# Hot Hot Hot

L4 Evaporation and Humidity

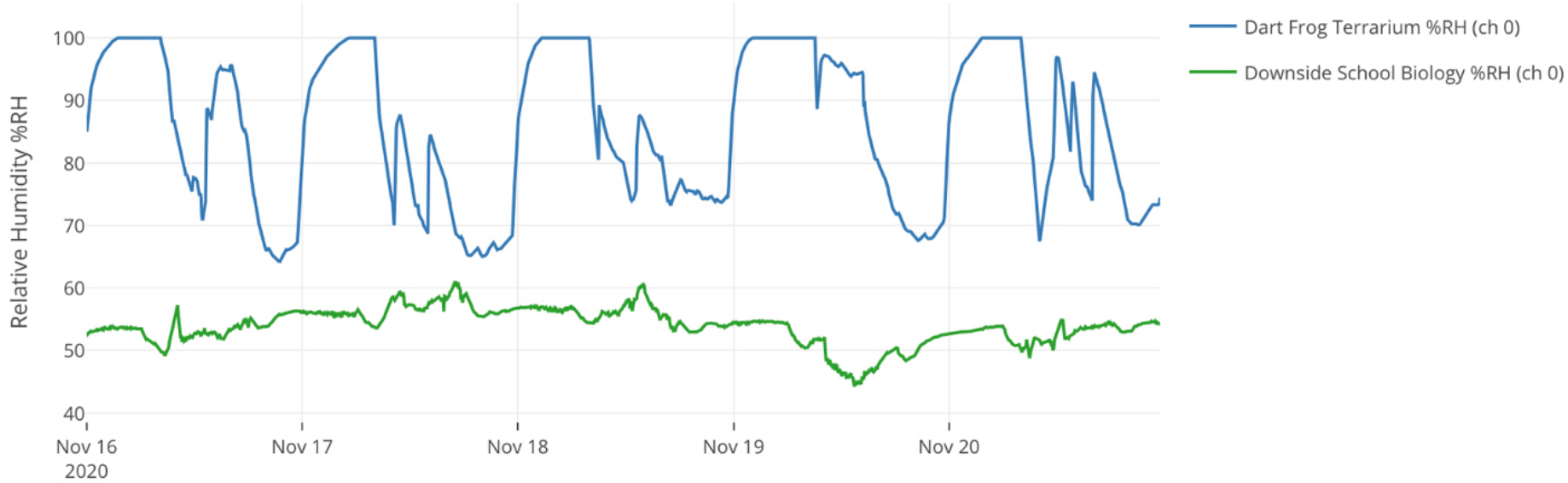

We’re off to the rainforest!
What do you need to pack?

# Dart frogs don’t drink!

Humidity describes how much water there is in the air

100% humidity is completely full of water.

0% is completely dry




1. Select the correct words to complete the sentences.

A This graph shows changes in _____ (humidity/temperature) in the frog terrarium and our classroom over one _____ (week/month).

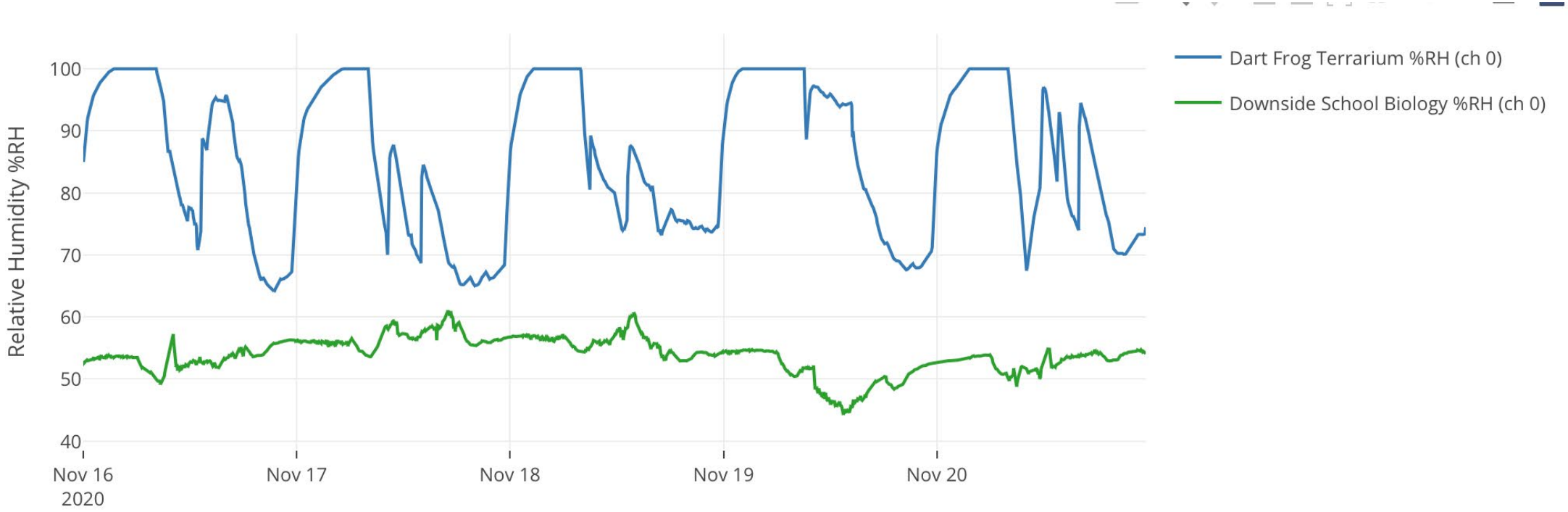
B The classroom humidity remains between 45% and _____ (60%/70%/80%).

C The humidity in the dart frog terrarium is much _____ (higher/lower) and shows _____ (hourly/daily/weekly) cycles. These are likely linked to light levels and temperature changes.

D Dart frogs are happiest at high humidities. If the humidity drops below 70% for long periods of time they might become dehydrated. This is because dart frogs do not drink and absorb all the water they need through their _____ (skin/noses).

2. On your graph, draw a ☺ at the 5 points when the terrarium humidity is 100%
3. On your graph, draw a ☹ at the 4 points where the terrarium humidity drops below 70%

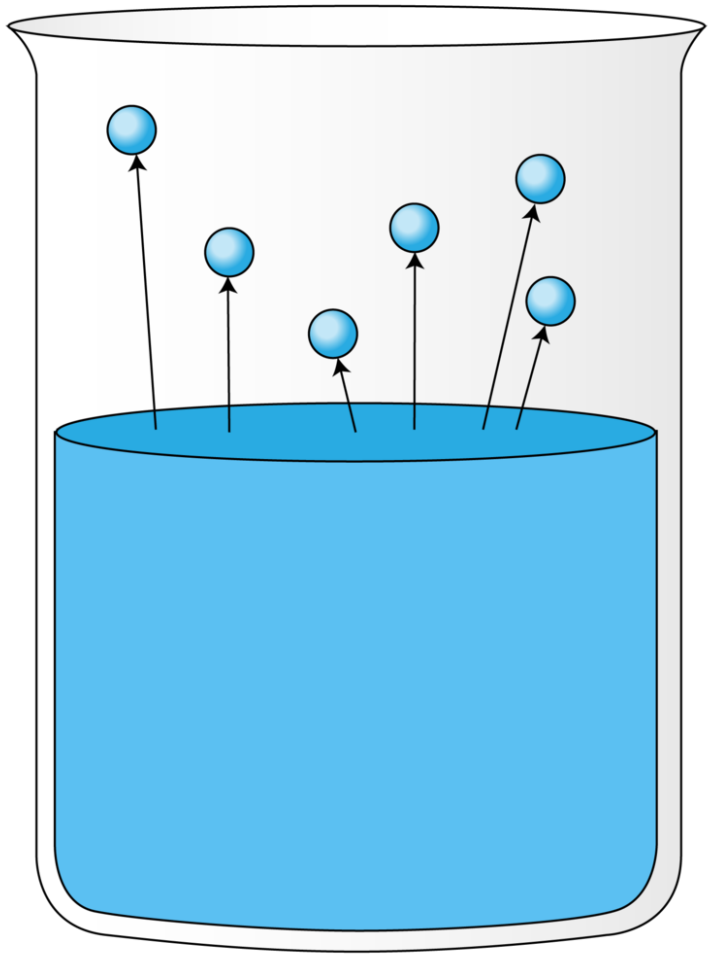
# When is happy/danger time for our school frogs?



# What do you think are the benefits of tracking changes in humidity over time?

# How does water get into the air?

# When water turns from liquid to gas it…



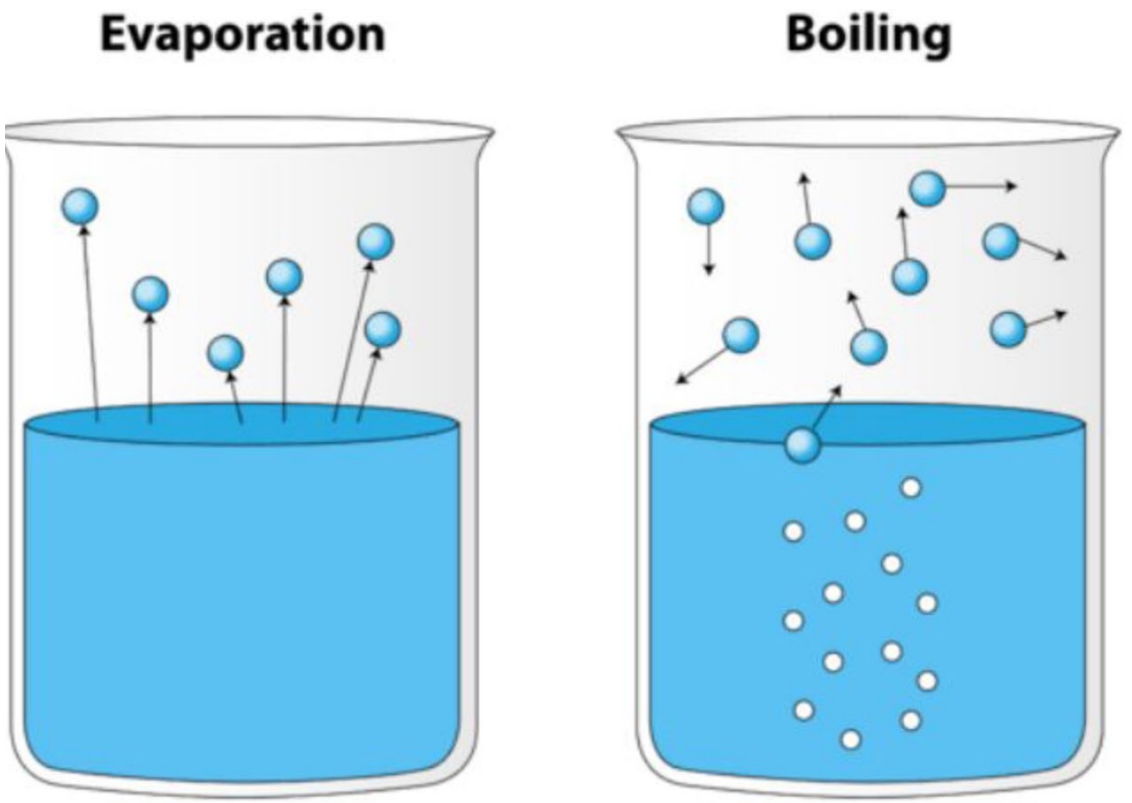
Evaporates or boils?

# Cooling by Evaporation

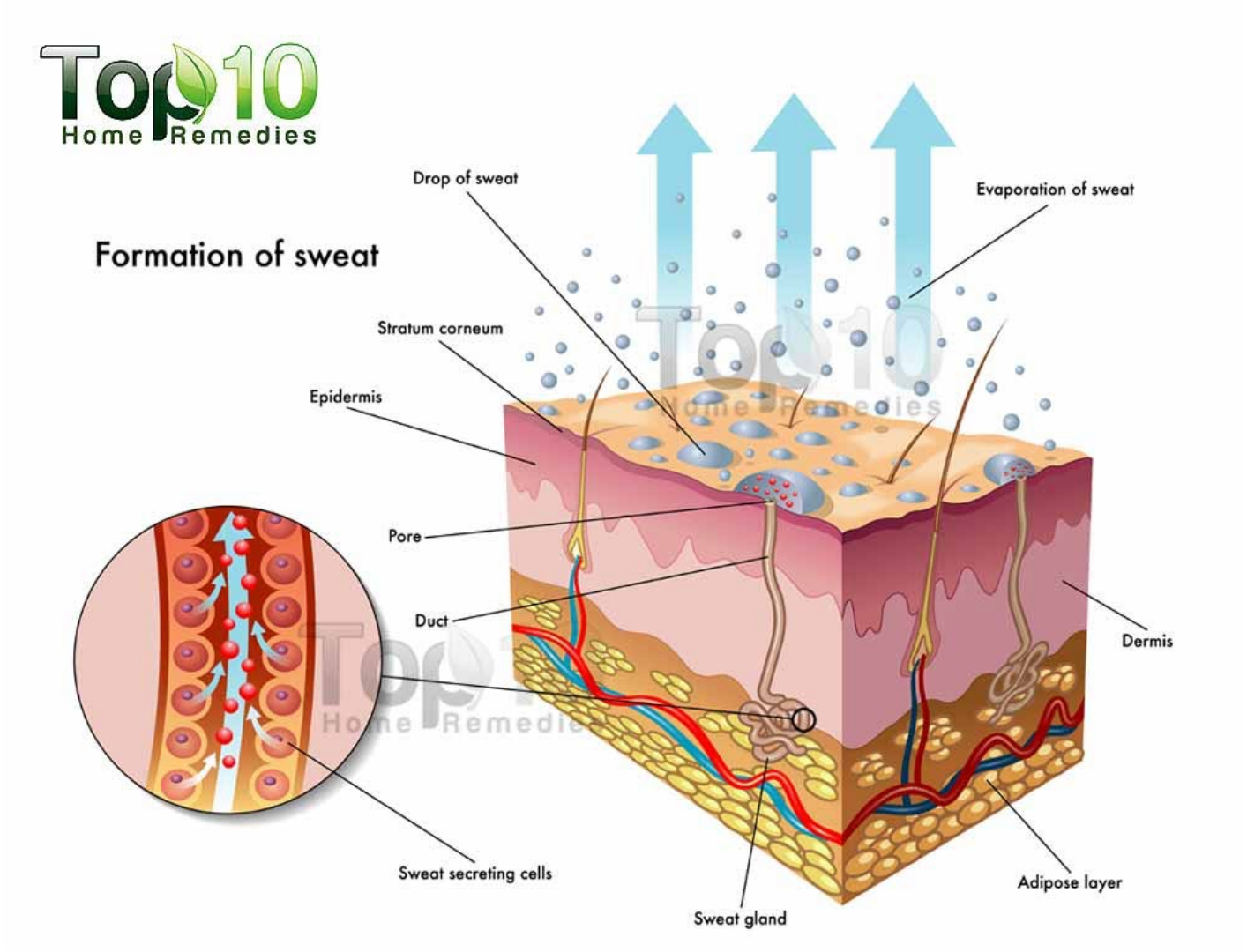
- Evaporation is a way of transferring _____ _____

- A liquid evaporates fastest at its _____ point but it can evaporate at any temperature.

- When particles escape from a liquid they form a _____ and take _____ energy with them. The particles left behind have less energy and so the temperature of the remaining liquid is _____.

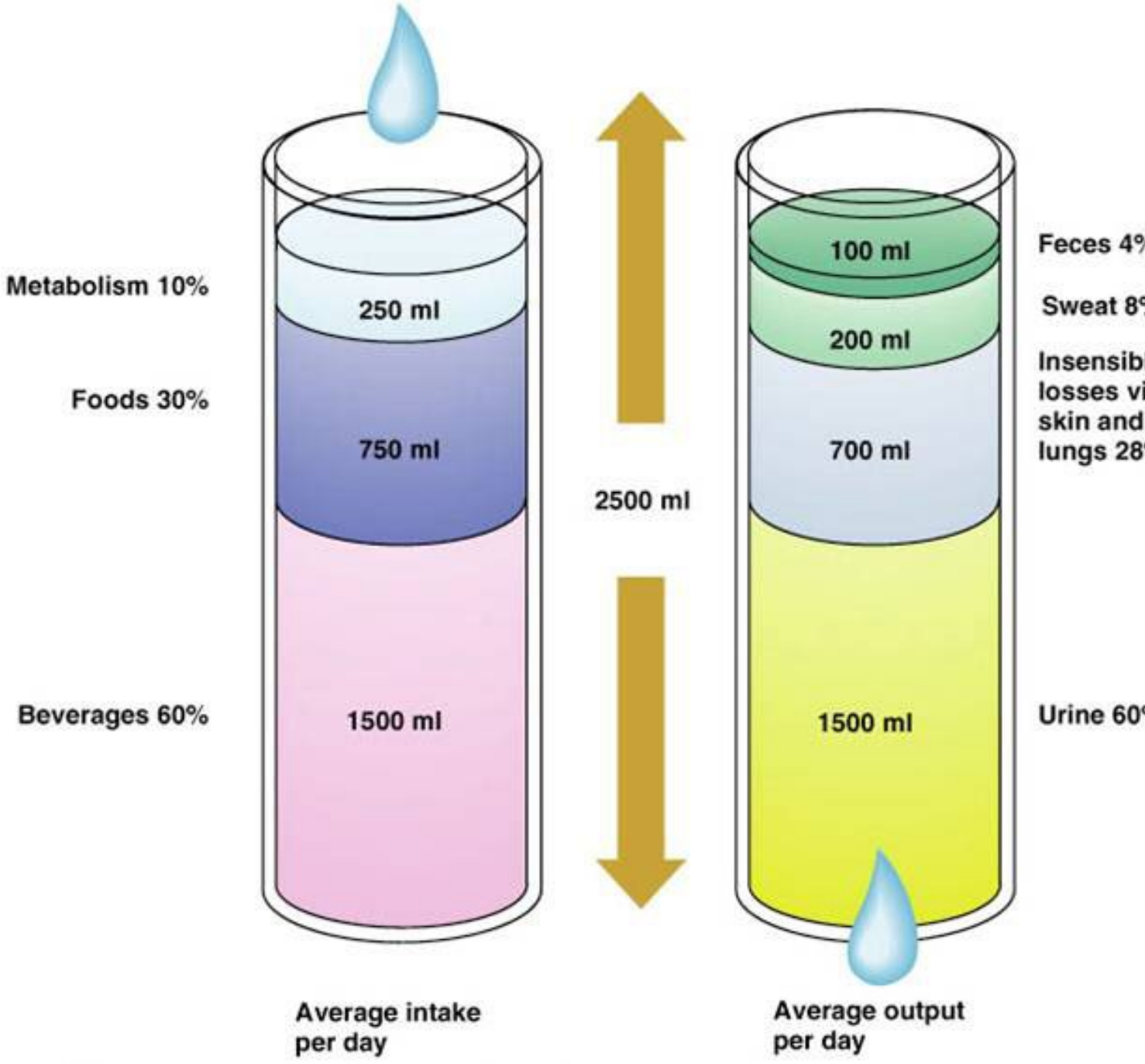


# This is why sweating cools us down

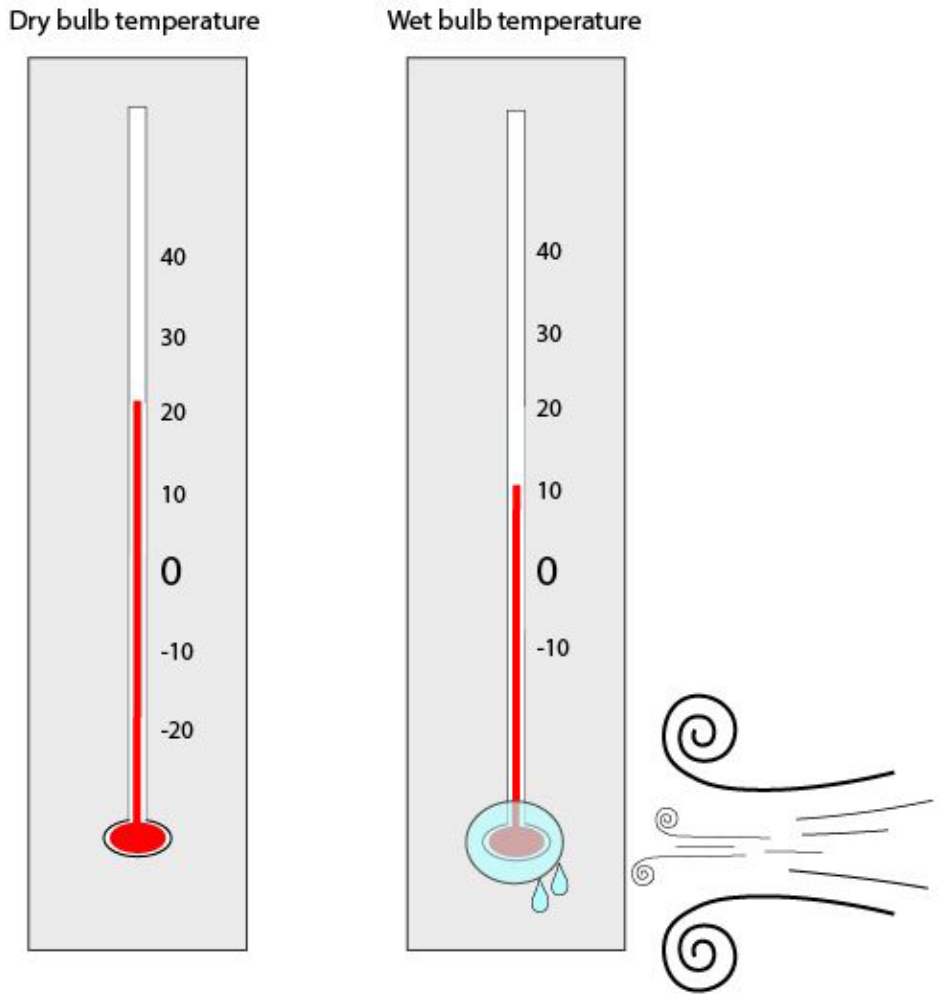


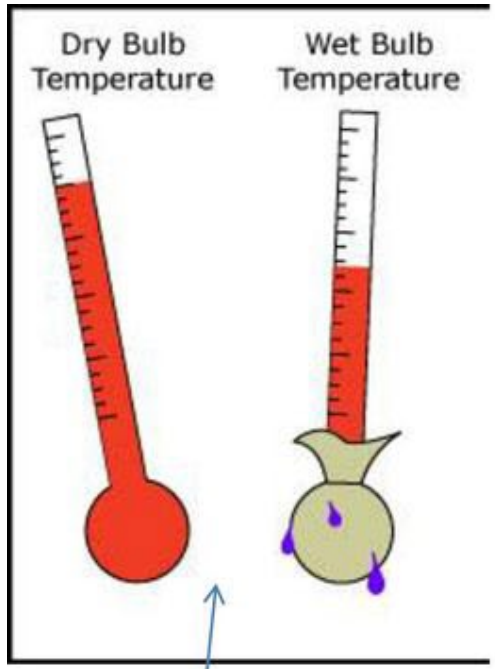

When sweat _____ from skin it takes _____ energy with it. This means that the skin loses thermal energy and feels _____.

- How much water do we lose by sweating each day?
- How do we replace that water?
- What do we have to do if we sweat more than usual?



# How do we measure humidity?






psychrometer

Measuring relative humidity

Use a dry bulb, a wet bulb and a table to determine the % of water Vapor the air contains. These instruments are called a **psychrometer.**

**Relative Humidity (%)**

| Dry-Bulb Temperature (°C) | Difference Between Wet-Bulb and Dry-Bulb Temperatures (C°) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| −20 | 100 | 28 | | | | | | | | | | | | | | |
| −18 | 100 | 40 | | | | | | | | | | | | | | |
| −16 | 100 | 48 | | | | | | | | | | | | | | |
| −14 | 100 | 55 | 11 | | | | | | | | | | | | | |
| −12 | 100 | 61 | 23 | | | | | | | | | | | | | |
| −10 | 100 | 66 | 33 | | | | | | | | | | | | | |
| −8 | 100 | 71 | 41 | 13 | | | | | | | | | | | | |
| −6 | 100 | 73 | 48 | 20 | | | | | | | | | | | | |
| −4 | 100 | 77 | 54 | 32 | 11 | | | | | | | | | | | |
| −2 | 100 | 79 | 58 | 37 | 20 | 1 | | | | | | | | | | |
| 0 | 100 | 81 | 63 | 45 | 28 | 11 | | | | | | | | | | |
| 2 | 100 | 83 | 67 | 51 | 36 | 20 | 6 | | | | | | | | | |
| 4 | 100 | 85 | 70 | 56 | 42 | 27 | 14 | | | | | | | | | |
| 6 | 100 | 86 | 72 | 59 | 46 | 35 | 22 | 10 | | | | | | | | |
| 8 | 100 | 87 | 74 | 62 | 51 | 39 | 28 | 17 | 6 | | | | | | | |
| 10 | 100 | 88 | 76 | 65 | 54 | 43 | 33 | 24 | 13 | 4 | | | | | | |
| 12 | 100 | 88 | 78 | 67 | 57 | 48 | 38 | 28 | 19 | 10 | 2 | | | | | |
| 14 | 100 | 89 | 79 | 69 | 60 | 50 | 41 | 33 | 25 | 16 | 8 | 1 | | | | |
| 16 | 100 | 90 | 80 | 71 | 62 | 54 | 45 | 37 | 29 | 21 | 14 | 7 | 1 | | | |
| 18 | 100 | 91 | 81 | 72 | 64 | 56 | 48 | 40 | 33 | 26 | 19 | 12 | 6 | | | |
| 20 | 100 | 91 | 82 | 74 | 66 | 58 | 51 | 44 | 36 | 30 | 23 | 17 | 11 | 5 | | |
| 22 | 100 | 92 | 83 | 75 | 68 | 60 | 53 | 46 | 40 | 33 | 27 | 21 | 15 | 10 | 4 | |
| 24 | 100 | 92 | 84 | 76 | 69 | 62 | 55 | 49 | 42 | 36 | 30 | 25 | 20 | 14 | 9 | 4 |
| 26 | 100 | 92 | 85 | 77 | 70 | 64 | 57 | 51 | 45 | 39 | 34 | 28 | 23 | 18 | 13 | 9 |
| 28 | 100 | 93 | 86 | 78 | 71 | 65 | 59 | 53 | 47 | 42 | 36 | 31 | 26 | 21 | 17 | 12 |
| 30 | 100 | 93 | 86 | 79 | 72 | 66 | 61 | 55 | 49 | 44 | 39 | 34 | 29 | 25 | 20 | 16 |

# Compare to the probe in Bio1

- How close are we?
- Why might there be a difference?
- Which is most likely to be correct?

# Type the key words that we learnt today!