

PRACTICE

Activity 8: Forces and Direction of Motion

Name _____

Date _____

Class _____

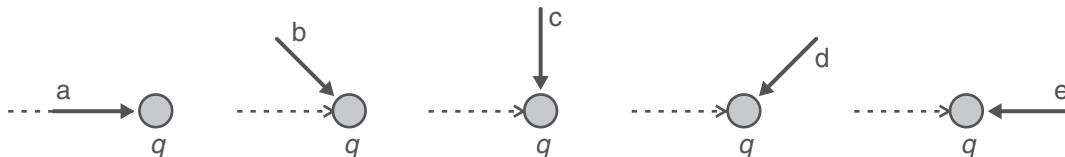
1. A field-hockey ball is rolling across the field. One of the field-hockey players hits the ball, swinging her stick at an angle to the ball's path. Will the ball continue in its original direction? Write your reasoning.



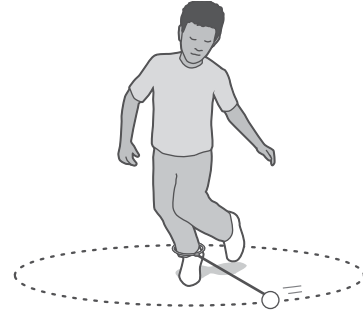
2. Suppose a ball rolls across a level table top in a path shown by the dotted line from point p to point q . At point q , a single force from a hand will give the ball a quick push.



The force can come from different directions, as represented below by the force arrows (a) through (e). Which of these forces from the hand would cause the ball to move along a different line of motion (path)? (There may be more than one answer.)

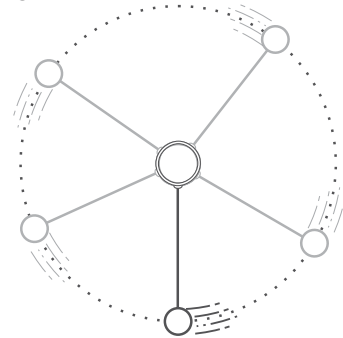


3. A “hopper ball” consists of a hoop that fits around an ankle, with a string and ball attached to the hoop. You use your ankle to swing the ball around in a circle on the ground and jump in place over the string with your other leg.



- a) On the diagram at the right, draw a force arrow showing the force exerted by the string on the ball. Do this for each position of the ball in the picture. Label one of the force arrows.
- b) Use force ideas from this activity to write why the hopper ball moves in a circle.

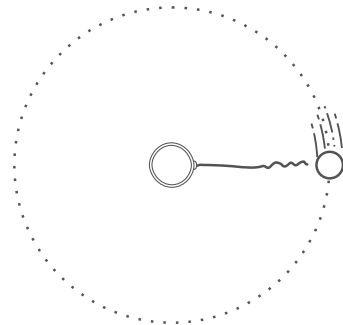
top view



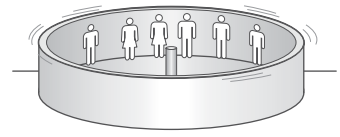
- c) Suppose you were twirling the hopper ball around, and the string breaks at the position shown. From this position, *draw the path* that the ball would move across the ground after the string breaks.

Write why you drew the path as you did.

top view



4. A popular ride at the fair is the “Whirl Around.” Riders laugh and scream as the ride tilts one way and then another. Sometimes, the floor even falls out from under their feet.



- a) What type of interaction causes the riders to spin around?

- b) What are the interacting objects in this interaction?

- c) On the diagram, draw and label a force arrow that shows the force exerted on the riders by the “Whirl Around.”

