Name: _____ Date: _____

Mail Shot Through Tubes Under the City Streets

Circle group

Before email, big cities had a fast way to move paper without carrying it by hand. In the 1800s, engineers buried pipes under city streets. They pushed small containers through the pipes with air. These pneumatic tube systems linked post offices, newspaper offices and banks. The idea spread to department stores and later to hospitals.

The idea is simple. A carrier is a sealed tube, often made of plastic or metal. It has a soft ring or brush around each end. It fits the pipe closely, so little air can slip past. A strong blower pushes air into the pipe behind the carrier. The carrier almost blocks the pipe, so the pressure builds up behind it. The high pressure shoves it along. Some systems work the other way. A pump pulls air out in front of the carrier. The normal air behind it is at higher pressure than the thin air in front, so it pushes the carrier along.

Many systems have a network of tubes and switches. A carrier can go from any station to any other. A worker types or dials a place. A diverter inside the pipes sends the carrier down the right branch. At the end, the air is let out, and the carrier slows to a soft stop in a basket.

Some city networks carried thousands of messages a day. Most of them closed when telephones, cheaper delivery and email took over. But hospitals still use tubes to send small samples and medicines fast. Many drive-through bank lanes use them too. The method lasts because it is quick and has few moving parts.

Questions

1. What moves through a pneumatic tube?

_____

_____

2. Why does the carrier have a soft ring around each end?

_____

_____

3. How is a pushing system different from a pulling system?

_____

_____

4. What sends a carrier down the right branch?

_____

_____

5. Why does the pressure build up behind the carrier?

_____

_____

6. Why did most city networks close?

_____

_____

Words to know

pneumatic: worked by air under pressure
carrier: a container that holds things being sent
blower: a machine that moves air with force
diverter: a part that sends something in a different direction
network: a system of lines that connect many points

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: _____

Mail Shot Through Tubes Under the City Streets

Triangle group

Before email, big cities had a faster way to move paper than carrying it by hand. In the nineteenth century, engineers began burying pipes under city streets and pushing small containers through them with air. These pneumatic tube systems linked post offices, newspaper offices, and banks, and the idea spread to department stores and later to hospitals.

The principle is simple. A carrier is a sealed cylinder, often made of plastic or metal, with a soft ring or brush around each end. It fits the tube closely, so little air can slip past it. A powerful blower pushes air into the tube behind the carrier. Because the carrier almost blocks the pipe, the pressure builds up behind it, and the higher pressure shoves it along. Some systems work the opposite way, using a pump to pull air out ahead of the carrier. The carrier is then pushed by the normal air behind it, which is at higher pressure than the thin air in front.

Many systems have a network of tubes and switches, so a carrier can be sent from any station to any other. Operators dial or type a destination, and a diverter inside the pipes sends the carrier down the correct branch. At the end, the air is let out and the carrier slows to a gentle stop in a catching basket.

Some tube networks in large cities carried thousands of messages each day. Most city networks closed once telephones, cheaper delivery, and email took over. Yet hospitals still use tube systems to send small samples and medicines quickly, and many drive-through bank lanes use them, too. The method lasts because it is quick and needs few moving parts.

Questions

1. What moves through a pneumatic tube?

_____

_____

2. Why does the carrier have a soft ring around each end?

_____

_____

3. What is the difference between pushing and pulling systems?

_____

_____

4. What sends a carrier down the correct branch?

_____

_____

5. Why does pressure build up behind the carrier?

_____

_____

6. Why did most city networks close?

_____

_____

Words to know

pneumatic: worked by air under pressure
carrier: a container that holds things being sent
blower: a machine that moves air with force
diverter: a part that sends something in a different direction
network: a system of lines that connect many points

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: _____

Mail Shot Through Tubes Under the City Streets

Square group

Before the arrival of email, large cities possessed a faster way of moving paper than carrying it from place to place by hand. During the nineteenth century, engineers began burying pipes beneath city streets and propelling small containers through them with compressed air. These pneumatic tube systems connected post offices, newspaper offices, and banks, and the idea eventually spread to department stores and, later, to hospitals.

The principle is elegantly simple. A carrier is a sealed cylinder, often made of plastic or metal, with a soft ring or brush around each end. It fits the tube so closely that very little air can slip past it. A powerful blower forces air into the tube behind the carrier, and because the carrier almost blocks the pipe, the pressure builds up behind it, and the higher pressure shoves it along. Some systems work in the opposite way, using a pump to draw air out ahead of the carrier. The carrier is then pushed by the ordinary air behind it, which is at a higher pressure than the thin air in front.

Many systems consist of a network of tubes and switches, so that a carrier can be dispatched from any station to any other. An operator dials or types a destination, and a diverter inside the pipes steers the carrier into the correct branch. At the end of the journey, the air is released and the carrier slows to a gentle stop in a catching basket.

Some tube networks in large cities carried thousands of messages each day. Most of those networks closed once telephones, cheaper delivery, and email took over. Yet hospitals still use tube systems to send small samples and medicines quickly, and many drive-through bank lanes use them as well. The method has endured because it is swift and requires few moving parts.

Questions

1. What travels through a pneumatic tube?

_____

_____

2. Why does the carrier have a soft ring or brush around each end?

_____

_____

3. How do pushing systems differ from pulling systems?

_____

_____

4. What steers a carrier into the correct branch?

_____

_____

5. Why does pressure build up behind the carrier?

_____

_____

6. Why did most city networks eventually close?

_____

_____

Words to know

pneumatic: worked by air under pressure
carrier: a container that holds things being sent
blower: a machine that moves air with force
diverter: a part that sends something in a different direction
network: a system of lines that connect many points

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: Mail Shot Through Tubes Under the City Streets

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

Circle: Mail Shot Through Tubes Under the City Streets

Easier · 269 words · Flesch-Kincaid grade 4.7

1. A sealed carrier that holds papers or small things.
2. It fits the pipe closely so little air can slip past.
3. One pushes air in behind the carrier, and the other pulls air out in front of it.
4. A diverter inside the pipes.
5. The carrier almost blocks the pipe, so the air cannot get past it.
6. Telephones, cheaper delivery and email took over the job.

Triangle: Mail Shot Through Tubes Under the City Streets

This passage · 282 words · Flesch-Kincaid grade 7.8

1. A sealed carrier that holds papers or small items.
2. It fits the tube closely so little air can slip past.
3. One pushes air in behind the carrier, and the other pulls air out ahead of it.
4. A diverter inside the pipes.
5. The carrier almost blocks the pipe, so the air pushed in cannot get past it.
6. Telephones, cheaper delivery, and email took over the job.

Square: Mail Shot Through Tubes Under the City Streets

Harder · 305 words · Flesch-Kincaid grade 9.4

1. A sealed carrier that holds papers or small items.
2. It fits the tube so closely that very little air can slip past.
3. One forces air in behind the carrier, and the other draws air out ahead of it.
4. A diverter inside the pipes.
5. The carrier almost blocks the pipe, so the air forced in cannot get past it.
6. Telephones, cheaper delivery, and email took over the job.