

# Depth Perception

“Heads up!” shouts your soccer coach.

Immediately you all look back and see the soccer ball soaring toward your opponent’s goal. Using your sense of vision you instantly estimate the distance and the speed of the approaching ball. Like a pro you jump, head-butt the ball, and block the charge of your opponent. Time is called, your team wins, and you’re carried off the field like a star.

Every day you use your sense of vision to perform complicated tasks that require you to judge distances. You are able to complete these spatial tasks because you have two eyes set forward in your cranium. This provides you with **binocular** vision (the prefix “bi” means two). This **binocular vision** is what allows you to be able to perceive distance or depth. Let’s do some experimenting to explore how binocular vision affects your **depth perception**.

## Materials

- Markers
- Two Depth Perception Targets (see last two pages)
- Graphing paper

## Procedures

- Choose a partner to work with (this partner is your subject).
- Have your subject turn around so he/she can’t see what your doing.
- Place the target on the floor.
- Have your subject use her/his **right hand to cover his right eye**.
- Have your subject **hold a marker in her/his left hand**. (NOTE: the marker should be uncapped with the writing end facing down.)
- Have your subject hold his/her left hand out, turn around, and try to drop the marker on the target. (NOTE: *Your subject must keep the right eye closed and covered at all times. Your partner must also keep the arm with the marker fully extended at all times.*) The marker should leave a mark were it hits the target.
- Record the number of points the subject earned with that drop in **Data Table**.  
*NOTE: Record your subject’s data on her/his lab sheet. After the experiment is over, you and your partner can share the data to complete your own lab sheet.*
- Repeat the steps four more times. Remember to record the points.
- Then have subject use his/her left hand to cover his/her left eye, place a different colored marker in the right hand and repeat the procedures.
- Then have your subject use both eyes and whichever hand she/he wants.
- Repeat the same procedures.
- Switch roles and repeat all steps using a new target.
- Complete **Challenge Activities**.

**Data Table**

Subject's name: \_\_\_\_\_

	Results: <b>Left Eye</b>	Results: <b>Right Eye</b>	Results: <b>Both Eyes</b>
Trial #	Points	Points	Points
1			
2			
3			
4			
5			
	Total: _____	Total: _____	Total: _____

Subject's name: \_\_\_\_\_

	Results: <b>Left Eye</b>	Results: <b>Right Eye</b>	Results: <b>Both Eyes</b>
Trial #	Points	Points	Points
1			
2			
3			
4			
5			
	Total: _____	Total: _____	Total: _____

## Challenge Activities

1. Under which conditions (with the **Left Eye** only, **Right Eye** only, or **Both Eyes**)

did you earn the most points? \_\_\_\_\_ Explain why: \_\_\_\_\_

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2. Which hand did you choose to drop the marker with when you could use both

eyes? \_\_\_\_\_ Why did you choose that hand? \_\_\_\_\_

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3. When a person loses sight in one eye some tasks become more difficult. Describe some tasks that you do very easily now that would be difficult for you to perform if you lost the vision in one eye and didn't have your depth perception?

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4. Use the graphing paper to graph the results of your experiment. Use different colors to represent your results and those of your partner. (*If you're familiar with spreadsheet programs, ask your teacher to allow you to use the computer to complete this graph.*)

5. Got online capabilities in your room? Check out these interesting websites for more about depth perception:

<http://faculty.washington.edu/chudler/chvision.html>

<http://www.aoanet.org/sv-depth-per.html>

[http://www.nba.com/news\\_feat/00662853.html](http://www.nba.com/news_feat/00662853.html)

<http://www.hitl.washington.edu/scivw/EVE/III.A.1.b.StereoscopicViewing.html>

**Idea adapted from *Neuroscience for Kids*,  
<http://faculty.washington.edu/chudler/neurok.html>**

# Depth Perception Targets

**1 POINT**

**3 POINTS**

**5**

**7**

**10**

**15**

**20**

