watching a new video and testing your understanding: /6pts

DOCUMENT 2: Chirality is Just Turtles All The Way Down



Source: PBS Chemistry

Fill in the blanks: start the video at 1:24

The real molecule you're looking at, that's L-DOPA.
The molecule you're seeing in the mirror, that's D-DOPA.
So L-DOPA and D-DOPA are _____ _____ of each other, and the atom that's responsible for making those two molecules mirror images of each other is this one.
But the thing is, these mirror image molecules are not _____, and chemists call molecules that are non-super imposable mirror images of each other _____.
And you can see that most clearly if I try to overlap them on each other.
So I'm gonna take this one and rotate it behind this one.
And you can see this oxygen lines up with this oxygen, this hydrogen lines up with this hydrogen, and so on all the way through the molecule, until we get to this carbon right here.
On this one, the nitrogen sticks out towards you.
On the back molecule, the nitrogen sticks out towards me.
And there is no amount of _____ or flipping or anything that I can do in three dimensions that will turn this front molecule into this back molecule.
These atoms will never _____.
And so these in fact are two _____ _____.