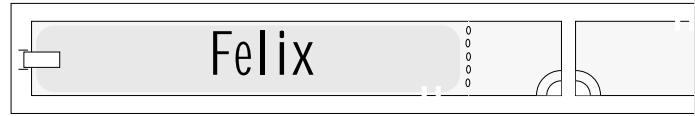
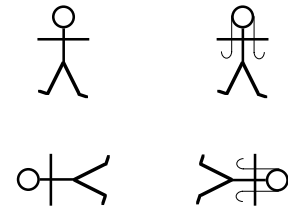


PHYZ SPRINGBOARD:
THIS WAY & THAT WAY IV
ROTATION

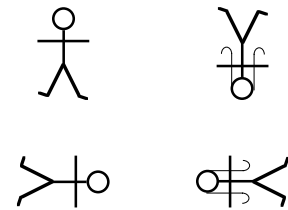


1. Both little people in the diagram to the right have rotated $1/4$ revolution. How can we distinguish the *angular displacement* (change in orientation) of the dude from that of the dudette? For example, we cannot say each had an angular displacement of " $1/4$ revolution," since that would suggest they moved the same way.



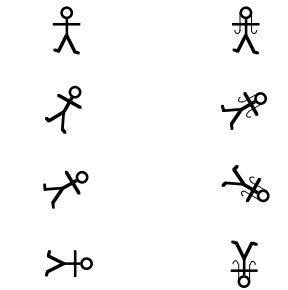
DUDE: $1/4$ rev (or $\pi/2$ rad) counterclockwise.
DUDETTE: $1/4$ rev (or $\pi/2$ rad) clockwise.

2. Consider the dude and dudette to the right. Who had the larger displacement, or did they undergo the same displacement? Justify your answer.



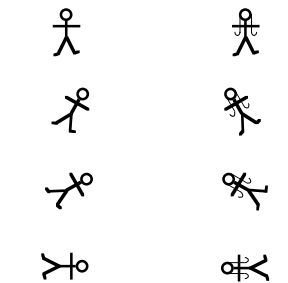
Same displacement.

3. How would you characterize the difference between the motion of the dude and the dudette shown in the sequential images taken at equal intervals and shown to the right?



Dudette has a greater angular speed than dude.

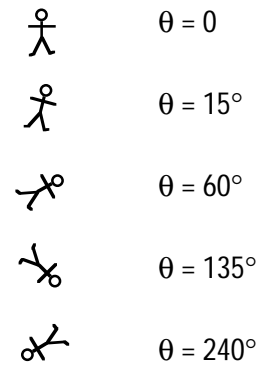
4. How would you characterize the difference between the motion of the dude and the dudette shown in the sequential images taken at equal intervals and shown to the right?



Dude and dudette have same angular speed, but dude's angular velocity is clockwise while dudette's angular velocity is counterclockwise.

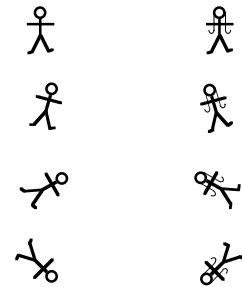
5. How would you characterize the motion of the dude shown in the sequential images taken at equal intervals and shown to the right?

Dude has increasing clockwise angular velocity (clockwise angular acceleration).



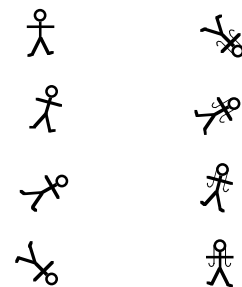
6. How would you characterize the difference between the motion of the dude and the dudette shown in the sequential images taken at equal intervals and shown to the right?

Dude has increasing clockwise angular velocity (clockwise angular acceleration); dudette has increasing counterclockwise angular velocity (counterclockwise angular acceleration).



7. a. How would you characterize the difference between the motion of the dude and the dudette shown in the sequential images taken at equal intervals (1s) and shown to the right?

Dude has increasing clockwise angular velocity; dudette has decreasing counterclockwise angular velocity.



b. How would you characterize the **similarity** of the motion of the dude and the dudette shown in the sequential images taken at equal intervals and shown to the right? If you're not sure, try completing the tables below: one for the dude and one for the dudette.

Clock Rd. t (s)	Position θ ($^\circ$)	Velocity ω ($^\circ/\text{s}$)	CR. mid t (s)	Acc. ω ($^\circ/\text{s}^2$)
0	0	15	0.5	30
1	15	45	1.5	30
2	60	75	2.5	
3	135			

Clock Rd. t (s)	Position θ ($^\circ$)	Velocity ω ($^\circ/\text{s}$)	CR. mid t (s)	Acc. ω ($^\circ/\text{s}^2$)
0	135	-75	2.5	30
5	60	-45	1.5	30
10	15	-15	12.5	
15	0			

Both have the same clockwise angular acceleration!