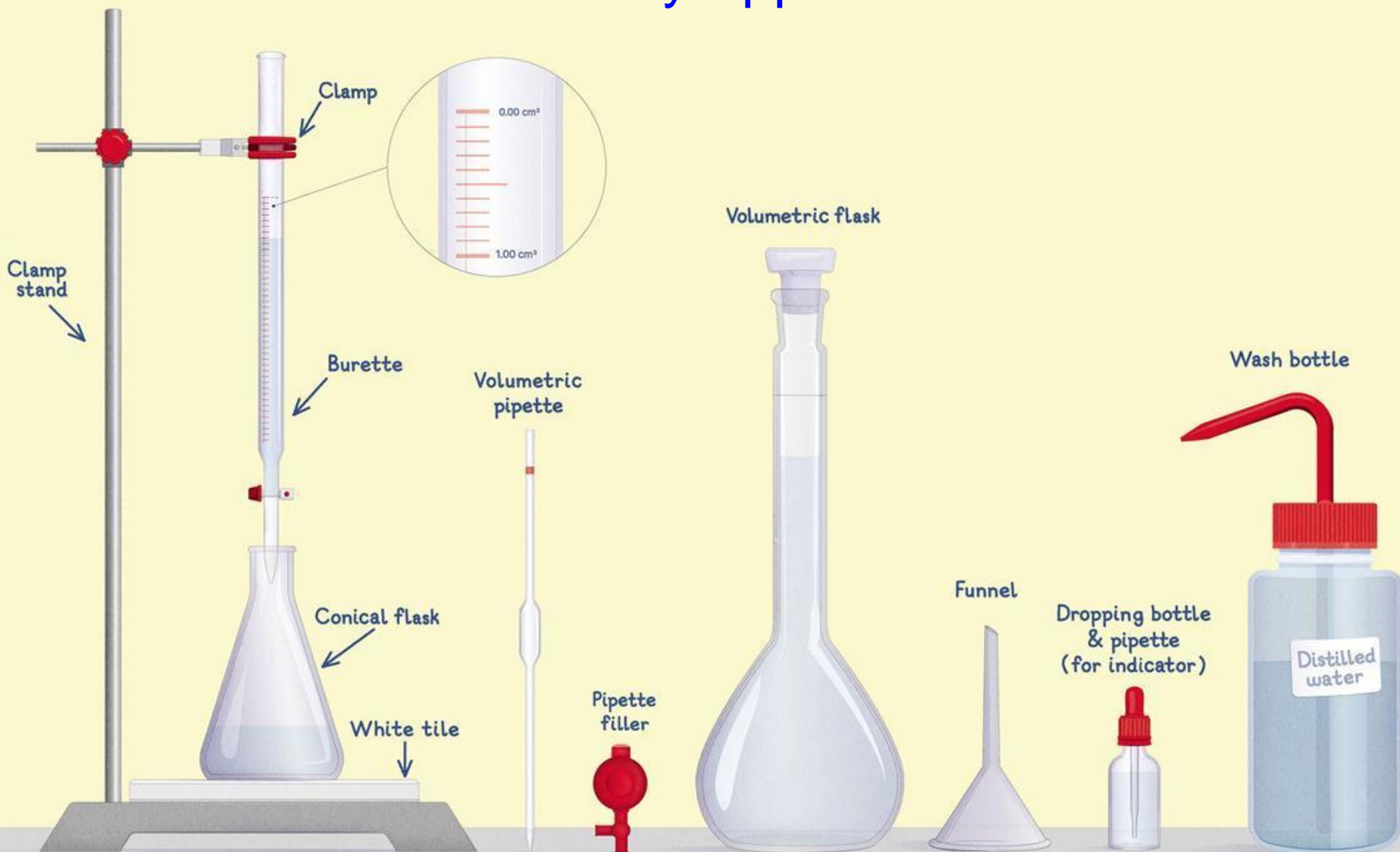


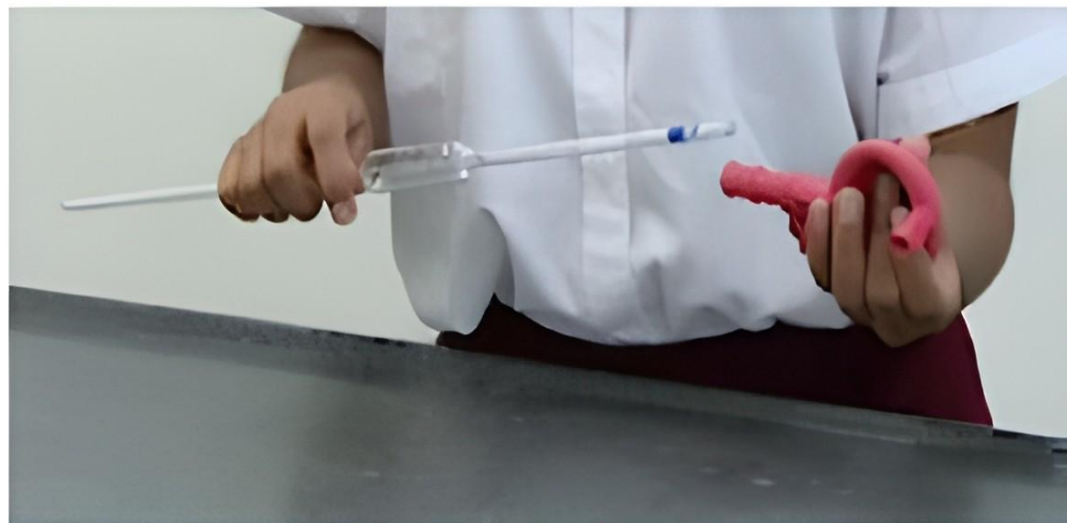
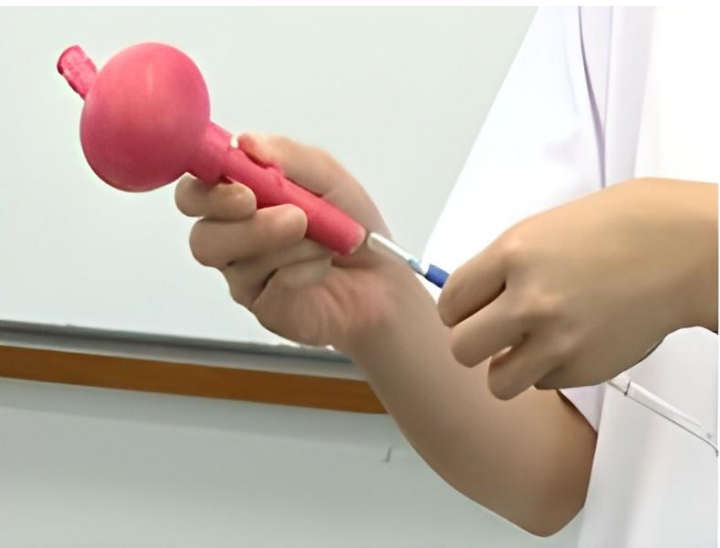


# Checklist for Titration

# Standard Laboratory Apparatus for Titration



## Correct and incorrect ways to insert a graduated pipette into a pipette filler.



- ✓ Hold the pipette close to the top. Gently push and twist the pipette to safely insert it into the pipette filler.
- ✗ Do not hold the pipette in the middle. The pipette could snap, and the broken glass may cause injury.

# Checklist for Titration

1) Rinse the burette with distilled water?

Yes

No

2) Rinse the burette with the solution that it will be used to contain?

Yes

No

3) Ensure that the tap of the burette is closed before filling it with the required solution?

Yes

No

4) Over fill the burette with solution?

Yes

No

5) Rinse the pipette with distilled water?

Yes

No



# Checklist for Titration

1) Rinse the burette with distilled water?

Yes

No

2) Rinse the burette with the solution that it will be used to contain?

Yes

No

3) Ensure that the tap of the burette is closed before filling it with the required solution?

Yes

No

4) Over fill the burette with solution?

Yes

No

5) Rinse the pipette with distilled water?

Yes

No



# Checklist for Titration

6) Rinse the pipette with the solution that it will be filled with?

Yes  No

7) Insert the pipette carefully and gently into the pipette filler?

Yes  No

8) Suck excess solution into the pipette filler?

Yes  No

9) Remove the pipette from the solution while adjusting the meniscus onto the graduation?

Yes  No

10) Touch the tip of the pipette onto the surface of the solution before removing it from the flask?

Yes  No



# Checklist for Titration

6) Rinse the pipette with the solution that it will be filled with?

Yes  No

7) Insert the pipette carefully and gently into the pipette filler?

Yes  No

8) Suck excess solution into the pipette filler?

Yes  No

9) Remove the pipette from the solution while adjusting the meniscus onto the graduation?

Yes  No

10) Touch the tip of the pipette onto the surface of the solution before removing it from the flask?

Yes  No



# Checklist for Titration

11) Blow the solution out of the pipette using the pipette filler?

Yes

No

12) Before use, rinse the conical flask with distilled water?

Yes

No

13) Rinse the conical flask with the solution that will be pipetted into it?

Yes

No

14) Ensure that the burette is clamped vertically at all times, especially while taking readings?

Yes

No

15) Climb up on a stool to take burette readings?

Yes

No





# Checklist for Titration

11) Blow the solution out of the pipette using the pipette filler?

Yes  No

- Let the solution drain out of the pipette under gravity.

12) Before use, rinse the conical flask with distilled water?

Yes  No

13) Rinse the conical flask with the solution that will be pipetted into it?

Yes  No

- Increases the amount of chemical in the flask, increasing the volume of solution from the burette.

14) Ensure that the burette is clamped vertically at all times, especially while taking readings?

Yes  No

- Do *not* remove the burette from the clamp to take readings – the burette *must* be vertical.

15) Climb up on a stool to take burette readings?

Yes  No

- This is dangerous! Lower the burette in its clamp so that you can take readings.



# Checklist for Titration

**16)** Remove the funnel from the top of the burette before taking readings and starting the titration?

Yes

No

**17)** Ensure eye is level with the meniscus when taking readings?

Yes

No

**18)** Take burette reading going *up* the burette's scale?

Yes

No

**19)** Ignore air bubbles in the burette and pipette as they will not affect the results?

Yes

No

**20)** Ensure that a white tile is placed under the conical flask while performing the titration?

Yes

No



# Checklist for Titration

16) Remove the funnel from the top of the burette before taking readings and starting the titration?

Yes

No

17) Ensure eye is level with the meniscus when taking readings?

Yes

No

18) Take burette reading going *up* the burette's scale?

Yes

No

- Read the burette moving *down* the scale, in the direction that the solution is moving.

19) Ignore air bubbles in the burette and pipette as they will not affect the results?

Yes

No

- Air bubbles must be removed. They occupy a volume that should be taken-up by the solution.

20) Ensure that a white tile is placed under the conical flask while performing the titration?

Yes

No



# Checklist for Titration

21) Add 10 to 12 drops of indicator to the solution in the conical flask?

Yes

No

22) Ensure that the burette is filled to exactly 0.00 cm<sup>3</sup> before starting the actual titration?

Yes

No

23) Swirl the conical flask continuously during the titration?

Yes

No

24) Wash the inside of the conical flask with distilled water near to the end-point?

Yes

No

25) Ensure that the addition of just *one drop* of solution from the burette gives the desired colour?

Yes

No



# Checklist for Titration

21) Add 10 to 12 drops of indicator to the solution in the conical flask?

Yes

No

- Only add 2 – 4 drops of indicator to the solution in the conical flask.

22) Ensure that the burette is filled to exactly 0.00 cm<sup>3</sup> before starting the actual titration?

Yes

No

- Ensure that the meniscus of the solution is on the scale towards the top of the burette.

23) Swirl the conical flask continuously during the titration?

Yes

No

24) Wash the inside of the conical flask with distilled water near to the end-point?

Yes

No

25) Ensure that the addition of just *one drop* of solution from the burette gives the desired colour?

Yes

No



# Checklist for Titration

26) Wear safety glasses during the course of the practical?

Yes  No

27) Record all burette readings to two decimal places?

Yes  No

28) Repeat the titration until two results  $\pm 0.10 \text{ cm}^3$  are obtained?

Yes  No

29) Record the volume of the solution that is pipetted to one decimal place?

Yes  No

30) Tick the best *three* “volumes of solution used” to average for the calculation?

Yes  No



# Checklist for Titration

26) Wear safety glasses during the course of the practical?

Yes

No

27) Record all burette readings to two decimal places?

Yes

No

28) Repeat the titration until two results  $\pm 0.10 \text{ cm}^3$  are obtained?

Yes

No

29) Record the volume of the solution that is pipetted to one decimal place?

Yes

No

30) Tick the best *three* “volumes of solution used” to average for the calculation?

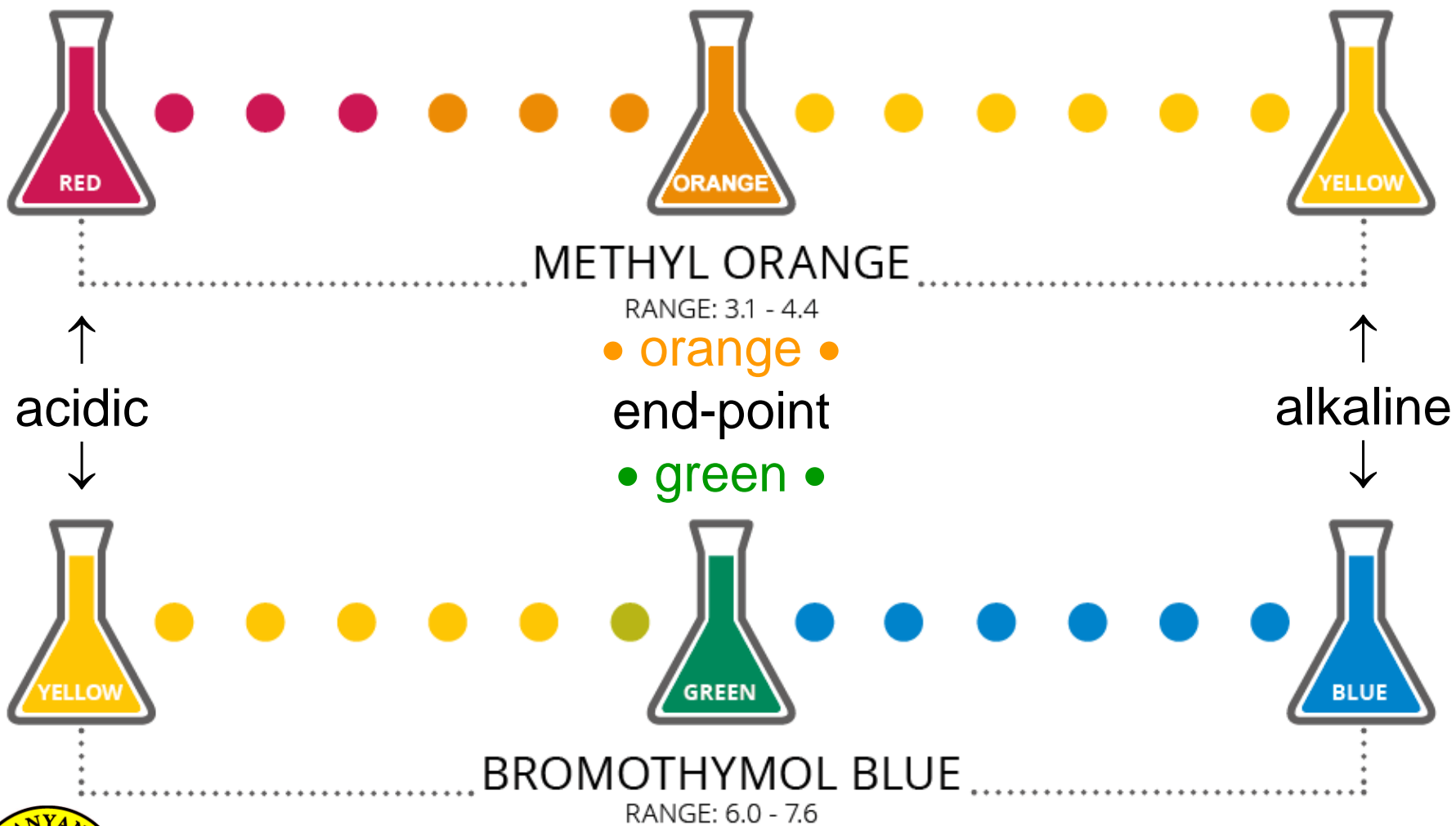
Yes

No

• Only tick the best *two* “volumes of solution used” and average these for the calculation.



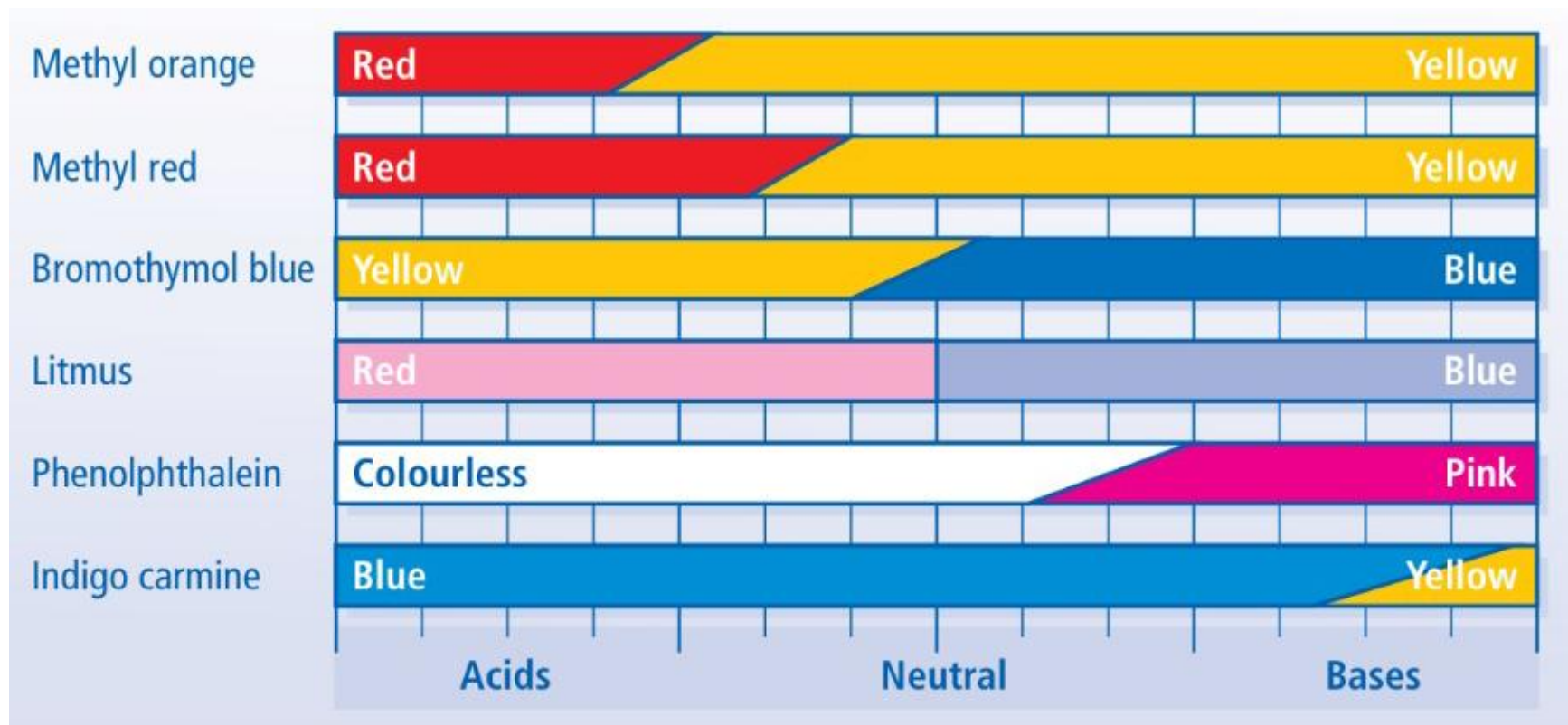
# Checklist for Titration





# Checklist for Titration

## Common Indicators



# Checklist for Titration



	Titration			
	Rough	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
*Final burette reading / cm <sup>3</sup>				
*Initial burette reading / cm <sup>3</sup>				
Volume of solution used / cm <sup>3</sup>				
✓ Two results ± 0.10 cm <sup>3</sup>				

\*Note that it is burette *reading* and NOT burette *volume*.

- Volume of solution from pipette =  $25.0 \text{ cm}^3$  (1 d.p.).



# Checklist for Titration



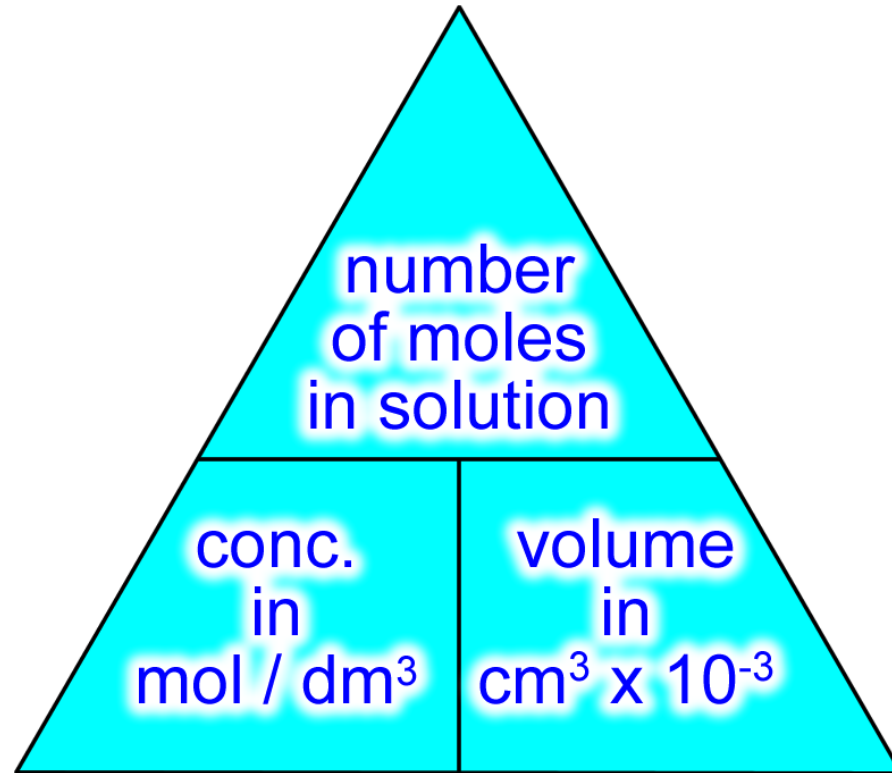
	Titration			
	Rough	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>
Final burette reading / cm <sup>3</sup>	27.55	33.80	27.60	27.00
Initial burette reading / cm <sup>3</sup>	1.30	8.70	2.25	1.80
Volume of solution used / cm <sup>3</sup>	26.25	25.10	25.35	25.20
✓ Two results ± 0.10 cm <sup>3</sup>		✓		✓

- Average of best two results  
=  $(25.10 + 25.20) \div 2 = \underline{25.15 \text{ cm}^3}$

- Volume of solution pipetted = 25.0 cm<sup>3</sup>



# Checklist for Titration



# Checklist for Titration



- Draw the table quickly and clearly.
  - Table can be drawn in *pencil*.
    - Please write in *pen*.
  - It is essential to include *units*.
  - Burette *reading*, not *volume*.
  - *Volume* of solution, not *amount*.
    - Burette readings to *2 d.p.*
    - *Pipette reading to 1 d.p.*
  - *Include zeros*, e.g. 23.00 not 23.



# Checklist for Titration



Presentation on  
**Checklist for Titration**  
by Dr. Chris Slatter

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2<sup>nd</sup> July 2016

