ISTEP +

Science
Grade 4

Water in Bottles

Practice Set 2
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

A measuring cup

Describe ONE way Theo could improve his investigation to make the test more fair.

He could of used the same size of bottles.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

Every time he puts more in the sound goes higher.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

It would be very low.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know that because when it has 100 it’s low so when it has 50 it’s very low.
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

He would probably use a measuring cup.

Describe ONE way Theo could improve his investigation to make the test more fair.

He could use all glass or plastic bottles.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

When he adds more water the pitch gets higher.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

The pitch would be lower.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know it is correct because the less you put in the bottle the lower the pitch is.

4 pts
1 Acceptable – correct measuring tool
2 Acceptable – correct investigation improvement
3 Acceptable – correct conclusion description
4 Acceptable – correct comparison description
5 Acceptable – correct data explanation. “less you put in the bottle” references water.
Note: both 4 and 5 must be correct to earn credit for 1 key element
4 correct key elements
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

He used a measuring cup.

Describe ONE way Theo could improve his investigation to make the test more fair.

Use all plastic bottles or glass bottles.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The higher the water is the higher sound it makes.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

It would be a little lower than W.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I see that on the chart for W it had 100 mL of water in it. It said the pitch was low, so 50 mL of water would be lower.

4 pts

1 Acceptable – correct measuring tool
2 Acceptable – correct investigation improvement
3 Acceptable – correct conclusion description
4 Acceptable – correct comparison description
5 Acceptable – correct data explanation
Note: both 4 and 5 must be correct to earn credit for 1 key element
4 correct key elements
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

measuring cup

Describe ONE way Theo could improve his investigation to make the test more fair.

put the same amount of water in it

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more water in it higher pitch.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

The pitch would be low.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

It is correct because look at the graph.

3 pts
1 Acceptable – correct measuring tool
2 Acceptable – correct investigation improvement. “it” references bottles.
3 Acceptable – correct conclusion description
4 Unacceptable – no direct comparison description. “Lower” would be acceptable.
5 Unacceptable – incorrect data explanation
3 correct key elements
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

Theo most likely used a measuring cup.

Describe ONE way Theo could improve his investigation to make the test more fair.

He could pour the same amount of water into each bottle.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

The more water they have in them the low the pitch gets.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

The pitch will be very low.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know that the pitch will be very low because the more that’s in the bottle the higher the pitch.

3 pts

1 Acceptable – correct measuring tool
2 Acceptable – correct investigation improvement
3 Unacceptable – incorrect conclusion description
4 Acceptable – correct comparison description
5 Acceptable – correct data explanation
Note: both 4 and 5 must be correct to earn credit for 1 key element
3 correct key elements
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

Graduated Cylinder

Describe ONE way Theo could improve his investigation to make the test more fair.

By making each bottle the same shape

Describe ONE fact that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

I think the more water you put into the bottle the less the oxygen can go into the bottle.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

I think the pitch will be lower.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know because from the graph because the W bottle didn't have much water in it so the other bottle should be even lower.

3 pts
1 Acceptable – correct measuring tool
2 Acceptable – correct investigation improvement
3 Unacceptable – incorrect conclusion description. Student must tie pitch to water amount.
4 Acceptable – correct comparison description
5 Acceptable – correct data explanation
Note: both 4 and 5 must be correct to earn credit for 1 key element
3 correct key elements
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

Most likely a measuring cup.

Describe ONE way Theo could improve his investigation to make the test more fair.

One way might be to put the same amount of water in each bottle.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

One conclusion is that when you add one-hundred ml the pitch gets louder.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

The pitch made by the other bottle might be lower than bottle W.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know it's correct because 50 mL is lower than one-hundred ml.
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

Measuring cup

Describe ONE way Theo could improve his investigation to make the test more fair.

Get the same type of bottles then measure the same amount of water.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

In plastic bottle Z the pitch of the sound would be high pitch and the bottle is high so they relate.

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

50 mL of water would mean they would both be low.

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

I know it correct because 50 mL is just 50 mL under and that's how I know it's correct.
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

**measuring cup**

Describe ONE way Theo could improve his investigation to make the test more fair.

**add more water**

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

**The more water there is the higher the pitch**

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

**It will sound lower**

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

**If Bottle W has more than 50 mL and is still low I know dam correct**

3 pts

1 Acceptable – correct measuring tool
2 Unacceptable – incorrect investigation improvement
3 Acceptable – correct conclusion description
4 Acceptable – correct comparison description
5 Unacceptable – explanation is too vague. mL level must be tied directly to pitch.
Note: both 4 and 5 must be correct to earn credit for 1 key element
2 correct key elements
Identify the scientific tool Theo MOST LIKELY used to measure the amount of water poured into each bottle.

* a centimeter ruler. *

Describe ONE way Theo could improve his investigation to make the test more fair.

You measure the bottles with the centimeter ruler.

Describe ONE conclusion that could be made about how the amount of water in the bottle relates to the pitch of the sound produced.

* If it is low it will go down, but if it is very high it will go up. *

Theo has another bottle just like bottle W. He will put 50 mL of water in it and blow across the top.

Describe how the pitch produced by the bottle with 50 mL of water in it will compare with the pitch produced by bottle W.

* Bottle W might be smaller. *

Use data from the table to EXPLAIN how you know your description of the pitch produced by the bottle with 50 mL of water is correct.

* It is because... that's all that can fit in there. *