Name: _____ Date: _____

Sailing Into the Wind in a Zigzag

Circle group

A sailboat has no motor. The wind pushes on its sails, and the boat moves. If the wind blows from behind, this is easy to see. But what if a sailor wants to go to a place that is where the wind comes from?

A sailboat cannot go straight into the wind. The sails would flap, and the boat would stop. But the sailor can still get there. The trick is to zigzag.

The sailor steers at an angle to the wind. The boat points a bit to the left of the goal. The curved sail catches the wind, and the boat moves on. Later, the sailor turns the boat. Now it points a bit to the right of the goal. The sail swings to the other side.

Each turn is called a tack. Many tacks in a row bring the boat to its goal.

It takes more time than a straight line. But it works.

Questions

1. What makes a sailboat move?

_____

_____

2. What happens if a boat points straight into the wind?

_____

_____

3. What is the trick to reach a place the wind comes from?

_____

_____

4. What is each turn in the zigzag called?

_____

_____

5. Does a zigzag path take more or less time than a straight path?

_____

_____

6. Why might a sailor zigzag to reach a harbor on a windy day?

_____

_____

Words to know

sails: large sheets of cloth that catch the wind to move a boat
motor: an engine that makes a machine move
zigzag: a path that turns sharply one way and then the other
tack: one leg of a zigzag path made by a sailboat

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Sailing Into the Wind in a Zigzag

Triangle group

A sailboat has no motor. It moves because the wind pushes on its sails. If the wind blows from behind the boat, it is easy to see how that works. But what if the sailor wants to go to a place that is in the direction the wind is coming from?

A sailboat cannot go straight into the wind. The sails would flap and the boat would stop. But a sailor can still get there. The trick is to zigzag.

The sailor steers the boat at an angle to the wind, a bit to the left of the goal. A curved sail catches the wind and the boat moves forward. After a while, the sailor turns the boat across the wind so that it points a bit to the right of the goal. The sail swings to the other side.

Each turn is called a tack. A long line of zigzags can bring the boat to its goal, one tack after another.

It takes longer than going straight, but it works.

Questions

1. What makes a sailboat move?

_____

_____

2. What happens if a boat points straight into the wind?

_____

_____

3. What is the trick for reaching a place the wind is coming from?

_____

_____

4. What is each turn in the zigzag called?

_____

_____

5. Does the zigzag path take longer or less time than a straight path?

_____

_____

6. Why might a sailor use zigzags on a windy day to reach a harbor?

_____

_____

Words to know

sails: large sheets of cloth that catch the wind to move a boat
motor: an engine that makes a machine move
direction: the way something is pointing or going
zigzag: a path that turns sharply one way and then the other
tack: one leg of a zigzag path made by a sailboat

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Sailing Into the Wind in a Zigzag

Square group

A sailboat has no motor of any kind. It moves because the wind pushes against its sails. When the wind blows from behind the boat, it is easy to understand how that works. But what happens when the sailor wants to reach a place that lies in the very direction the wind is coming from?

A sailboat cannot travel straight into the wind, because the sails would flap uselessly and the boat would come to a halt. Even so, a skilled sailor can still arrive at the goal. The secret is to zigzag.

The sailor steers the boat at an angle to the wind, aiming a little to the left of the goal. The curved sail catches the wind, and the boat glides forward. After a while, the sailor turns the boat across the wind so that it points a little to the right of the goal, and the sail swings over to the opposite side.

Each of these turns is called a tack. A long series of zigzags, one tack after another, will carry the boat to its destination.

This takes longer than sailing in a straight line, but it works.

Questions

1. What makes a sailboat move?

_____

_____

2. What happens when a boat points straight into the wind?

_____

_____

3. What is the secret to reaching a place that lies in the direction the wind is coming from?

_____

_____

4. What is each turn in the zigzag called?

_____

_____

5. Does a zigzag path take more or less time than a straight path?

_____

_____

6. Why might a sailor use zigzags to reach a harbor on a windy day?

_____

_____

Words to know

sails: large sheets of cloth that catch the wind to move a boat
motor: an engine that makes a machine move
direction: the way something is pointing or going
zigzag: a path that turns sharply one way and then the other
tack: one leg of a zigzag path made by a sailboat

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Sailing Into the Wind in a Zigzag

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Sailing Into the Wind in a Zigzag

Easier · 156 words · Flesch-Kincaid grade 1

1. The wind pushing on its sails.
2. The sails flap and the boat stops.
3. The sailor zigzags.
4. A tack.
5. It takes more time.
6. The harbor may be where the wind is coming from, so the boat cannot go straight there.

Triangle: Sailing Into the Wind in a Zigzag

This passage · 171 words · Flesch-Kincaid grade 2.7

1. The wind pushing on its sails.
2. The sails flap and the boat stops.
3. The sailor zigzags.
4. A tack.
5. It takes longer.
6. The harbor may be in the direction the wind is blowing from, and the boat cannot go straight there.

Square: Sailing Into the Wind in a Zigzag

Harder · 192 words · Flesch-Kincaid grade 5.2

1. The wind pushing against its sails.
2. The sails flap and the boat comes to a halt.
3. The sailor zigzags.
4. A tack.
5. It takes longer.
6. The harbor may lie in the direction the wind is blowing from, so the boat cannot head straight there.