Name: _____ Date: _____

Why Manhole Covers Are Round

Circle group

Look down at a city street. You may see a big metal disk in the road. It is a manhole cover. It closes a hole. The hole leads to pipes and tunnels under the ground. Workers go down there to fix things.

Most manhole covers are round. There is a good reason. A round cover can never fall into its hole.

A circle is the same width all the way across. It is the same in every direction. The hole is a little smaller than the cover. So a round cover cannot slip through. It does not matter how it is turned.

A square cover is not the same. The distance from corner to corner is longer than the distance across the sides. Someone could tip a square cover on its side. It could slide corner first down the hole. That would be bad for the workers below.

A round cover has one more good point. It is heavy. But a worker can roll it on its edge, like a giant coin.

Questions

1. What does a manhole cover close?

_____

_____

2. What shape are most manhole covers?

_____

_____

3. Why can a round cover never fall in?

_____

_____

4. What is longer on a square, across the sides or corner to corner?

_____

_____

5. How can a worker move a heavy round cover?

_____

_____

6. Why would a square cover be bad for workers below?

_____

_____

Words to know

manhole: a hole in a street that workers can climb down into
disk: a flat, round shape
circle: a perfectly round shape
corner: the point where two sides of a shape meet
tunnels: long passages that run underground

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: _____

Why Manhole Covers Are Round

Triangle group

Look down at a city street. You may spot a big metal disk in the road. It is a manhole cover. It closes a hole that leads to pipes and tunnels under the ground. Workers climb down there to fix things.

Nearly all manhole covers are round, and there is a good reason. A round cover can never fall into its hole.

A circle is the same width all the way across, in every direction. The hole is just a little smaller than the cover. So a round cover cannot slip through, no matter how it is turned.

A square cover is different. The distance from corner to corner is longer than the distance across the sides. Someone could tip a square cover on its side. It could slide corner first right down the hole. That would be dangerous for the workers below.

A round cover has one more good point. It is very heavy, but a worker can roll it on its edge, like a giant coin.

Questions

1. What does a manhole cover close?

_____

_____

2. What shape are nearly all manhole covers?

_____

_____

3. Why can a round cover never fall into its hole?

_____

_____

4. Which is longer on a square, the distance across the sides or corner to corner?

_____

_____

5. How can a worker move a heavy round cover?

_____

_____

6. Why would a square cover be dangerous for workers below?

_____

_____

Words to know

manhole: a hole in a street that workers can climb down into
disk: a flat, round shape
circle: a perfectly round shape
corner: the point where two sides of a shape meet
tunnels: long passages that run underground

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: _____

Why Manhole Covers Are Round

Square group

If you glance down at a city street, you may notice a large metal disk set into the pavement. It is a manhole cover, and it seals a hole that leads to pipes and tunnels beneath the ground, where workers climb down to make repairs.

Almost all manhole covers are round, and there is an excellent reason for it. A round cover can never drop into its own hole.

A circle measures exactly the same width across in every direction. Because the hole is slightly smaller than the cover, a round cover cannot slip through no matter how it is turned or tilted.

A square cover would behave quite differently. The distance from one corner to the opposite corner is longer than the distance across the sides. If someone tipped a square cover on its edge, it could slide corner first straight down the hole, which would be dangerous for the workers below.

A round cover has one more advantage. Although it is very heavy, a worker can roll it along on its edge, much like a giant coin.

Questions

1. What does a manhole cover seal?

_____

_____

2. What shape are almost all manhole covers?

_____

_____

3. Why can a round cover never drop into its hole?

_____

_____

4. Which is longer on a square, the distance across the sides or from corner to corner?

_____

_____

5. How can a worker move a very heavy round cover?

_____

_____

6. Why would a square cover be dangerous for the workers below?

_____

_____

Words to know

manhole: a hole in a street that workers can climb down into
disk: a flat, round shape
circle: a perfectly round shape
corner: the point where two sides of a shape meet
tunnels: long passages that run underground

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: Why Manhole Covers Are Round

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

Circle: Why Manhole Covers Are Round

Easier · 172 words · Flesch-Kincaid grade 2.8

1. A hole that leads to pipes and tunnels.
2. Round.
3. A circle is the same width in every direction, and the hole is a little smaller.
4. Corner to corner.
5. By rolling it on its edge.
6. It could be tipped and slide down the hole corner first.

Triangle: Why Manhole Covers Are Round

This passage · 168 words · Flesch-Kincaid grade 4.1

1. A hole that leads to pipes and tunnels under the ground.
2. Round.
3. A circle is the same width in every direction, and the hole is a little smaller than the cover.
4. Corner to corner is longer.
5. By rolling it on its edge.
6. It could be tipped and slide corner first down the hole.

Square: Why Manhole Covers Are Round

Harder · 179 words · Flesch-Kincaid grade 7.6

1. A hole that leads to pipes and tunnels beneath the ground.
2. Round.
3. A circle is the same width in every direction, and the hole is slightly smaller than the cover.
4. Corner to corner is longer.
5. By rolling it along on its edge.
6. It could be tipped on its edge and slide corner first down the hole.