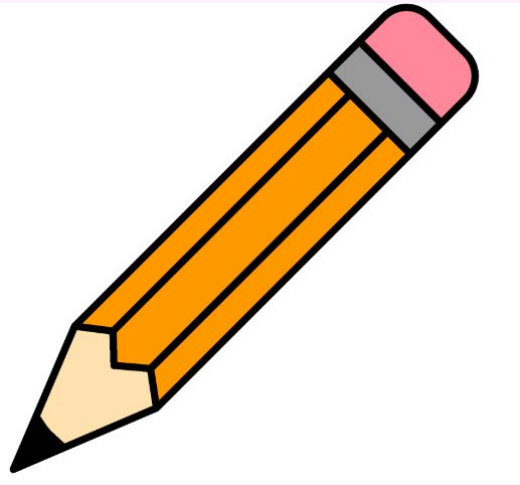
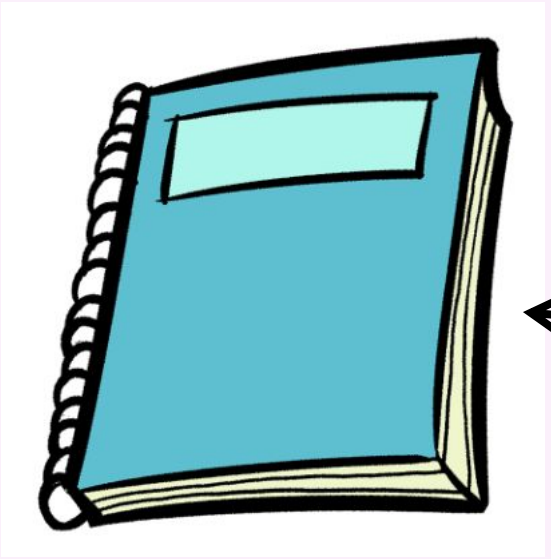
Welcome!

Do you have...?

1) your pen/pencil? →





← 2) your notebook/paper?

3) some water? →

Sounds through SOLIDS, *liquids* and gases

What will we learn today?

We will review the basic information about sound.

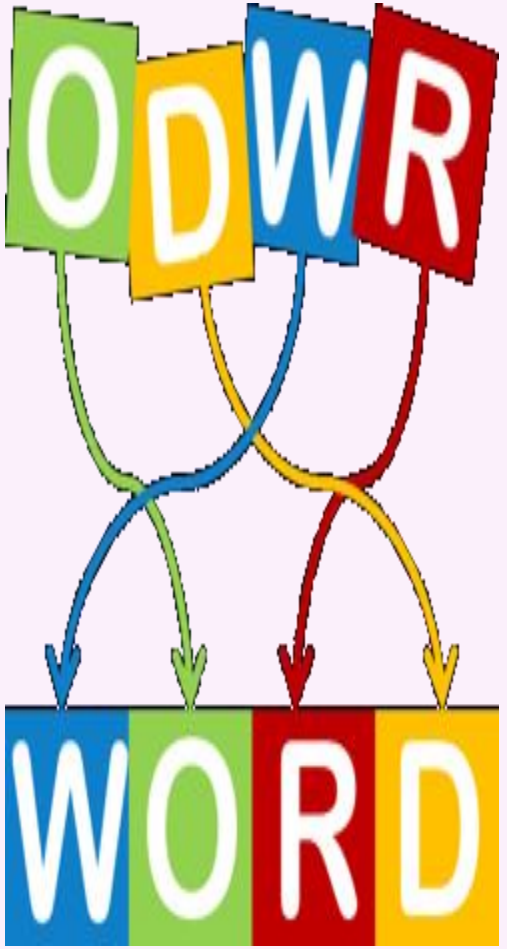
We will learn about how sound travels through solids, liquids and gases.

Let's remember what we know!

Let's look at some of the key vocabulary from the previous Science lessons.

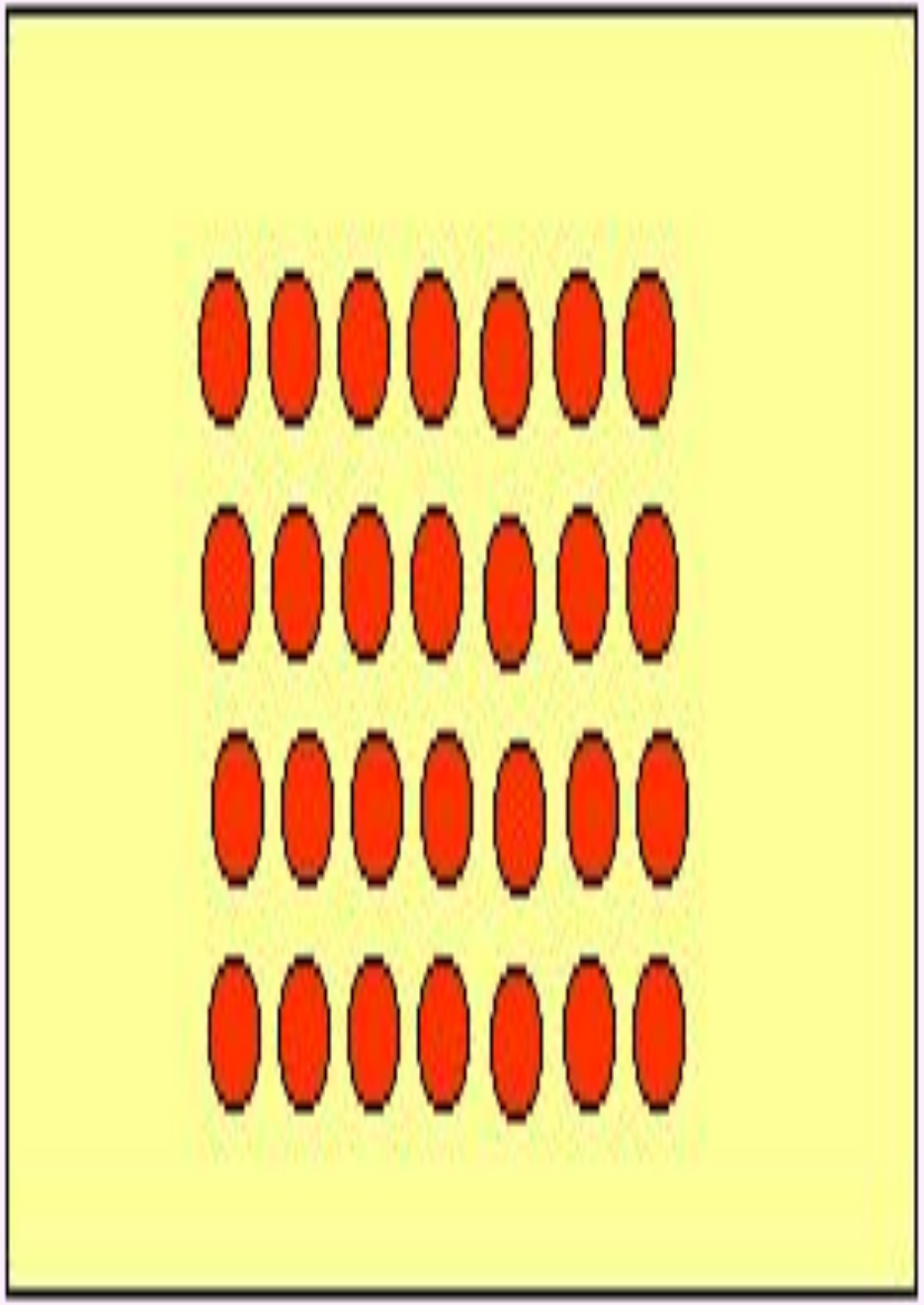
Some words will appear on screen scrambled (mixed up).

Put your hand up when you think you know the answer.

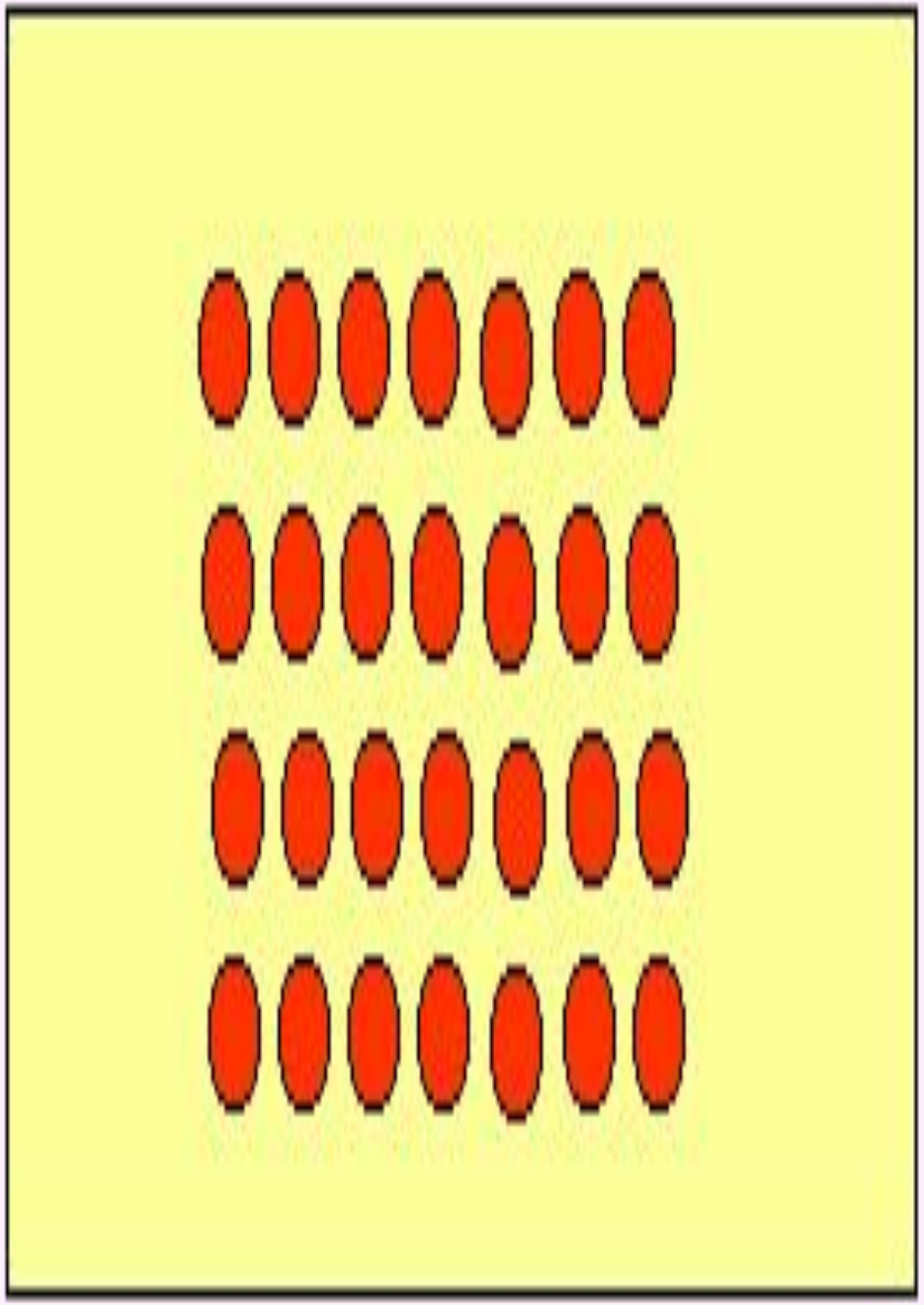


betvair

vibrate



spratelic



particles

udol

loud

iteuq

quiet

uodns emrte

sound meter

ceiblesd

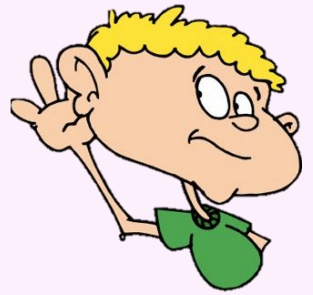
decibels

vawes

waves

Sound basics review

What is sound?



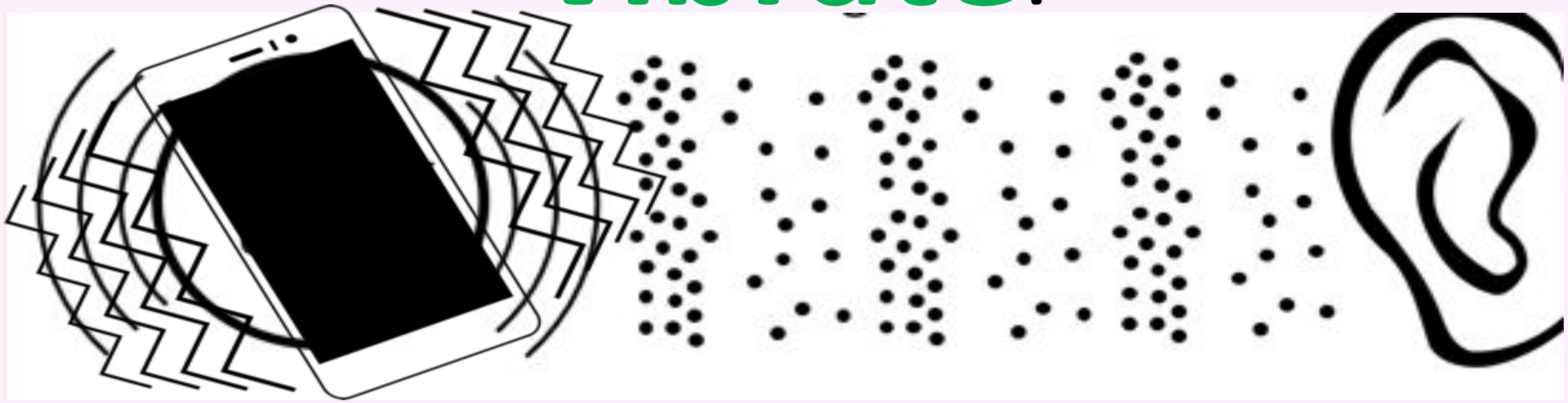
Sound is a type of **energy**.

Sound basics review

Sounds are made when objects...

Sound basics review

Sounds are made when objects **vibrate**.

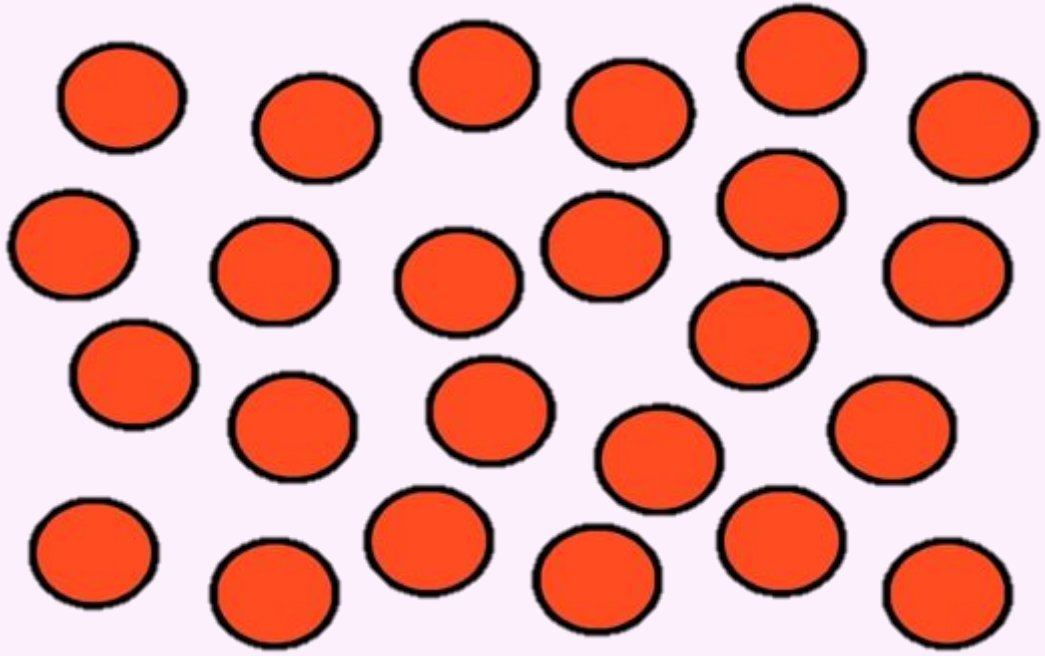


Sound basics review

Vibrate means to **shake** very quickly.

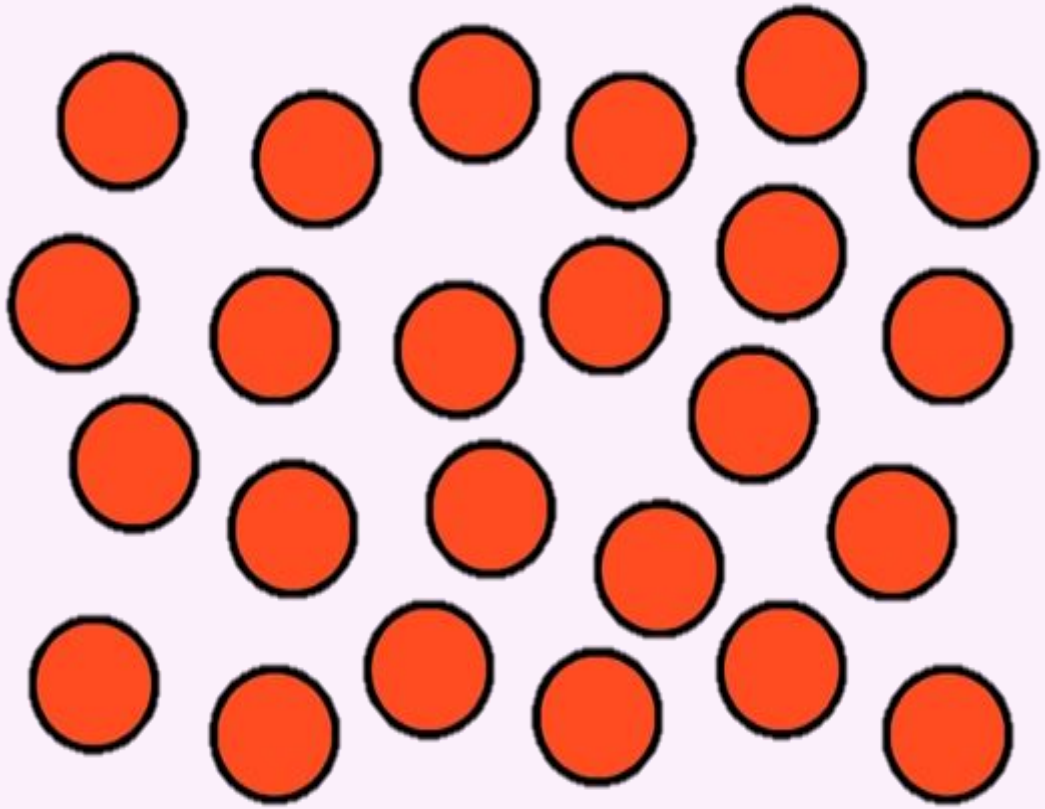
Sound basics review

Everything is made from very tiny **particles**.



Sound basics review

These particles can vibrate to make sounds.



Sound basics review

Some sounds are **loud**.

Sound basics review

Some sounds are **quiet/soft**.

Sound basics review

How do we measure sound?

We can measure the volume of a sound using a **sound meter**.

Sound basics review

How do we measure sound?

We measure the volume of a sound in units called **decibels** (dB).

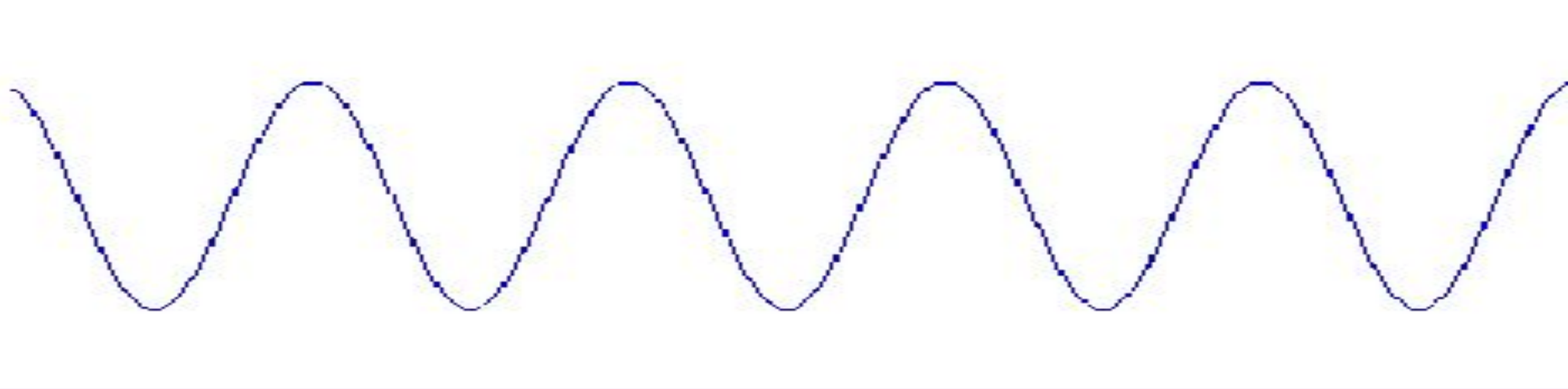
Sound basics review

How does sound travel?

Sound travels in **waves**.

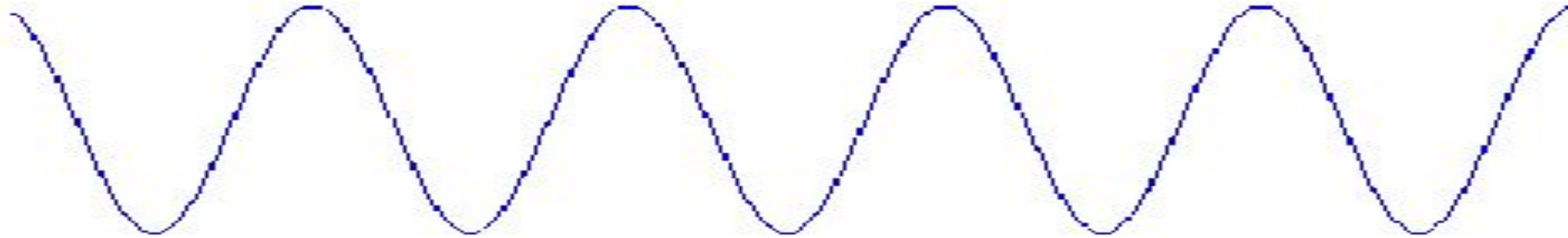
Sound basics review

We can draw sound waves like this…



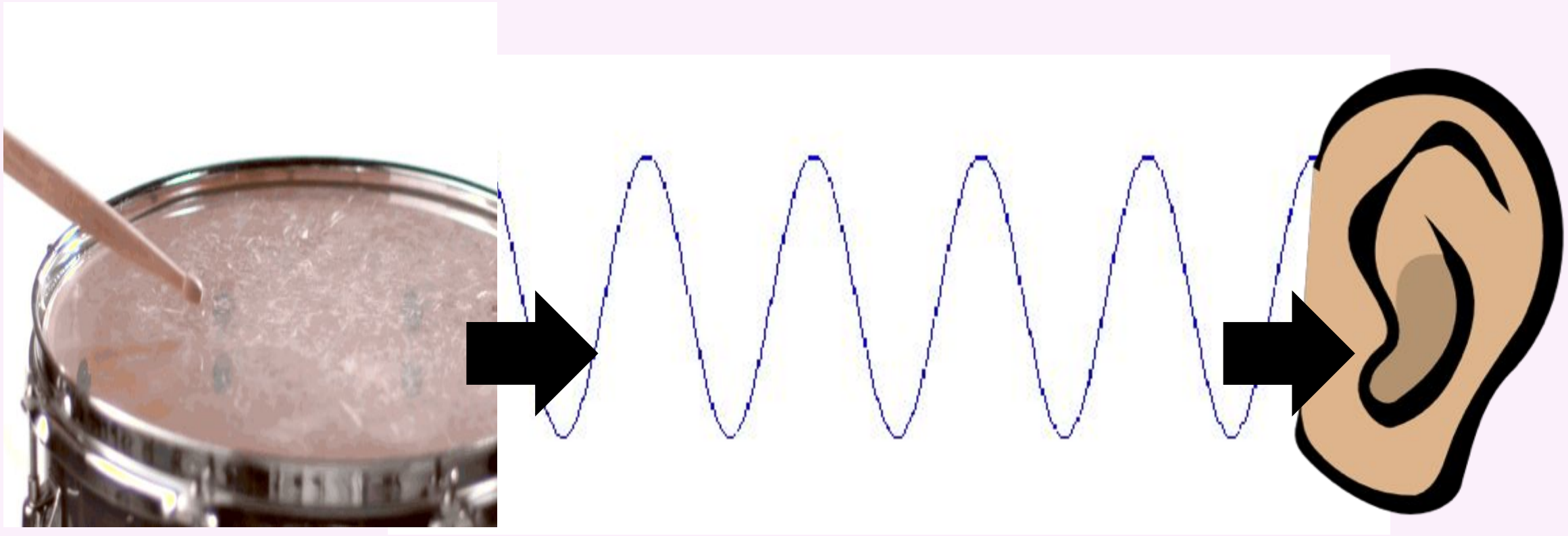
Sound basics review

The bigger the wave, the louder the sound.



Sound basics review

How does sound travel from a source to me?



End of Period 1

Period 2

Sound through solids, liquids and gases

Review states of matter

Let’s complete a brief review of states of matter.

Everything is made up of particles.

Review states of matter

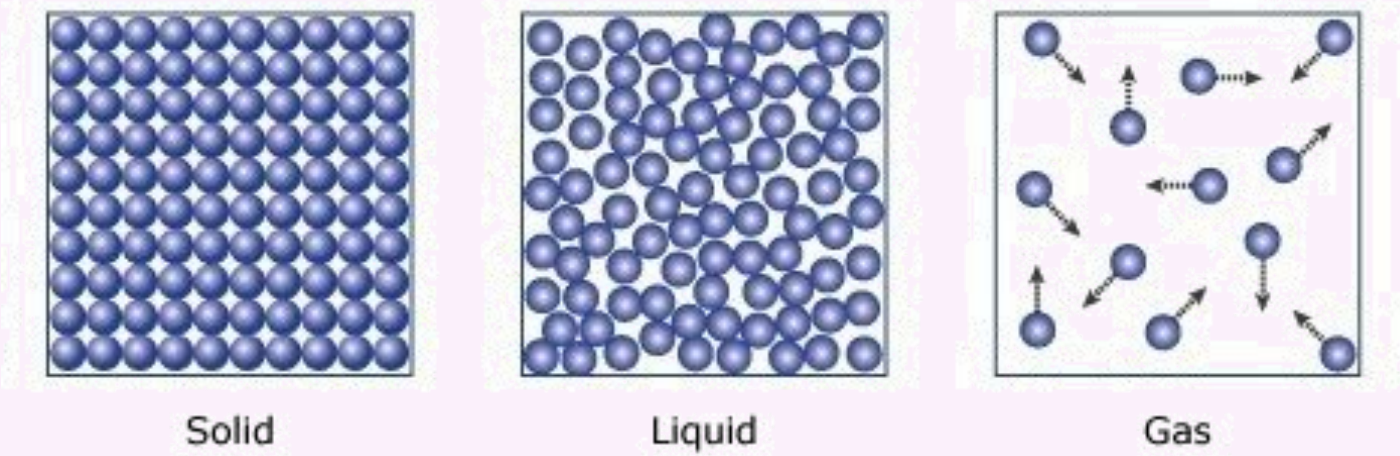
There are three states of matter.

Can you name them?

Review states of matter

There are three states of matter:

solid liquid gas



Which state of matter is being described?

The particles are very far apart and move about.

solid

A

liquid

B

gas

C

Which state of matter is being described?

The particles are very close together.

solid

A

liquid

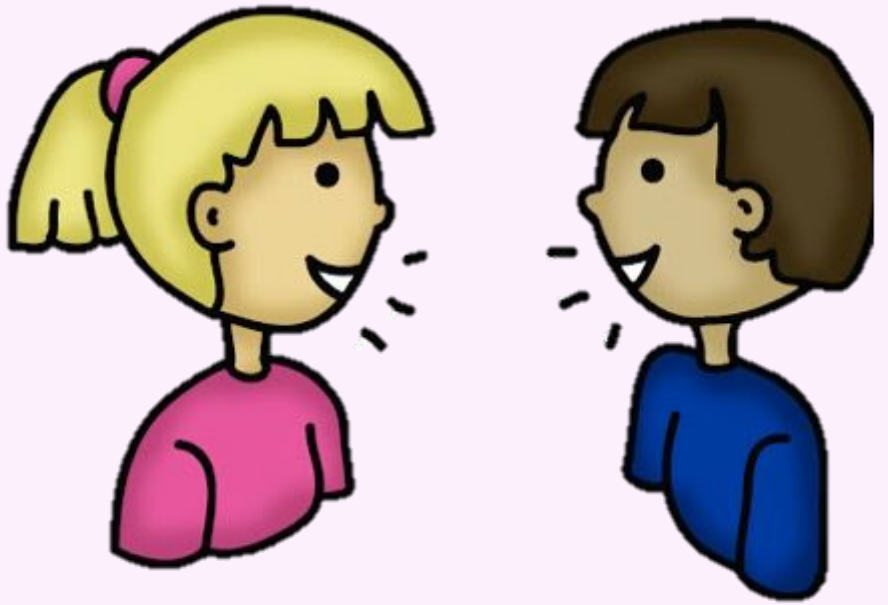
B

gas

C

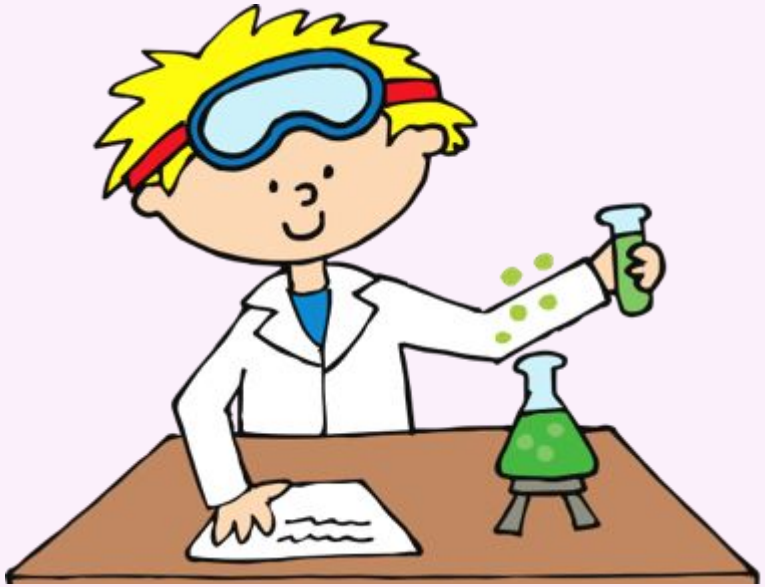
Sounds through solids, liquids and gases

When we speak, the sound travels through the air.



But can sound travel through solids and liquids?

Activity



Activity

Hit your pencil (carefully!)
on the table.

How loud is it?

Activity

Now put your ear against the desk and hit it again.

Activity

Which was louder?

Sounds through solids, liquids and gases

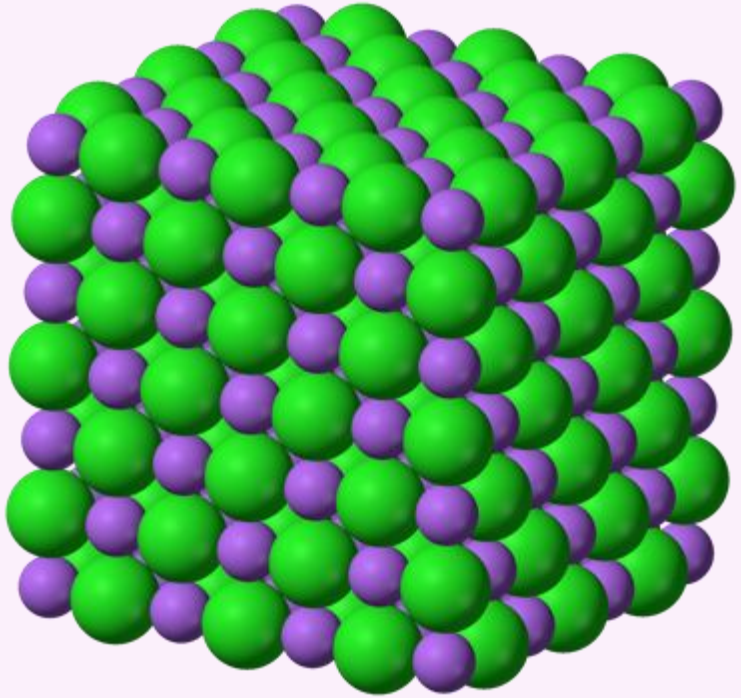
Sounds travel best through solids.

They travel worst through gases, like the air.

Sounds through solids

In a solid, the particles are very close together.

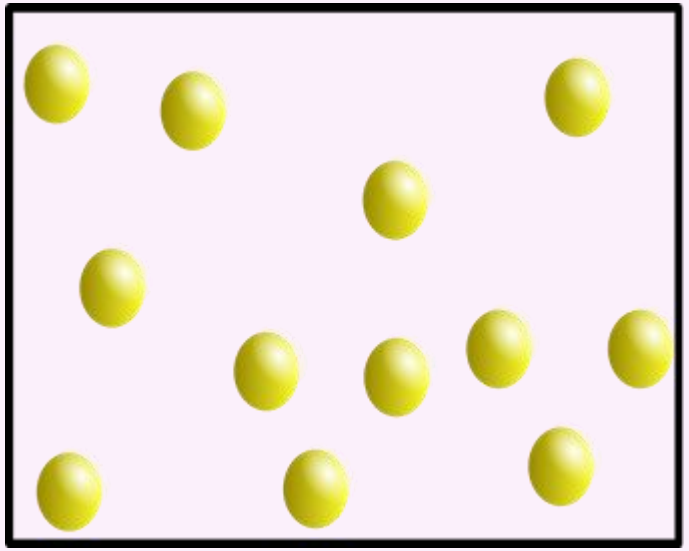
Vibrations pass easily between the particles.



Sounds through gases

In a gas, the particles are very far apart.

Vibrations don't pass so easily because of the space.

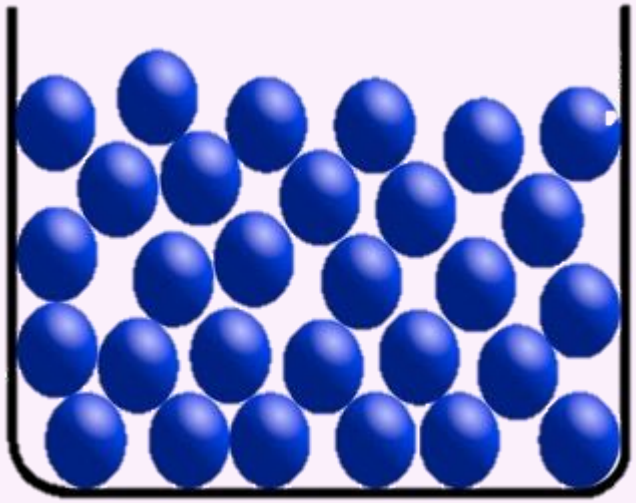


Sounds through liquids

What about liquids?

Sounds through liquids

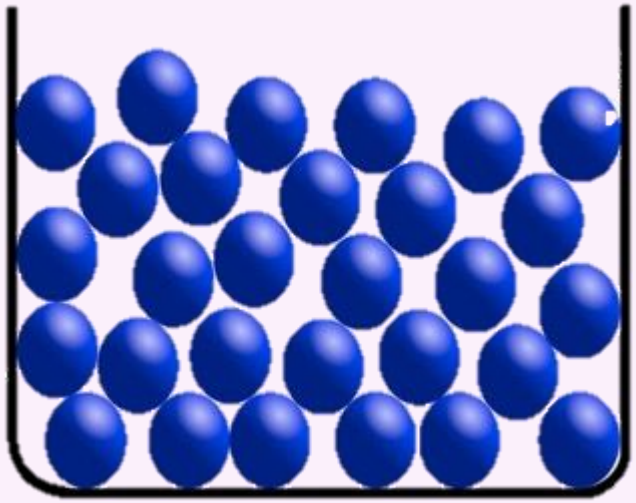
In liquids, there is more space between the particles than in solids.



But there is less space between the particles than in gases.

Sounds through liquids

Sounds pass better through liquids than gases, but worse than through solids.



Sounds through solids, liquids and gases

The dominoes at the top are close together, like the particles in a solid.

The dominoes at the bottom of a screen are further apart, like in a liquid or gas.

Sounds through solids, liquids and gases

As the dominoes fall, they bump into each other. This is like how a sound travels.

Which was faster, top or bottom?

Sounds in a vacuum

Finally, let’s talk about sound in a vacuum.

Space is a vacuum.

There are no particles in space.

Sounds in a vacuum

So can we hear sounds in space?

Sounds in a vacuum

In the next video, the scientists put a music player in a jar then sucked all of the air out of it to make a vacuum.

Listen to what happens to the sound.

Part 1
Sound in a vacuum

Review

Question Time

1. Pick the correct answer (A, B, C, or D).
2. Raise your hand when you have the correct answer.
3. There are 8 questions to answer.

Quiz Time!

1. The particles in a solid are...

Quiz Time!

1. The particles in a solid are...

A. far apart.

Quiz Time!

1. The particles in a solid are...

A. far apart.

B. very close together.

Quiz Time!

1. The particles in a solid are...

A. far apart.

B. very close together.

C. quite close together.

Quiz Time!

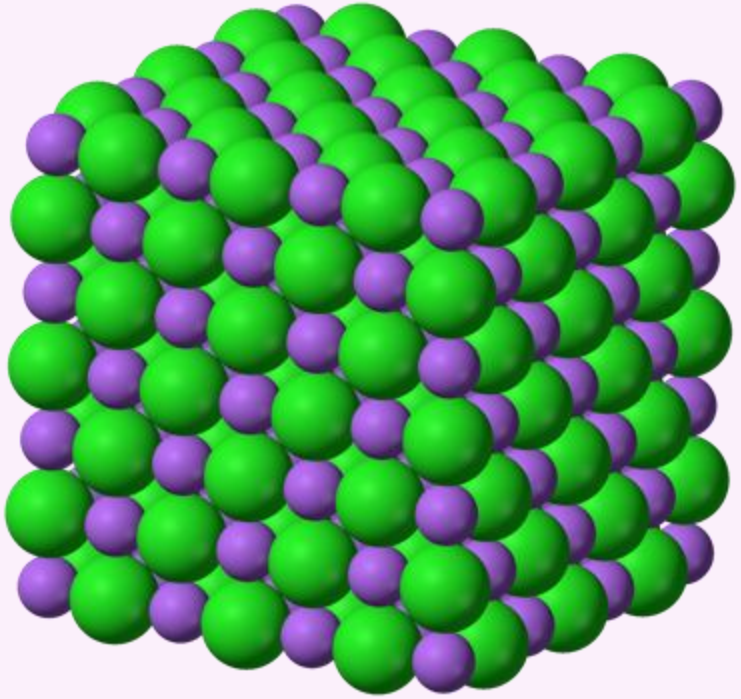
1. The particles in a solid are...

A. far apart.

B. very close together.

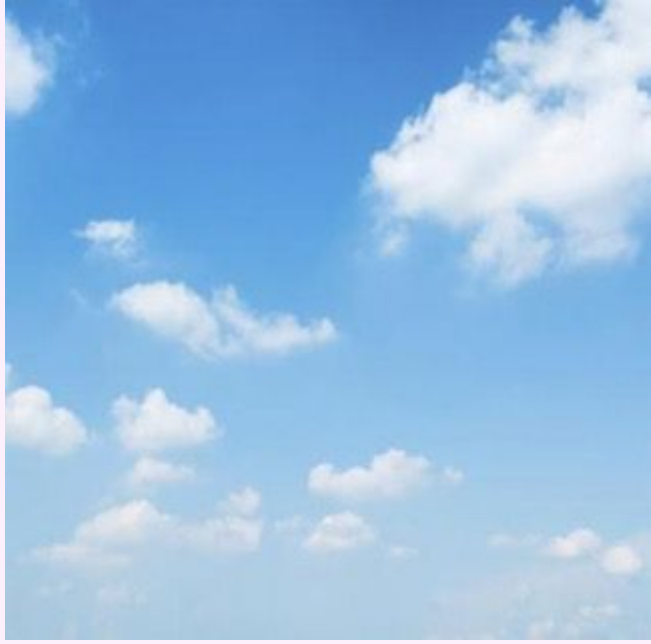
C. quite close together.

D. beautiful.



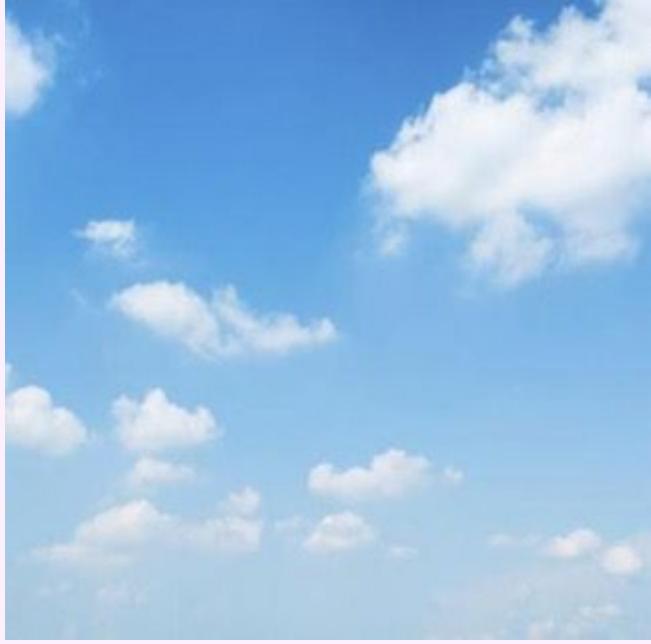
B. very close together

Quiz Time!



2. The particles in a gas are...

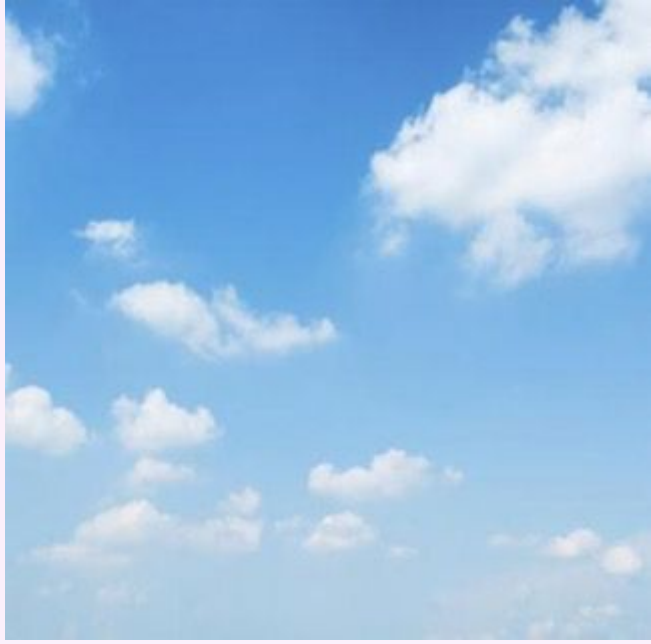
Quiz Time!



2. The particles in a gas are...

A. quite close together.

Quiz Time!

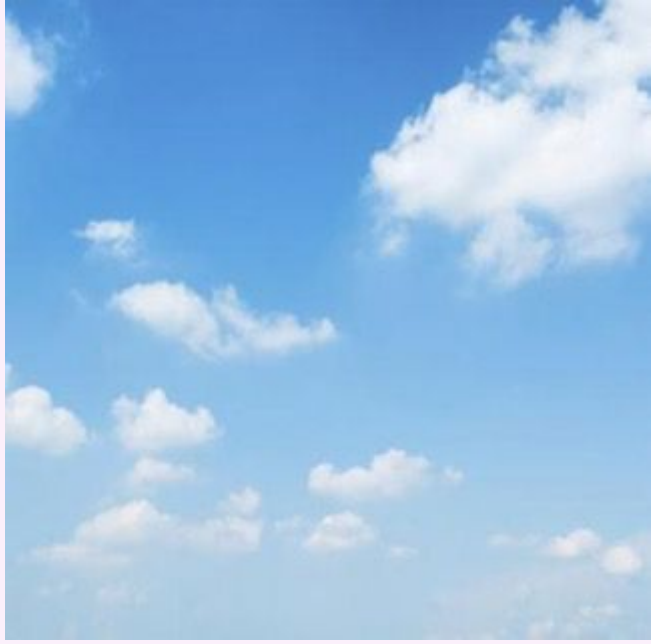


2. The particles in a gas are...

A. quite close together.

B. very close together.

Quiz Time!



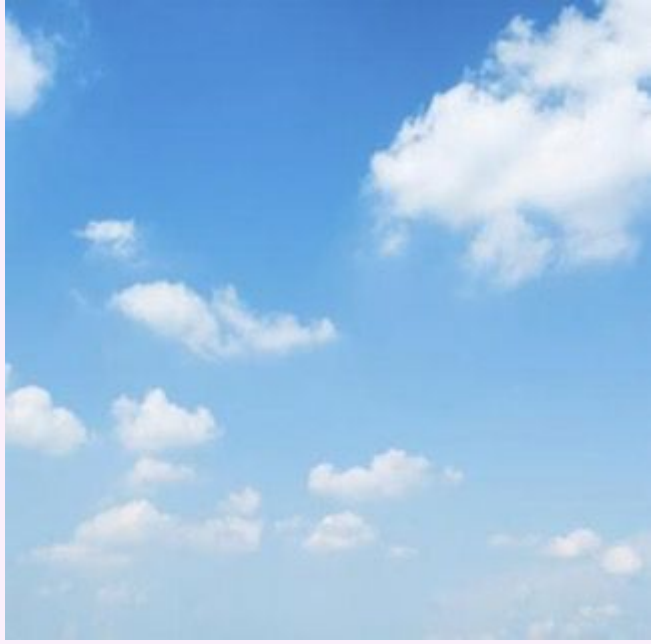
2. The particles in a gas are...

A. quite close together.

B. very close together.

C. far apart.

Quiz Time!



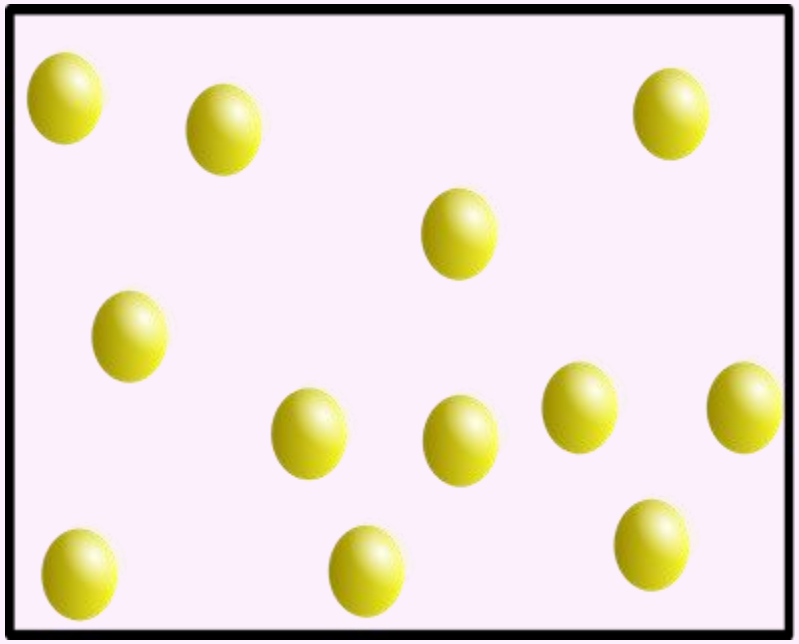
2. The particles in a gas are...

A. quite close together.

B. very close together.

C. far apart.

D. more beautiful than in a solid.



C. far apart

Quiz Time!

3. The particles in a liquid are...

Quiz Time!

3. The particles in a liquid are...

A. quite close together.

Quiz Time!

3. The particles in a liquid are...

A. quite close together.

B. very close together.

Quiz Time!

3. The particles in a liquid are...

A. quite close together.

B. very close together.

C. far apart.

Quiz Time!

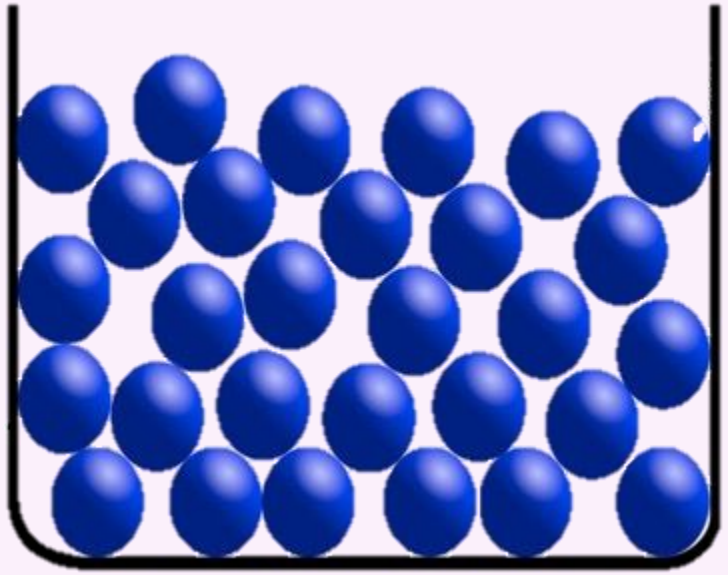
3. The particles in a liquid are...

A. quite close together.

B. very close together.

C. far apart.

D. more ugly than in a solid.



A. quite close together

Quiz Time!

4. Sound travels best through...

Quiz Time!

4. Sound travels best through...

A. a gas.

Quiz Time!

4. Sound travels best through...

A. a gas.

B. a liquid.

Quiz Time!

4. Sound travels best through...

A. a gas.

B. a liquid.

C. ice cream.

Quiz Time!

4. Sound travels best through...

A. a gas.

B. a liquid.

C. ice cream.

D. a solid.

D. a solid

Review

Sounds travels best through solids as the particles are close together and pass the vibrations easily.

Quiz Time!

5. Sound travels worst through...

Quiz Time!

5. Sound travels worst through...

A. a gas.

Quiz Time!

5. Sound travels worst through...

A. a gas.

B. a liquid.

Quiz Time!

5. Sound travels worst through...

A. a gas.

B. a liquid.

C. ice cream.

Quiz Time!

5. Sound travels worst through...

A. a gas.

B. a liquid.

C. ice cream.

D. a solid.

A. a gas

Review

Sound travels worst through gases as the particles are further apart and it’s more difficult for the vibrations to be passed

Quiz Time!

6. How does sound travel through liquid.

Quiz Time!

6. How does sound travel through liquid.

A. better than a gas,
worse than a solid.

Quiz Time!

6. How does sound travel through liquid.

A. better than a gas, worse than a solid.

B. worse than a gas, better than a solid.

Quiz Time!

6. How does sound travel through liquid.

A. better than a gas, worse than a solid.

B. worse than a gas, better than a solid.

C. the same as a solid.

Quiz Time!

6. How does sound travel through liquid.

A. better than a gas, worse than a solid.

B. worse than a gas, better than a solid.

C. the same as a solid.

D. the same as a gas.

A. better than a gas, worse than a solid.

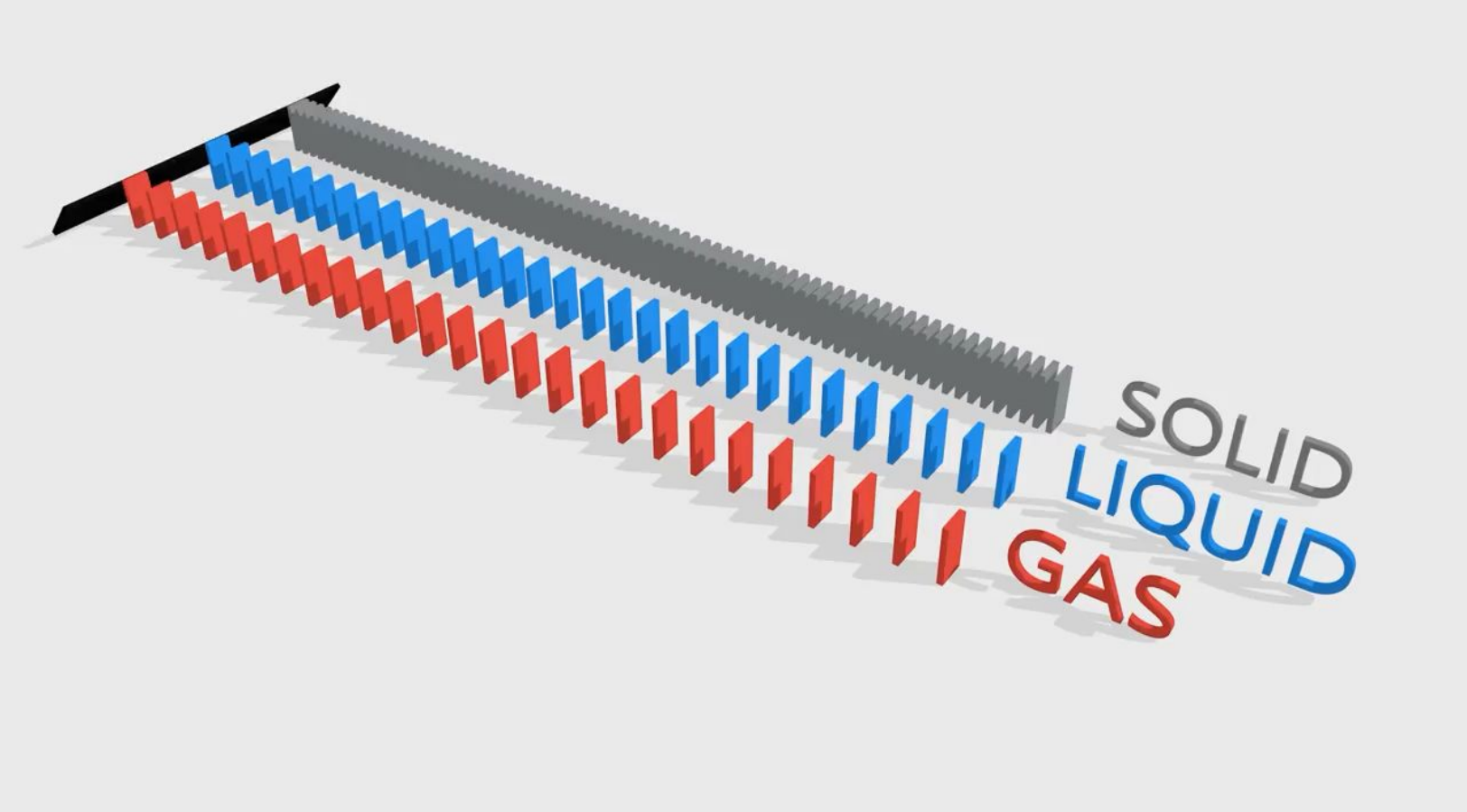
Review

In liquids, there is more space between the particles than in solids.

But there is less space between the particles than in gases.

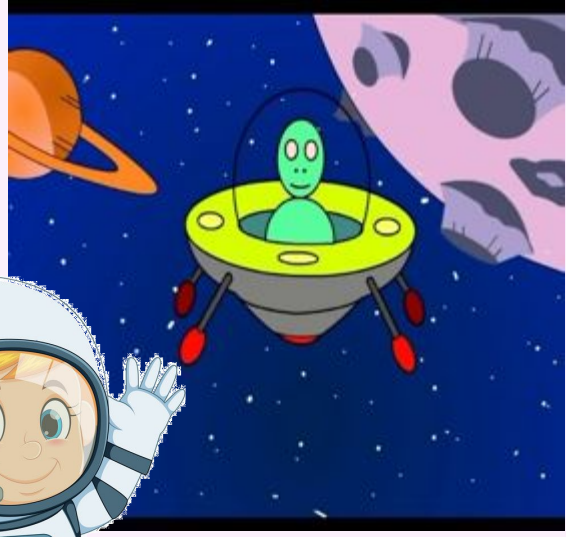
Sounds pass better through liquids than gases, but worse than through solids.

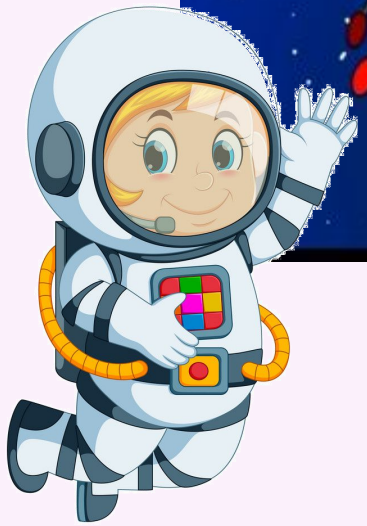
Review



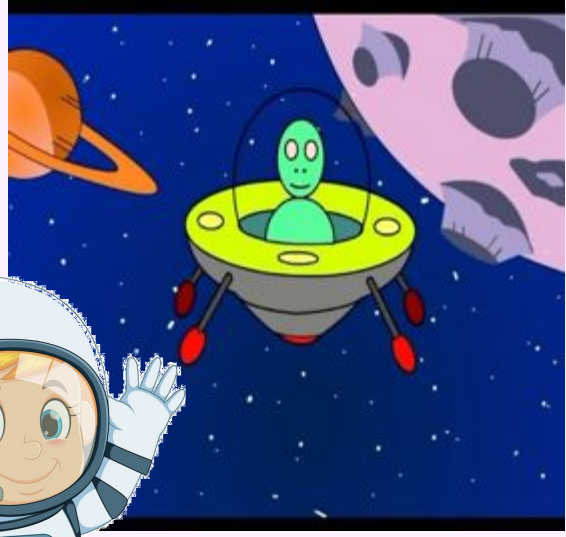
Quiz Time!

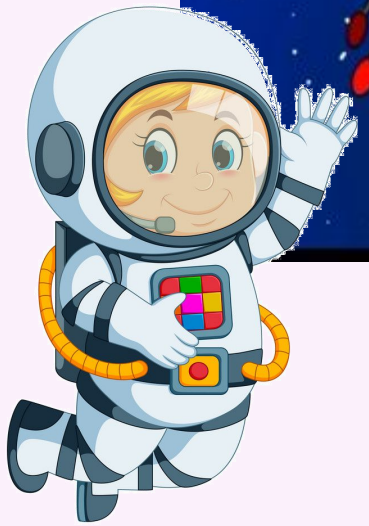
7. Can the alien hear the astronaut talking?





Quiz Time!

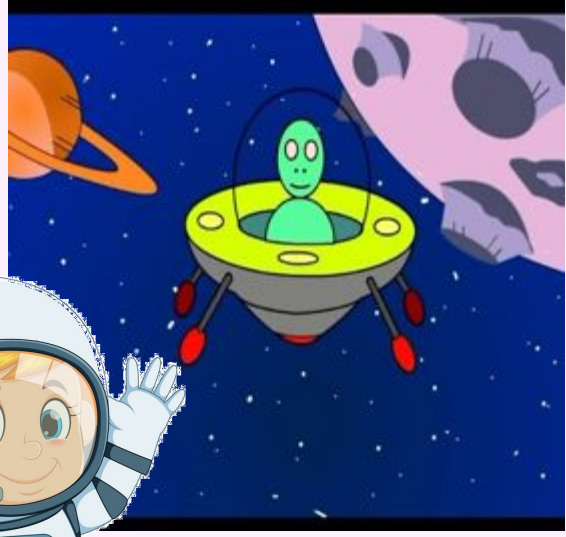


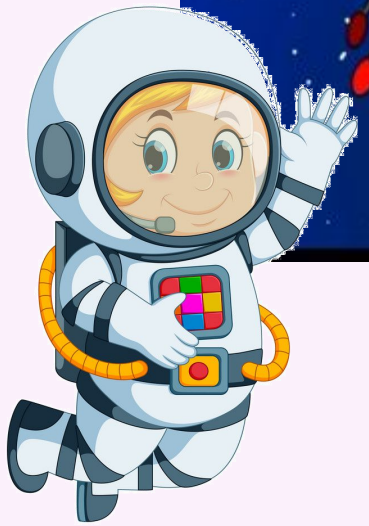


7. Can the alien hear the astronaut talking?

A. yes.

Quiz Time!



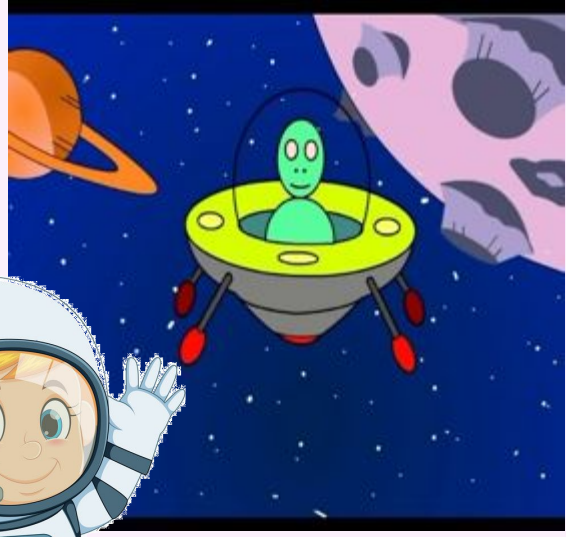


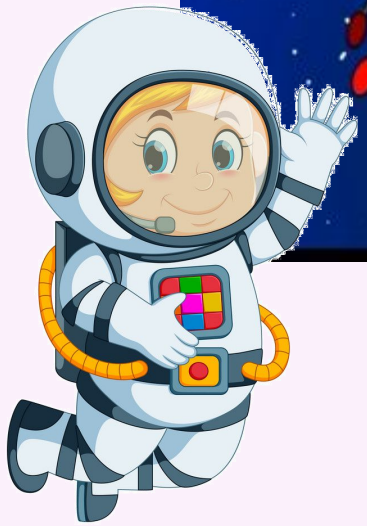
7. Can the alien hear the astronaut talking?

A. yes.

B. no.

Quiz Time!





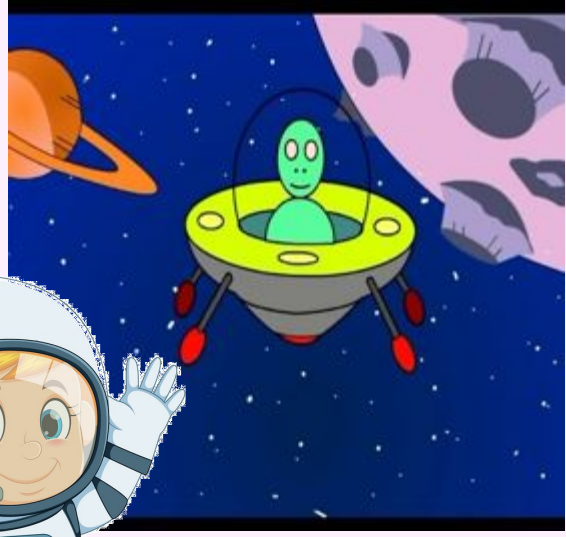
7. Can the alien hear the astronaut talking?

A. yes.

B. no.

C. maybe.

Quiz Time!



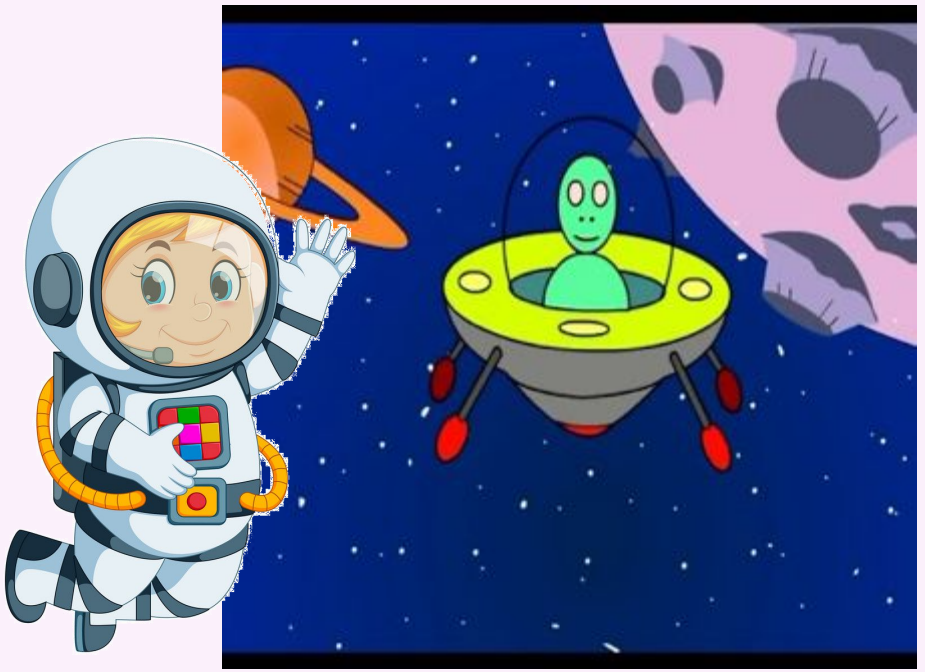
7. Can the alien hear the astronaut talking?

A. yes.

B. no.

C. maybe.

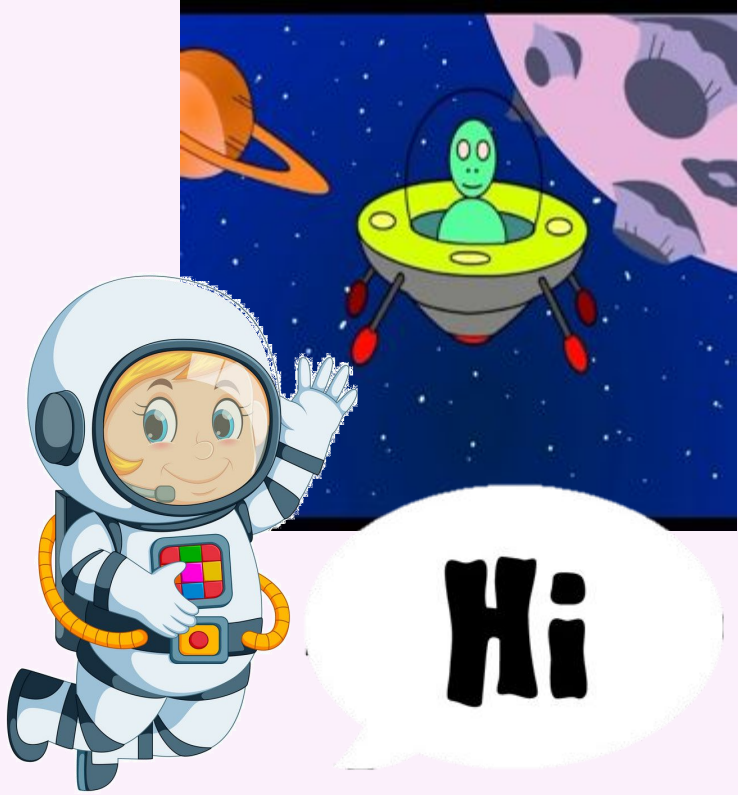
D. don’t know.



B. no

Quiz Time!

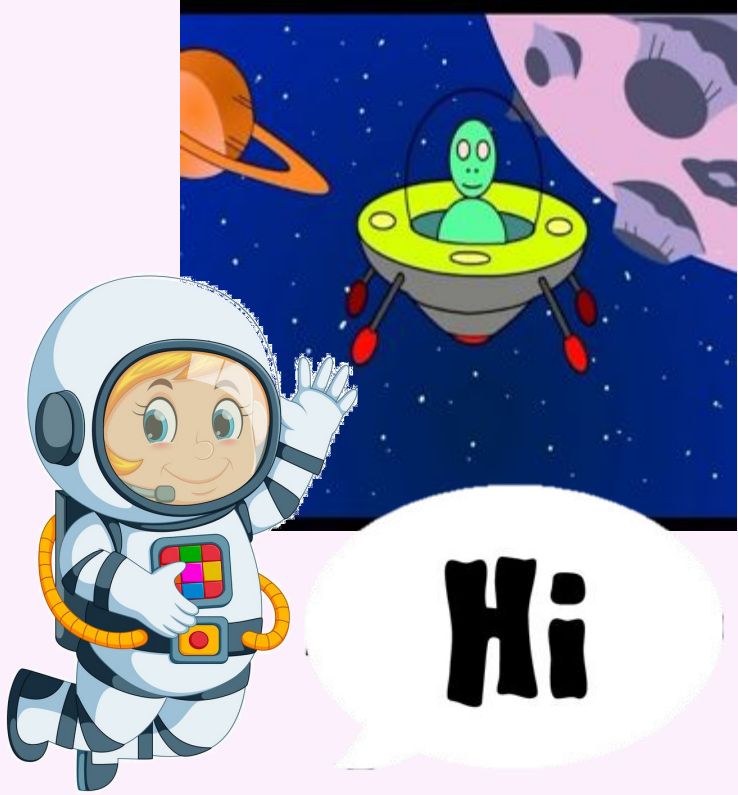
8. Why can’t we hear sounds in space?



Quiz Time!

8. Why can’t we hear sounds in space?

A. because the particles are very close together.

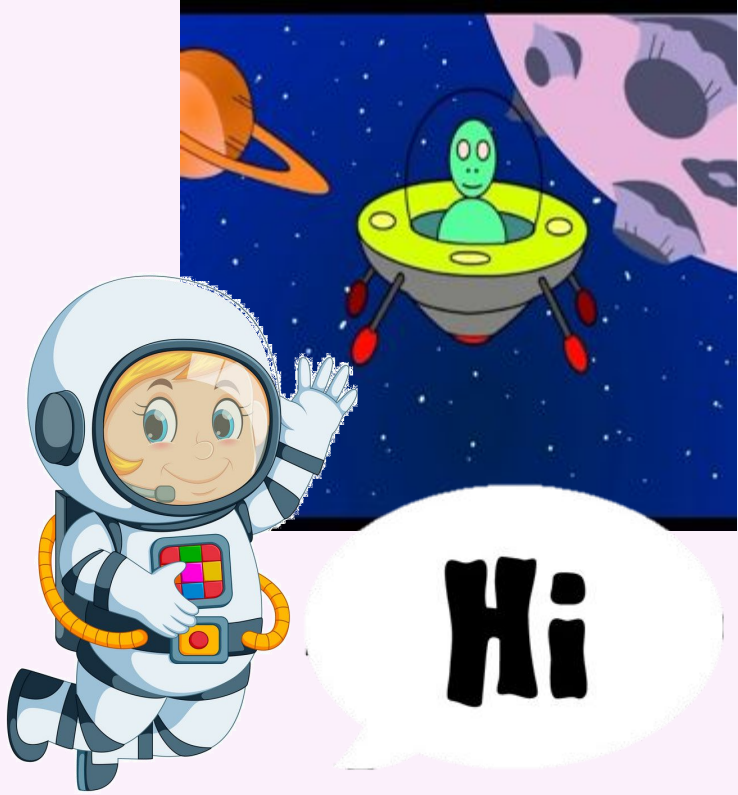


Quiz Time!

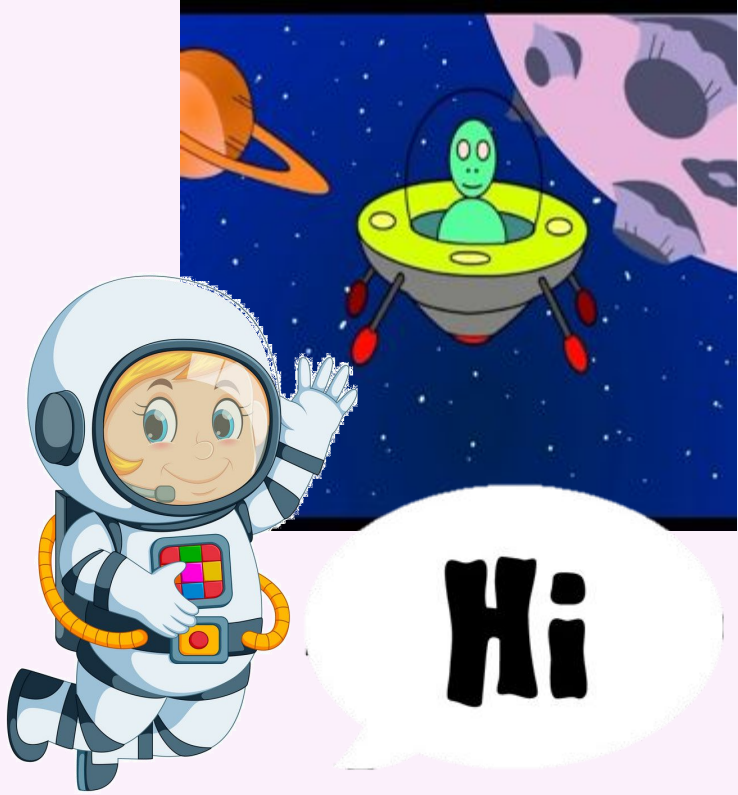
8. Why can’t we hear sounds in space?

A. because the particles are very close together.

B. because aliens can’t talk.



Quiz Time!



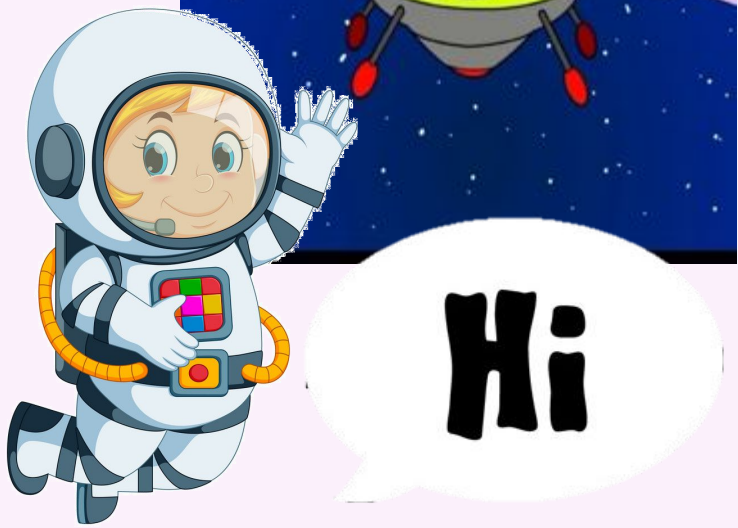
8. Why can’t we hear sounds in space?

A. because the particles are very close together.

B. because aliens can’t talk.

C. because the particles are far apart .

Quiz Time!



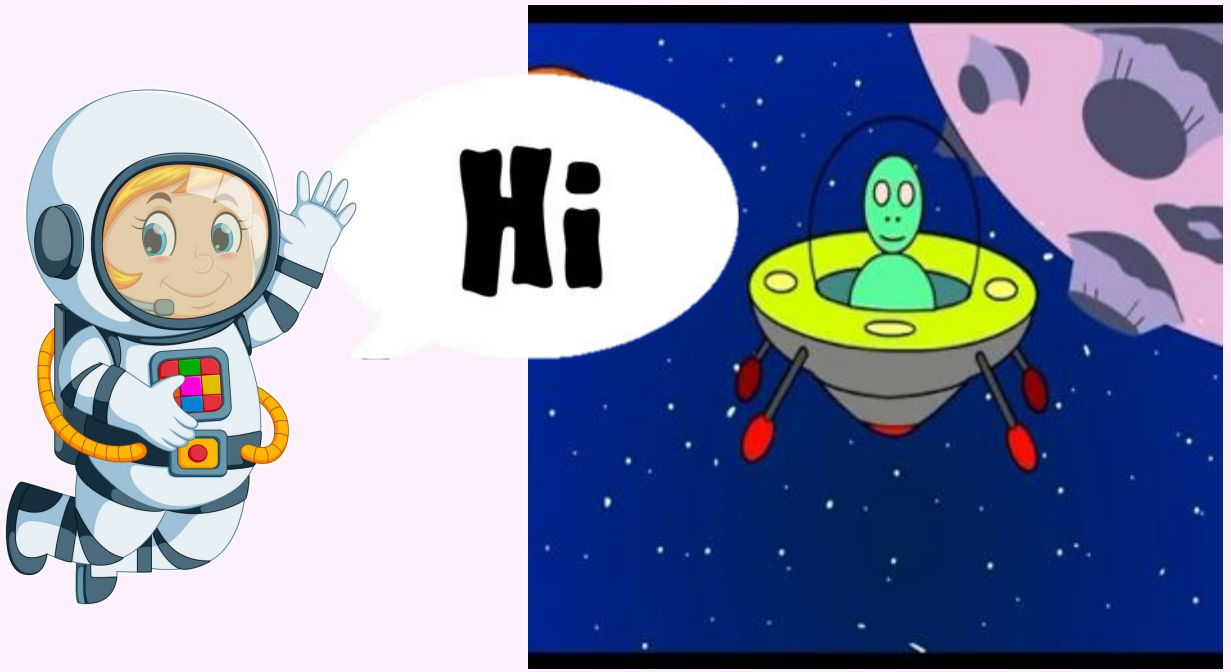
8. Why can’t we hear sounds in space?

A. because the particles are very close together.

B. because aliens can’t talk.

C. because the particles are far apart .

D. because there are no particles for sound to move through.



D. because there are no particles for sound to move through

Review

In a vacuum, like space, you can’t hear any sound as there are no particles to vibrate.

Excellent work today everyone!