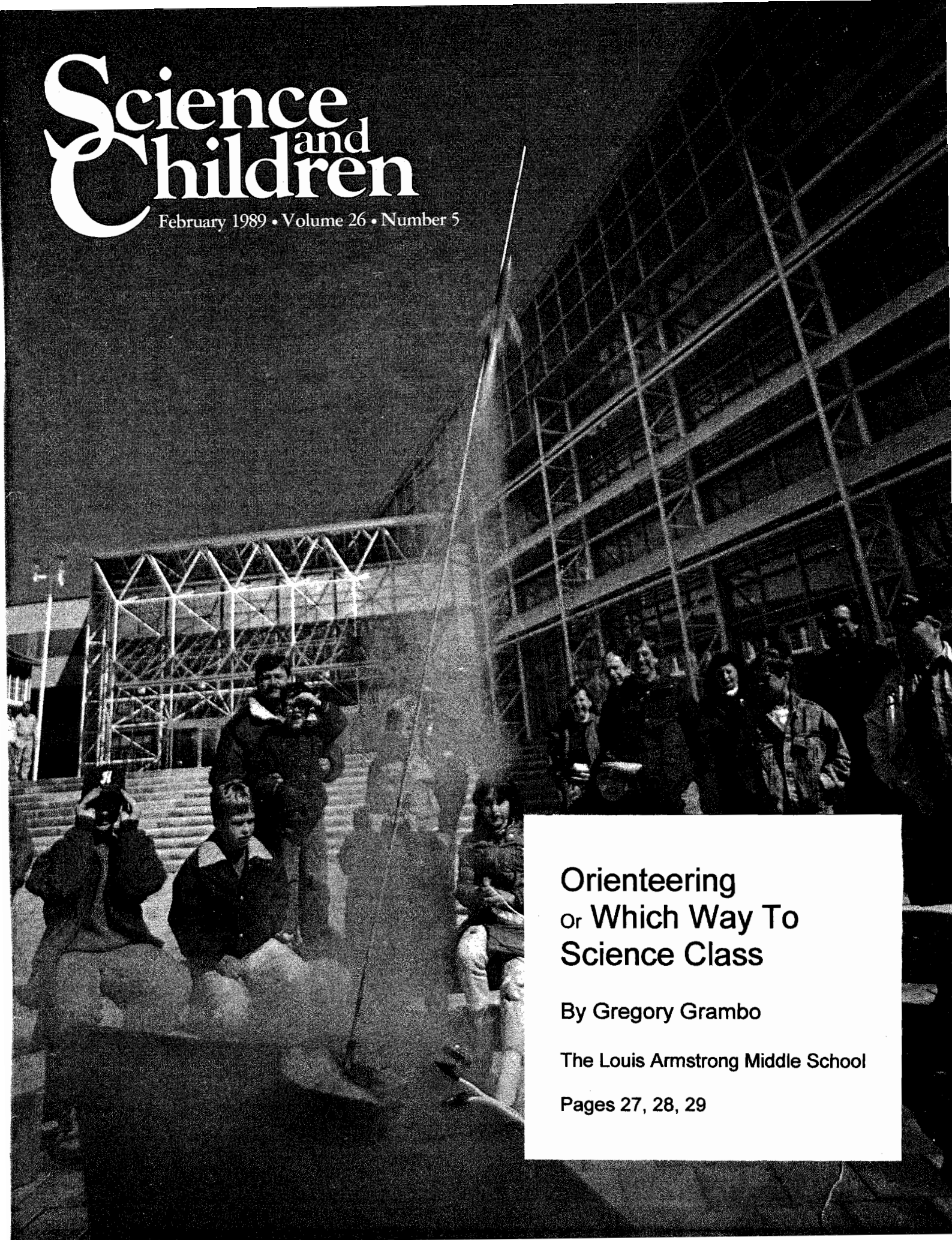


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Orienteering or Which Way To Science Class

By Gregory Grambo

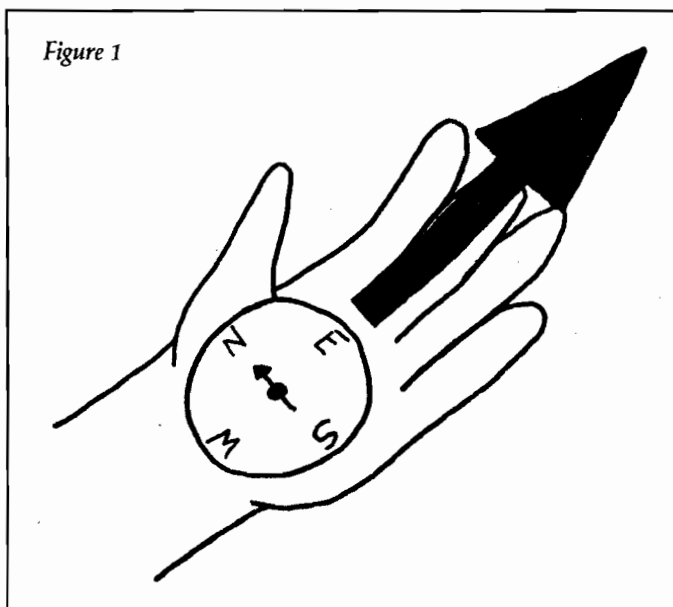
The Louis Armstrong Middle School

Pages 27, 28, 29

Orienteering, or, Which Way to Science Class?

A lesson in orienteering helps students figure out exactly where they're headed.

Figure 1



Long ago, explorers did not have the help of road signs to tell them which way to go. Instead, they relied on the North Star to calculate directions. They knew that when they moved toward it, they would be heading north, and they used that knowledge to develop the compass in the eleventh century.

Explain to your class that the face of a compass is divided into 360 sections, or degrees, like a pie that is cut into 360 pieces. No matter where you are, the compass will tell you what direction you are facing. Tell them that a compass contains a magnetized piece of metal that is balanced so that it can turn freely. The Earth's magnetic North Pole attracts the needle of the compass, causing it to point north. The opposite end of the needle, therefore, points south. If you hold a compass in your hand and the arrow points to your left, your body must be facing east (see fig. 1).

When teaching your students about orienteering, make sure they keep their elbows close to their bodies and their forearms stretched out in front of them with the compasses in the palms of their hands. Have each child align the

compass by turning it so that the needle points to the N. The direction shown at the base of his fingers is the direction that the student is facing (see fig. 2).

Next, explain that a *pace* is the distance a person travels in

one step. Show students how to walk paces. Ask them to explain how a pace is different from a meter. Make sure they understand that a pace is not an exact measure because it varies with leg length.

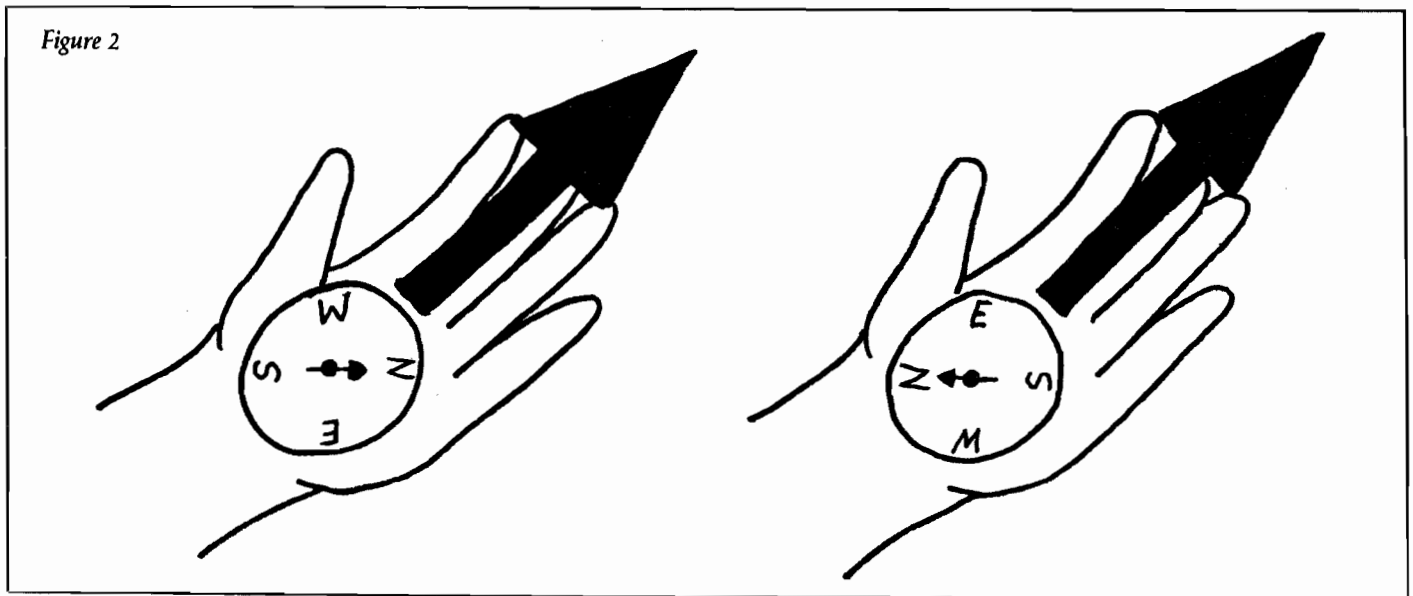


Figure 3, Reproducible Task Cards

A

1. Face 360° . Walk 30 paces.
2. Turn to 90° . Walk 30 paces.
3. Turn to 180° . Walk 30 paces.
4. Turn to 270° . Walk 30 paces.

C

1. Turn to 120° . Walk 30 paces.
2. Turn to 240° . Walk 30 paces.
3. Turn to 360° . Walk 30 paces.

B

1. Face 360° . Walk 30 paces.
2. Turn to 90° . Walk 70 paces.
3. Turn to 180° . Walk 30 paces.
4. Turn to 270° . Walk 70 paces.

D

1. Turn to 130° . Walk 30 paces.
2. Turn to 180° . Walk 15 paces.
3. Turn to 310° . Walk 30 paces.
4. Turn to 360° . Walk 15 paces.

After preparing your students for a lesson on orienteering, distribute task cards (see fig. 3) and a compass to each group of three or four students. Party-goods stores often sell inexpensive but accurate compasses appropriate for this activity. Have the children read the cards and predict the shape of the path each one describes. Then let them turn to the coordinates as directed on the cards and walk the designated paces, checking their predictions. Their results should match those given in figure 4.

To further sharpen their skills, send students on a treasure hunt. First hide an object in the classroom or in another part of the school. Then draw a map that students using a compass can follow to find the hidden object, and send them off to find the treasure!

For a homework assignment, have students map their neighborhoods. Ask them for compass directions to locate specific objects in their neighborhoods. Orienteering may lead students to explore further the exciting world of science. ε

Gregory Grambo is a science teacher at Louis Armstrong Middle School in East Elmhurst, New York. Illustrations courtesy of the author.

E

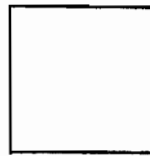
1. Turn to 120°. Walk 30 paces.
2. Turn to 360°. Walk 15 paces.
3. Turn to 240°. Walk 30 paces.
4. Turn to 360°. Walk 15 paces.

F

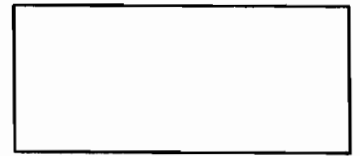
1. Turn to 360°. Walk 80 paces.
2. Turn to 90°. Walk 10 paces.
3. Turn to 180°. Walk 80 paces.
4. Turn to 270°. Walk 10 paces.

Figure 4, Answer Key

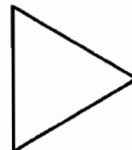
A



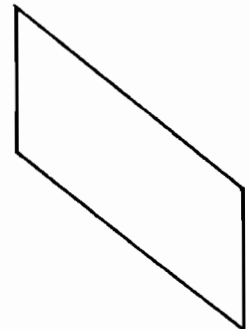
B



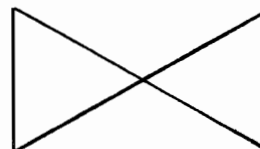
C



D



E



F

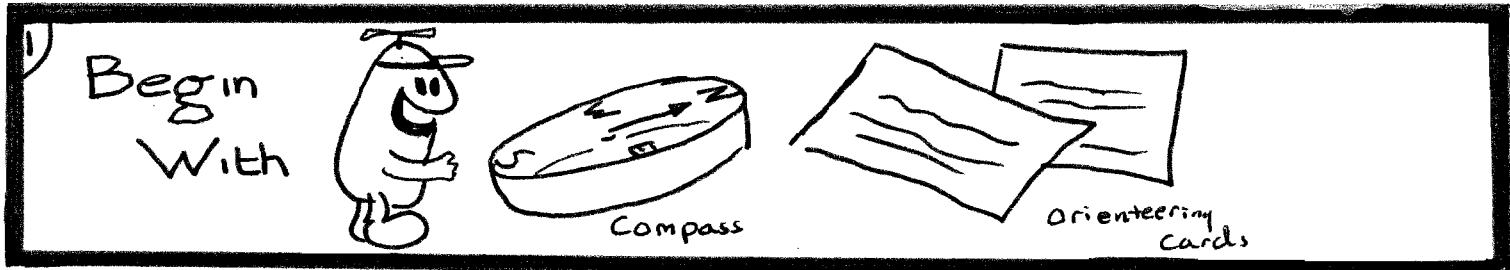


Orienteering

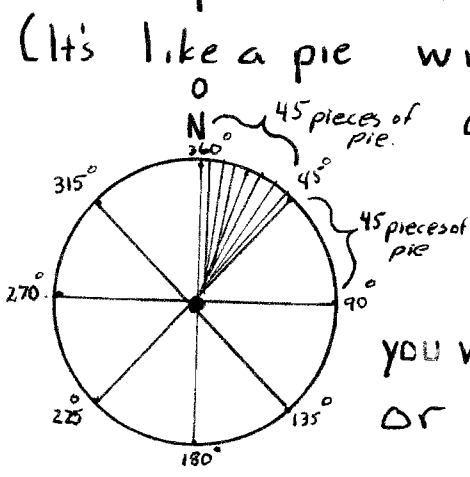
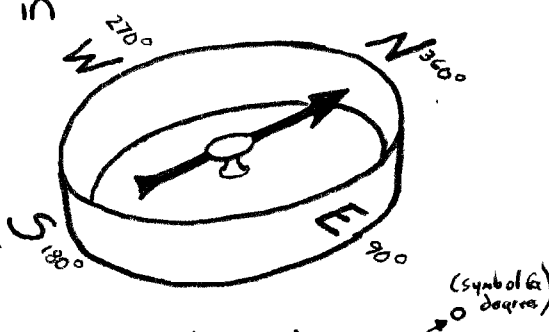
Name _____

Class _____ Group No _____

What is orienteering?



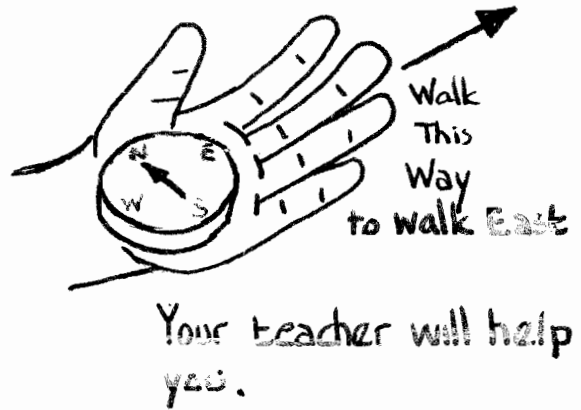
Orienteering is used to teach people how to navigate, or find their way around using a tool called a compass. The compass has a magnet in it. The earth has a magnetic north pole. The magnet in the compass causes the compass to point at the magnetic north pole. The face of the compass is broken up into 360 pieces called degrees.



any direction. The compass will tell you what direction you are walking in. If the top of this paper was north, you would be walking in the direction of East, or 90°, if you walked this way →

2) What direction are you moving the compass in? (in degrees)

3) Place the compass in the palm of your hand. Hold your hand in front of you and keep your elbow on your chest. Turn the compass so the N and the arrow point North. The degrees facing your fingers is the direction in front of you.



4) Lets try some orienteering.
 Ask your teacher for a card.
 Read the card and predict the shape you will make when you walk where the card says to.
 Check with your teacher for the answers, after you have done what the card asks.

Homework -

- 1- Pirates used a compass to bury treasure. Try making a map of your neighborhood. Give us compass directions to find something you have hidden.
- 2- Give me compass directions to get from the science room to the Auditorium, Art room, or Gym.

Card	predict	Actual results
A		
	predict	actual results
B		
	predict	actual results
C		
	predict	actual results
D		
	predict	actual results
E		
	predict	actual results
F		
	predict	actual results

A

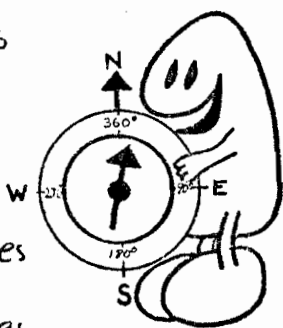
1- Face 360° . Walk 30 paces

North.

2- Turn to 90° Walk 30 paces.

3- Turn to 180° Walk 30 paces

4- Turn to 270° Walk 30 paces



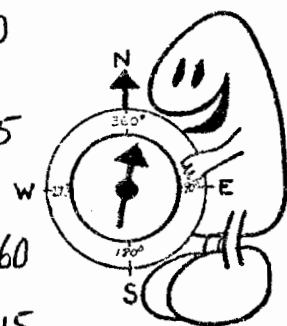
E

1- Turn to 120° . Walk 60 paces.

2- Turn to 360° . Walk 15 paces.

3- Turn to 240° . Walk 60 paces.

4- Turn to 360° . Walk 15 paces



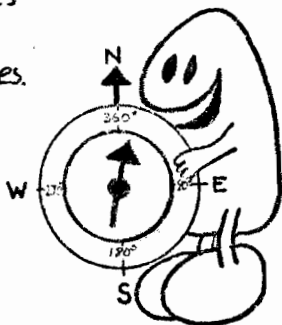
B

1- Face 360° . Walk 30 paces north.

2- Turn to 90° . Walk 70 paces.

3- Turn to 180° . Walk 30 paces.

4- Turn to 270° Walk 70 paces.



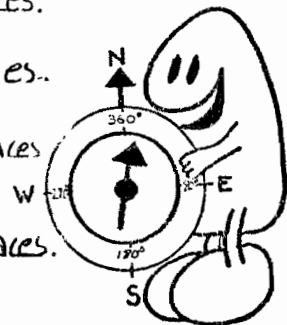
F

1- Turn to 360° . Walk 80 paces.

2- Turn to 90° . Walk 10 paces.

3- Turn to 180° Walk 80 paces

4- Turn to 270° . Walk 10 paces.

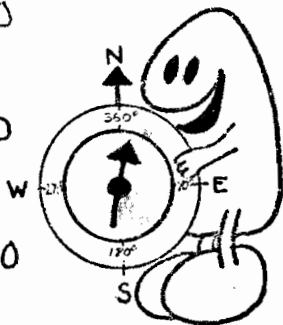


C

1- Turn to 120° . Walk 30 paces.

2- Turn to 240° . Walk 30 paces.

3- Turn to 360° . Walk 30 paces



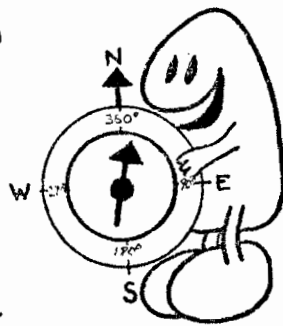
D

1- Turn to 130° . Walk 30 paces.

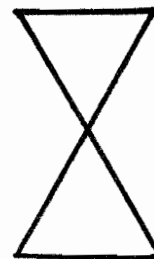
2- Turn to 180° . Walk 15 paces.

3- Turn to 310° . Walk 30 paces.

4- Turn to 360° . Walk 15 paces.



D-



E-



F-

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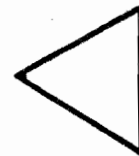
Answer Key



A-



B-



C-

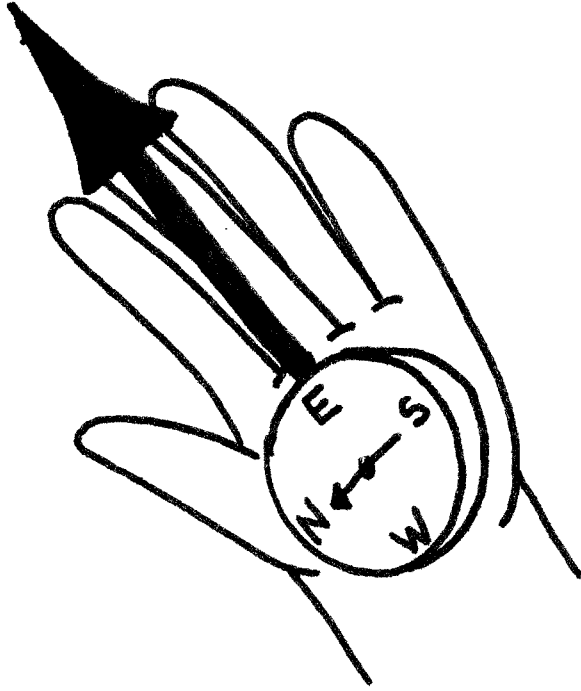
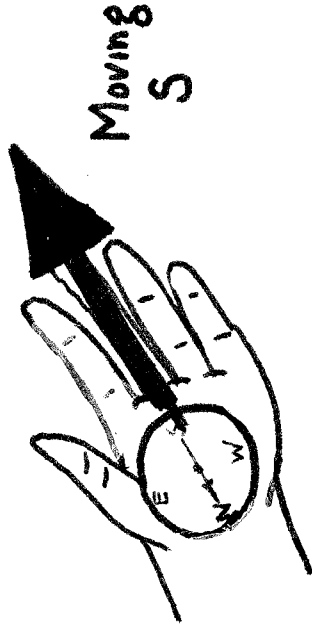
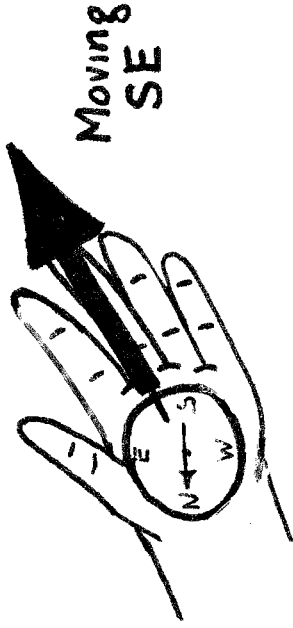
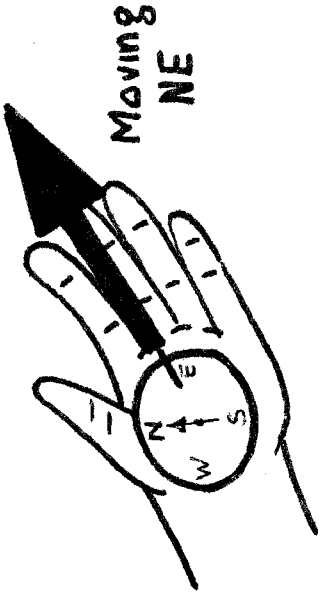


figure 1

figure 2

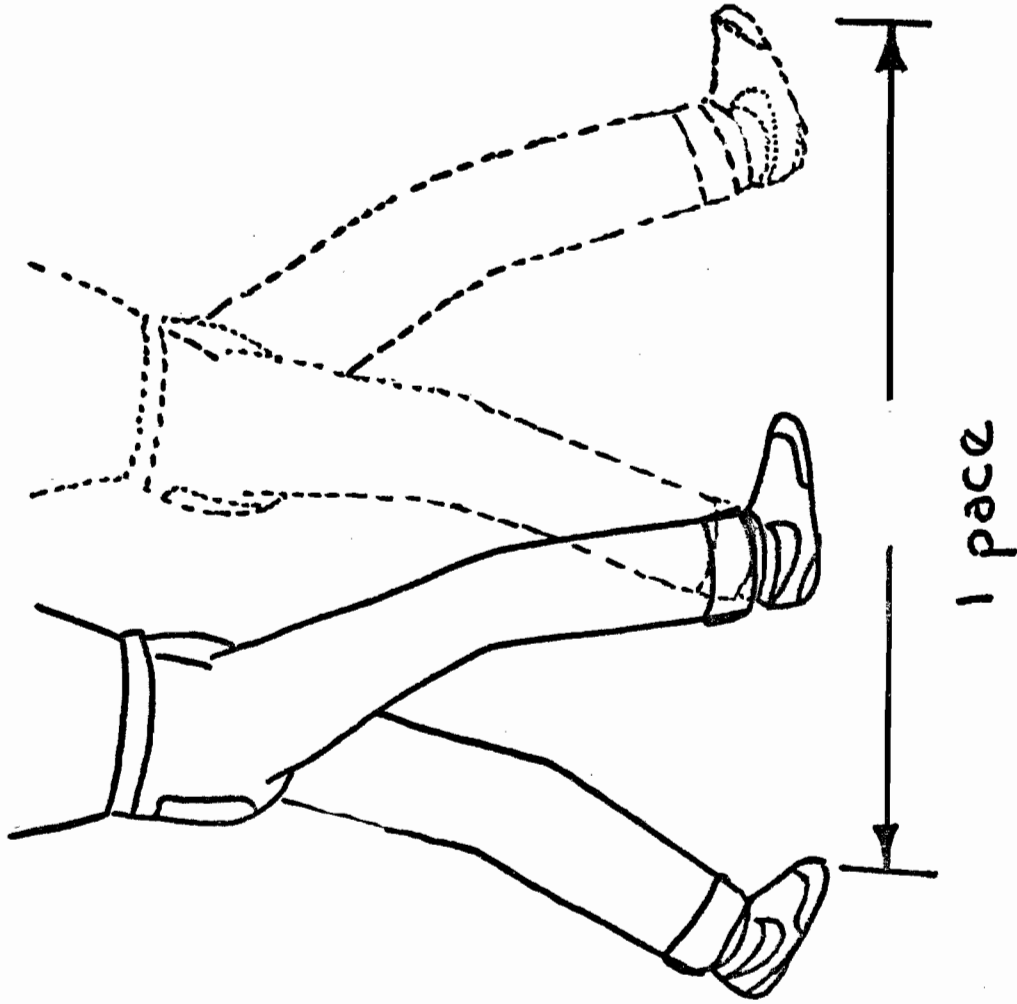


Figure 3

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116-05-107th Ave