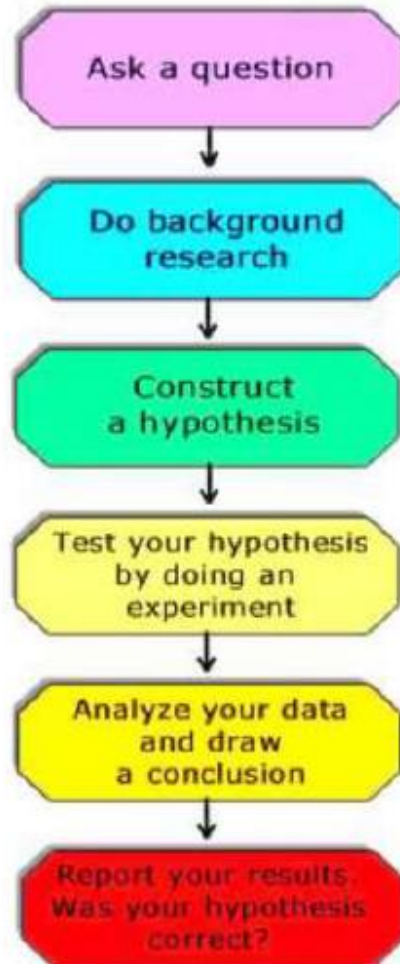# Learning Goals for Today

Learning Goals for Today

Learning Goals for Today

- Understand the different parts of the "real" scientific method

- Analyze the different thought processes towards a scientific goal
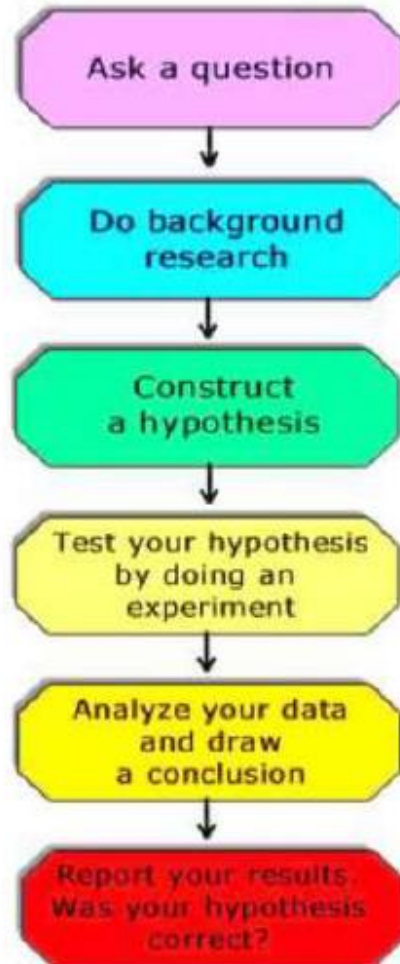
Learning Goals for Today

- Understand the different parts of the "real" scientific method

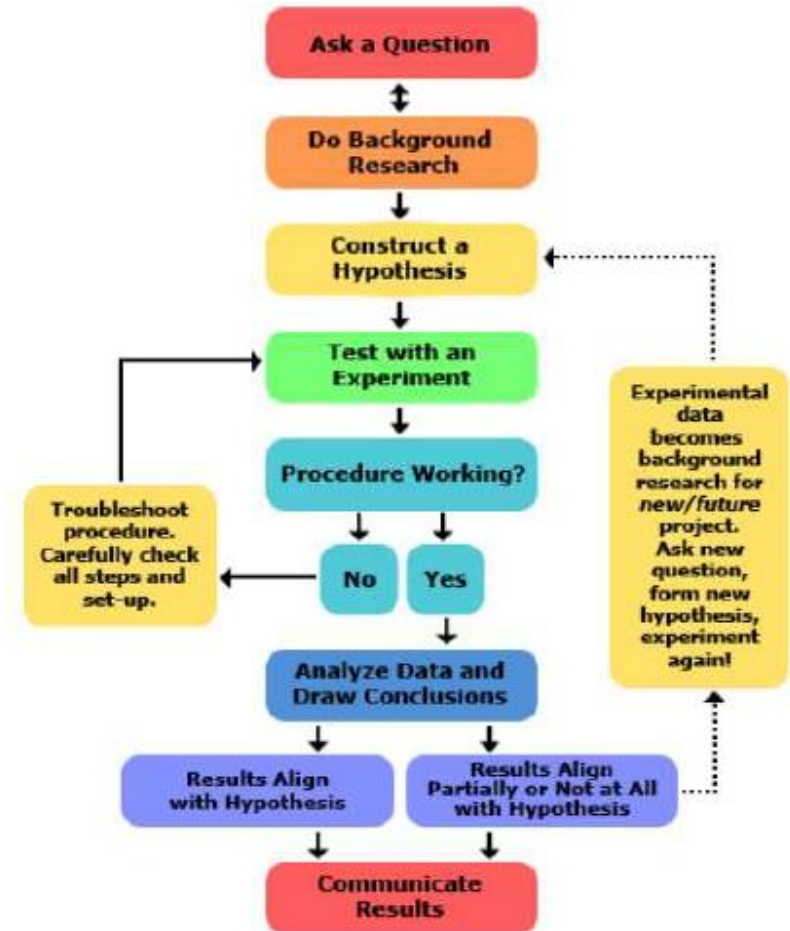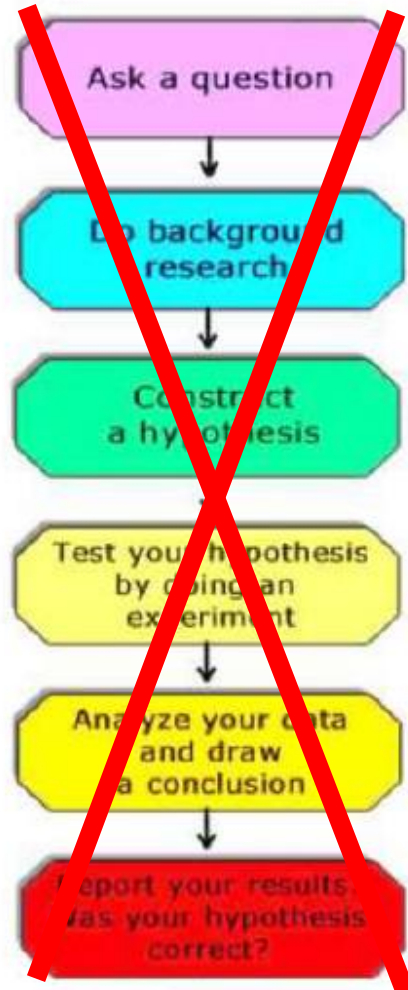- Analyze the different thought processes towards a scientific goal

Scientific method

Is this the "real" scientific method?

Scientific method

Ask a question

Do background research

Construct a hypothesis

Test your hypothesis by doing an experiment

Analyze your data and draw a conclusion
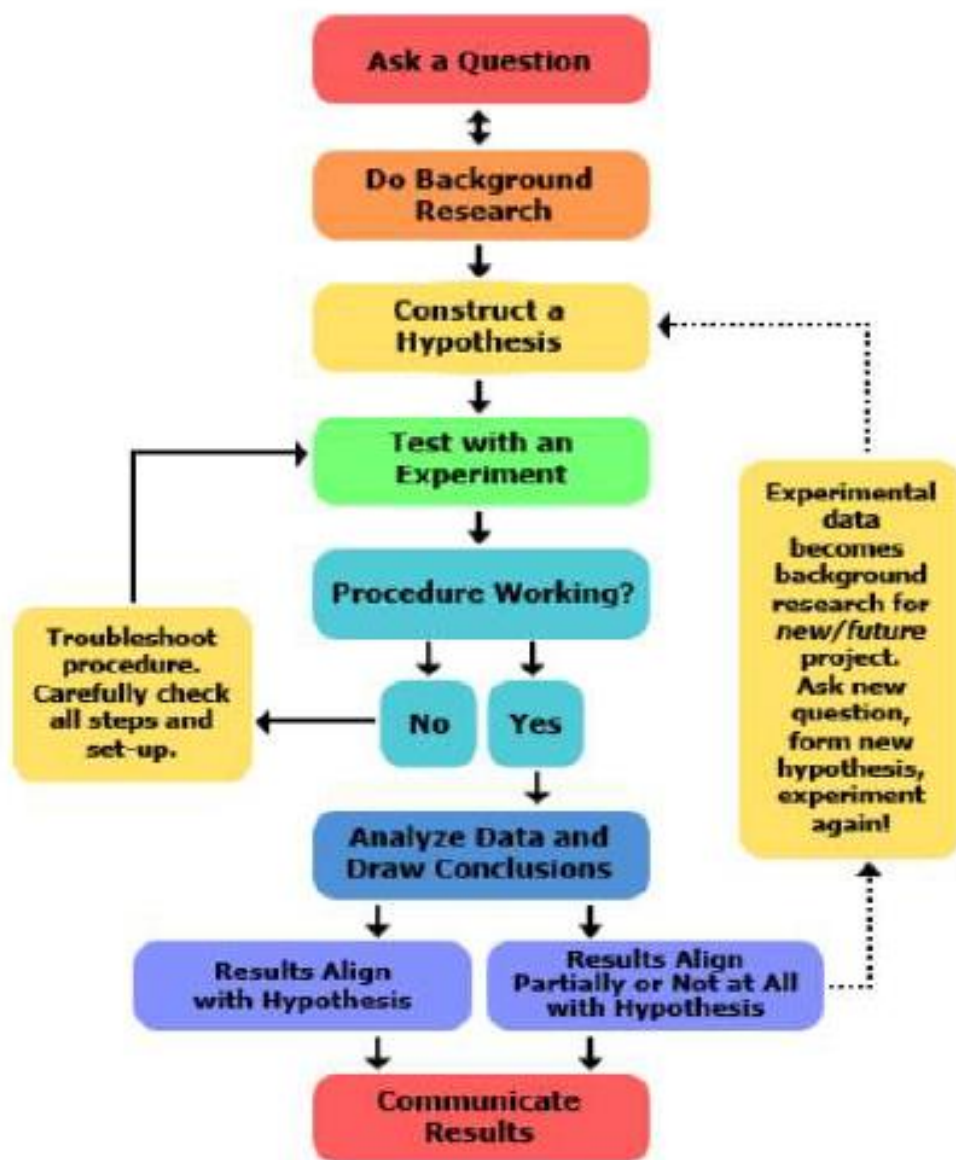
Report your results. Was your hypothesis correct?

Is this the "real" scientific method?

No

Scientific method

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Diagram ©sciencebuddies.com

Ask a Question

Do Background Research

Construct a Hypothesis

Test with an Experiment

Procedure Working?

Troubleshoot procedure. Carefully check all steps and set-up.

No   Yes

Experimental data becomes background research for new/future project. Ask new question, form new hypothesis, experiment again!

Analyze Data and Draw Conclusions

Results Align with Hypothesis

Results Align Partially or Not at All with Hypothesis

Communicate Results

Diagram ©sciencebuddies.com

Diagram ©sciencebuddies.com

Ask a Question

Do Background Research

Construct a Hypothesis

What is a hypothesis?

Test with an Experiment

Procedure Working?

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Diagram ©sciencebuddies.com

What is a hypothesis?

"educated guess" to guide a scientific discovery process
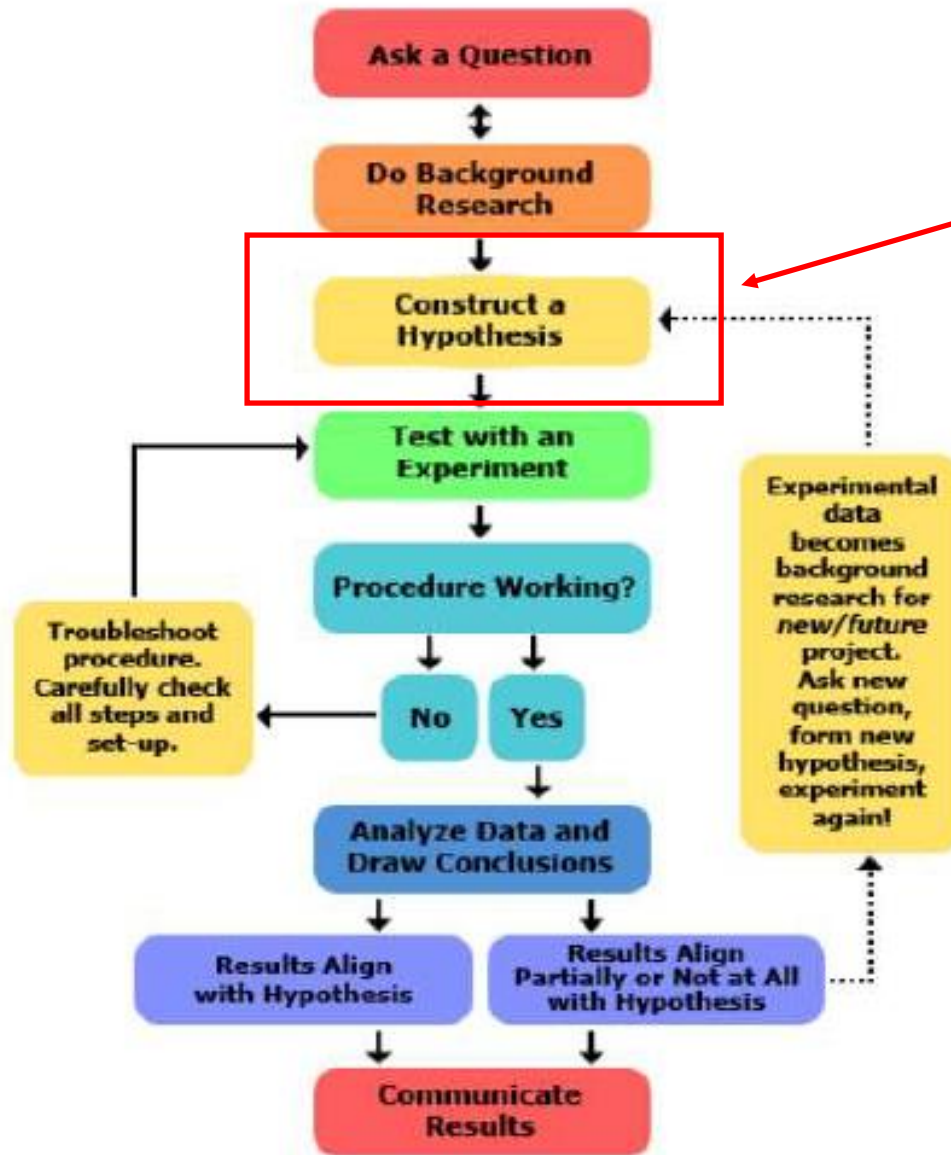
Diagram ©sciencebuddies.com

What is a hypothesis?

"educated guess" to guide a scientific discovery process

"educated" because we know something (even a "little") about what we are trying to answer

Diagram ©sciencebuddies.com

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No   Yes

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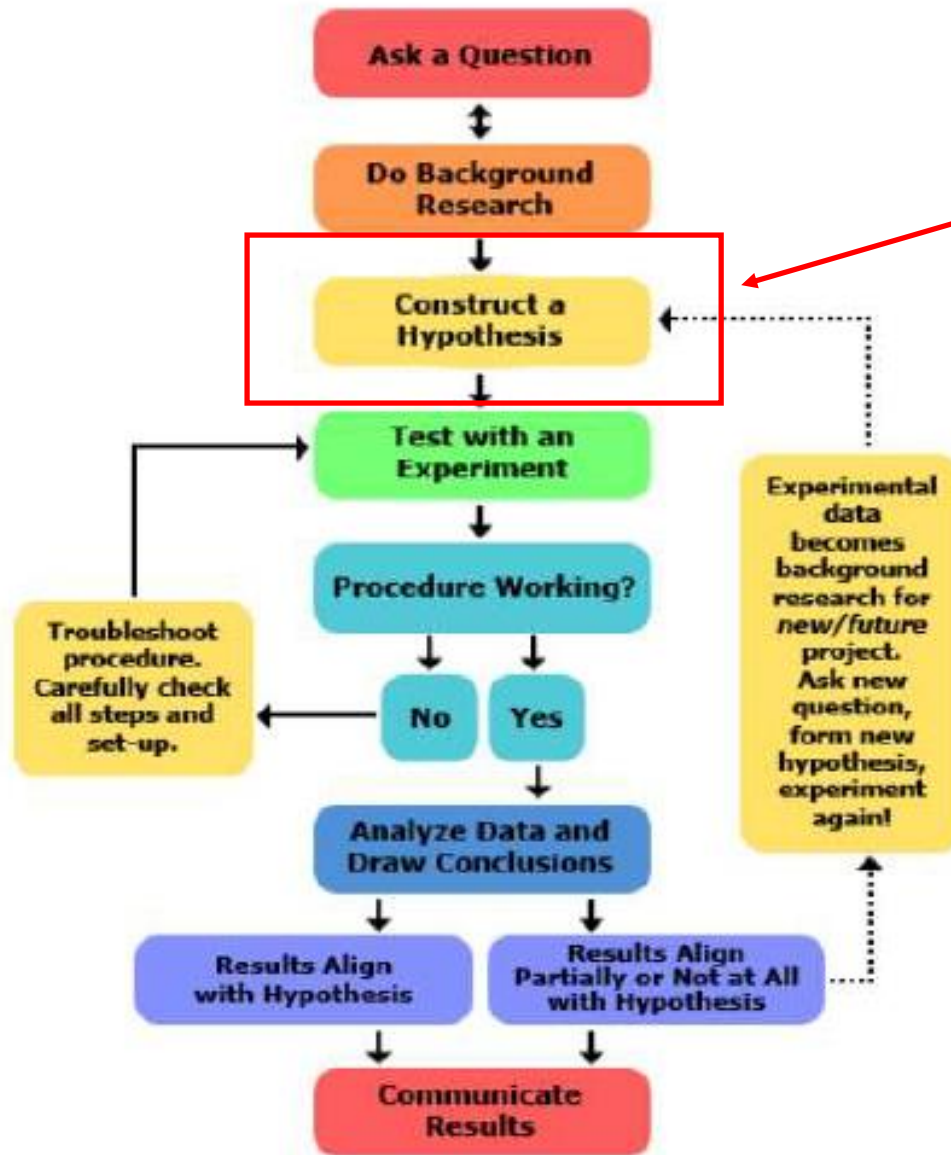
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What **are two importance characteristics** of a hypothesis (your **answer must be only two words**)

Diagram ©sciencebuddies.com

What is a hypothesis?

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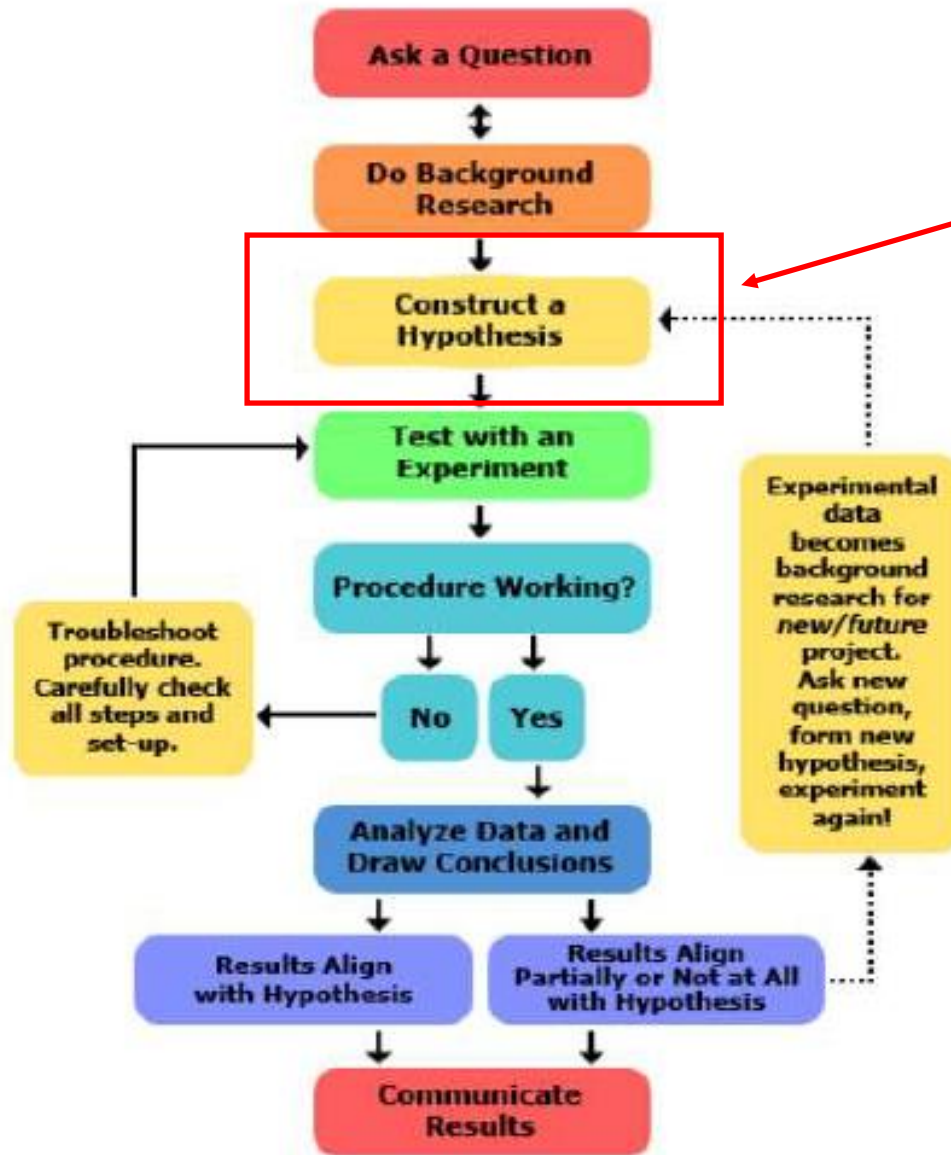
1) Testable

2) Falsifiable

What is a hypothesis?

"educated guess" to guide a scientific discovery process

"educated" because we know something (even a "little") about what we are trying to answer

What are two importance characteristics of a hypothesis (your answer must be only two words)

1) Testable → be able to be tested with feasible experiments

2) Falsifiable

Diagram ©sciencebuddies.com

What is a hypothesis?

"educated guess" to guide a scientific discovery process

"educated" because we know something (even a "little") about what we are trying to answer

What are two importance characteristics of a hypothesis (your answer must be only two words)

1) Testable → be able to be tested with feasible experiments

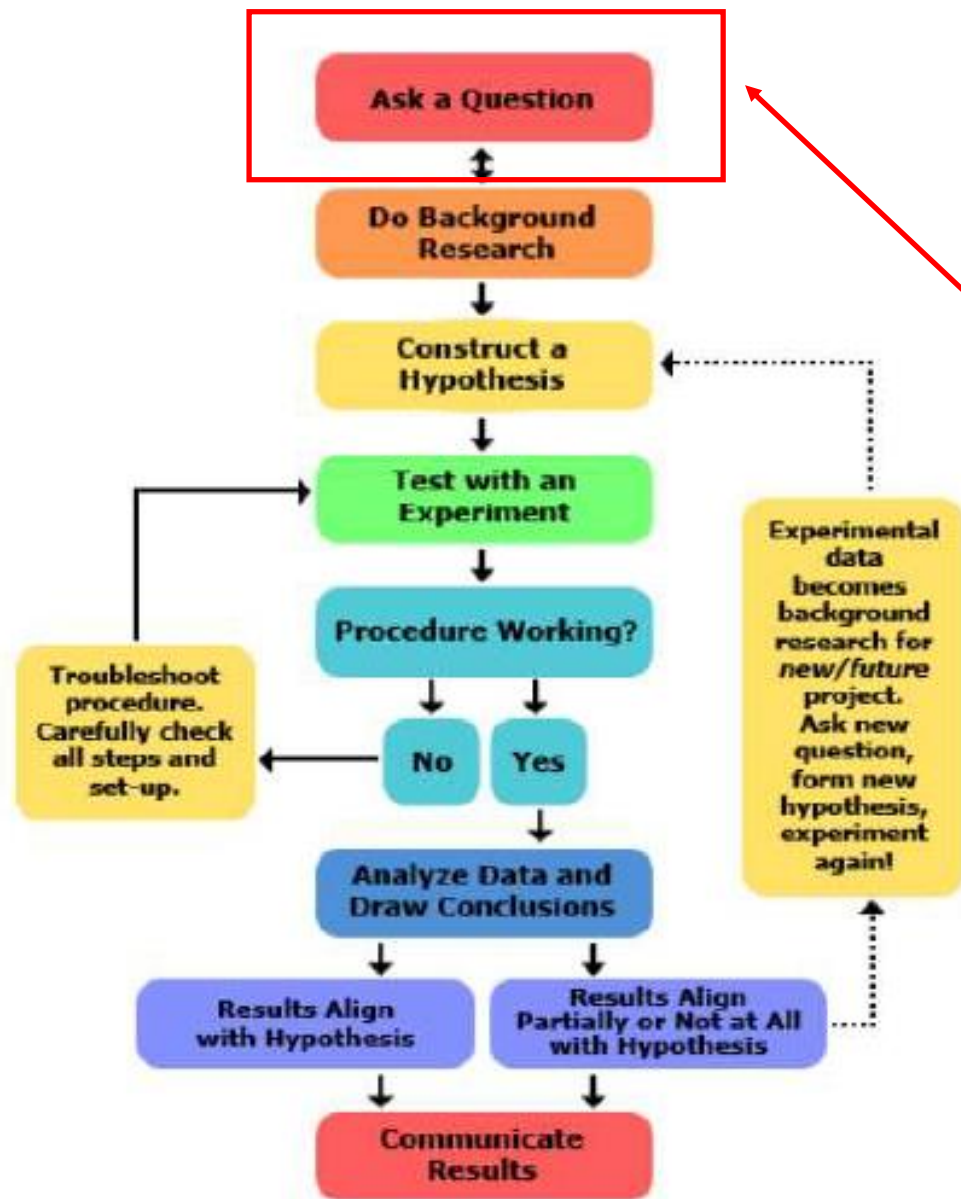2) Falsifiable → be able to proven "true" or "false"

What is a hypothesis?

What is a purpose?

Diagram ©sciencebuddies.com
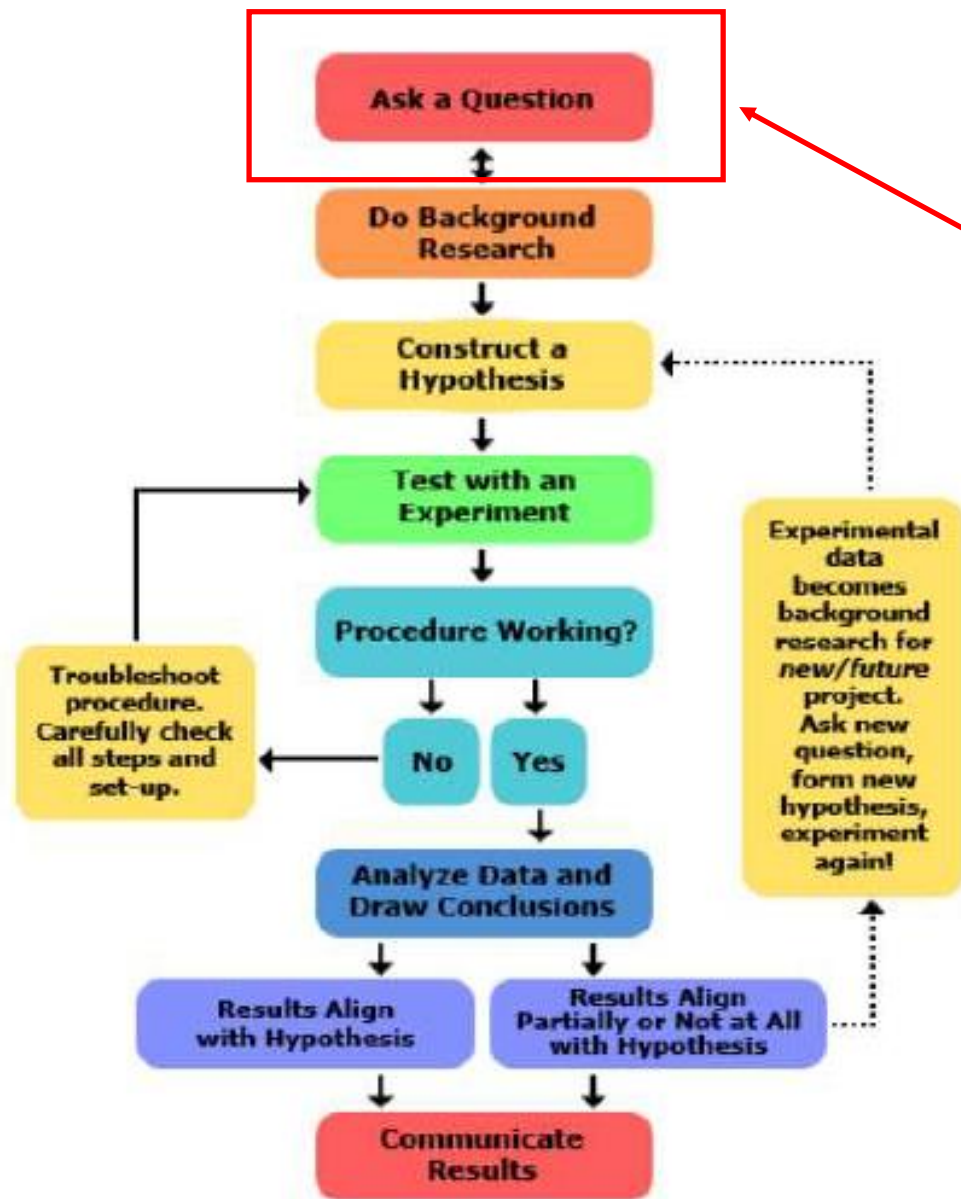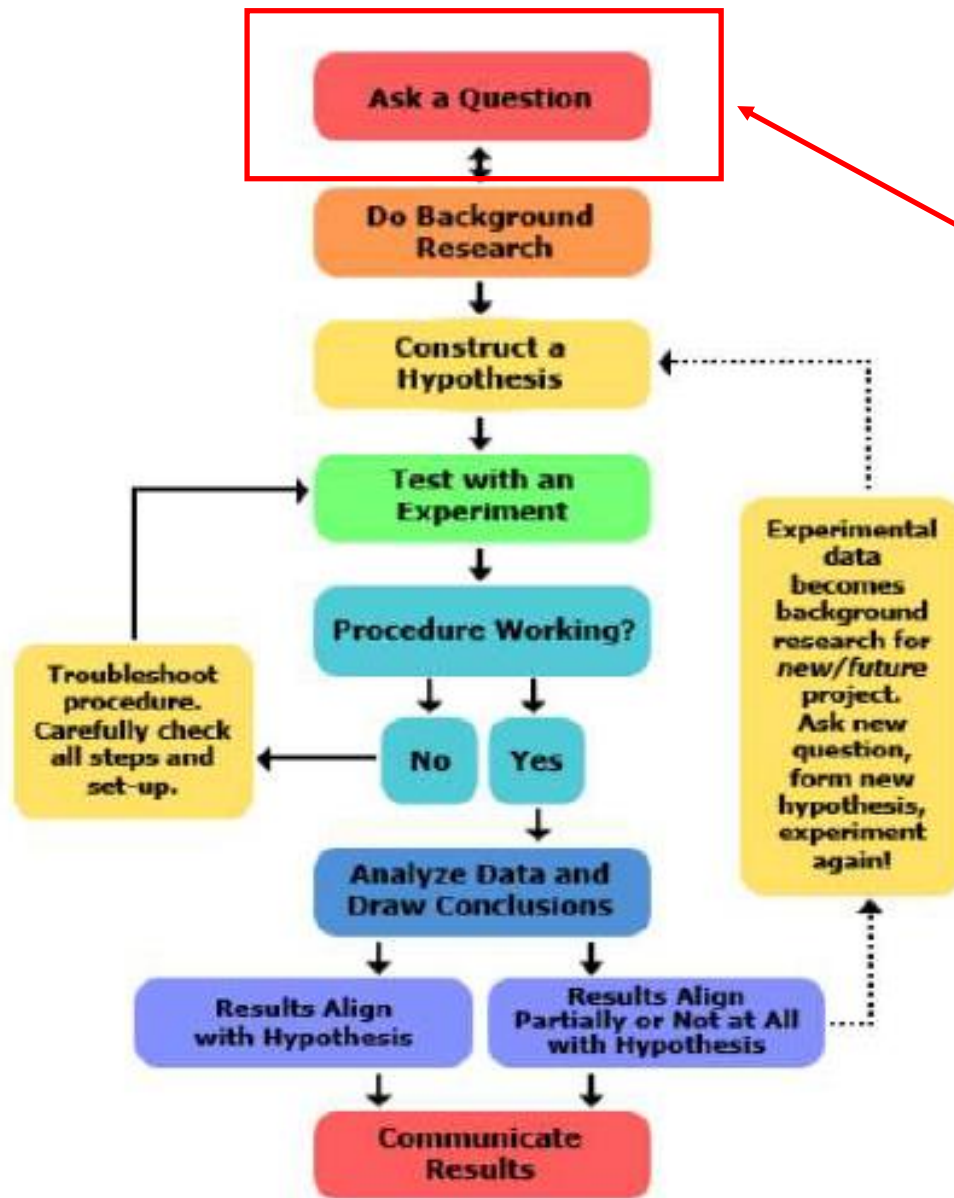
What is a hypothesis?

What is a purpose?

When we are trying to discover something, but we don't know anything about what we are trying to discover

Diagram ©sciencebuddies.com

What is a hypothesis?

What is a purpose?

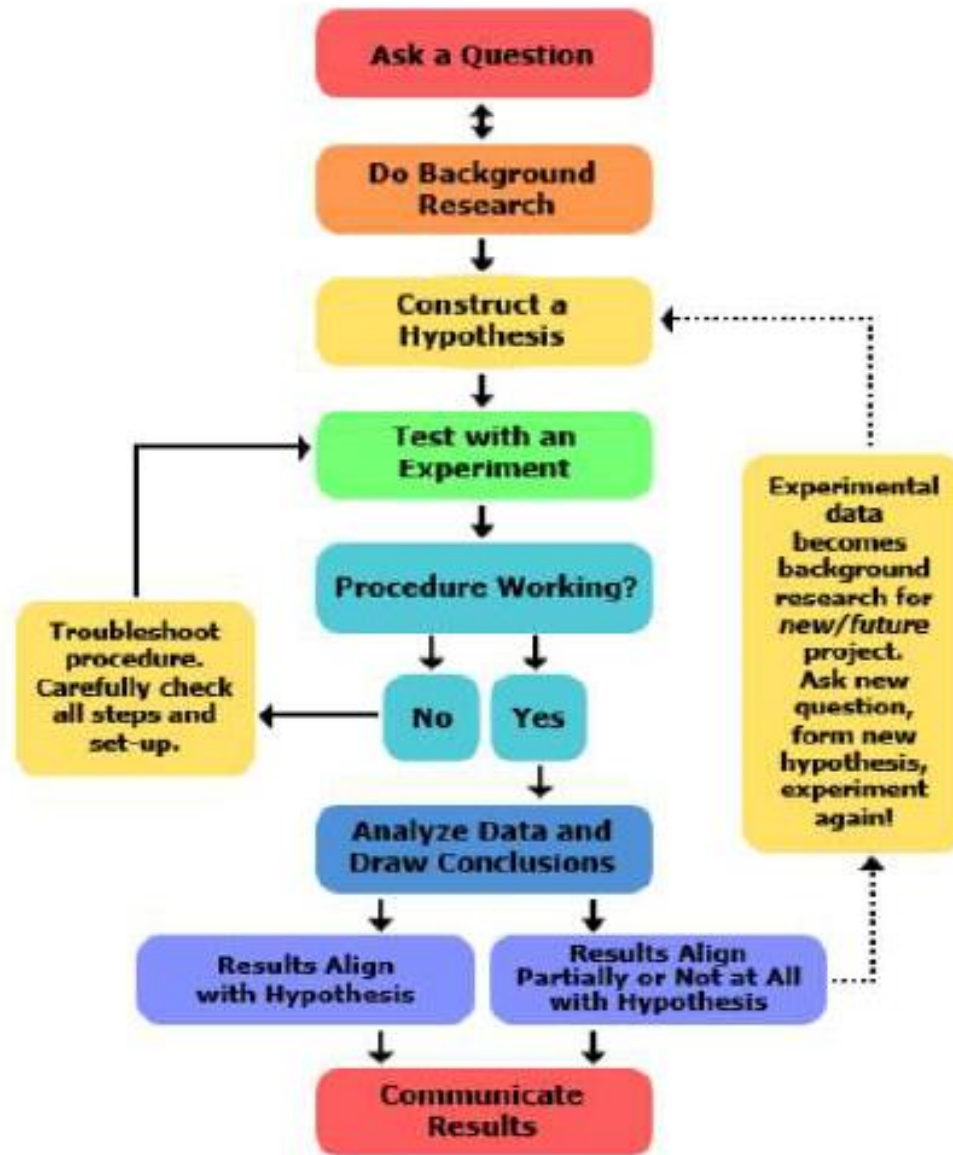What is a question?

Diagram ©sciencebuddies.com
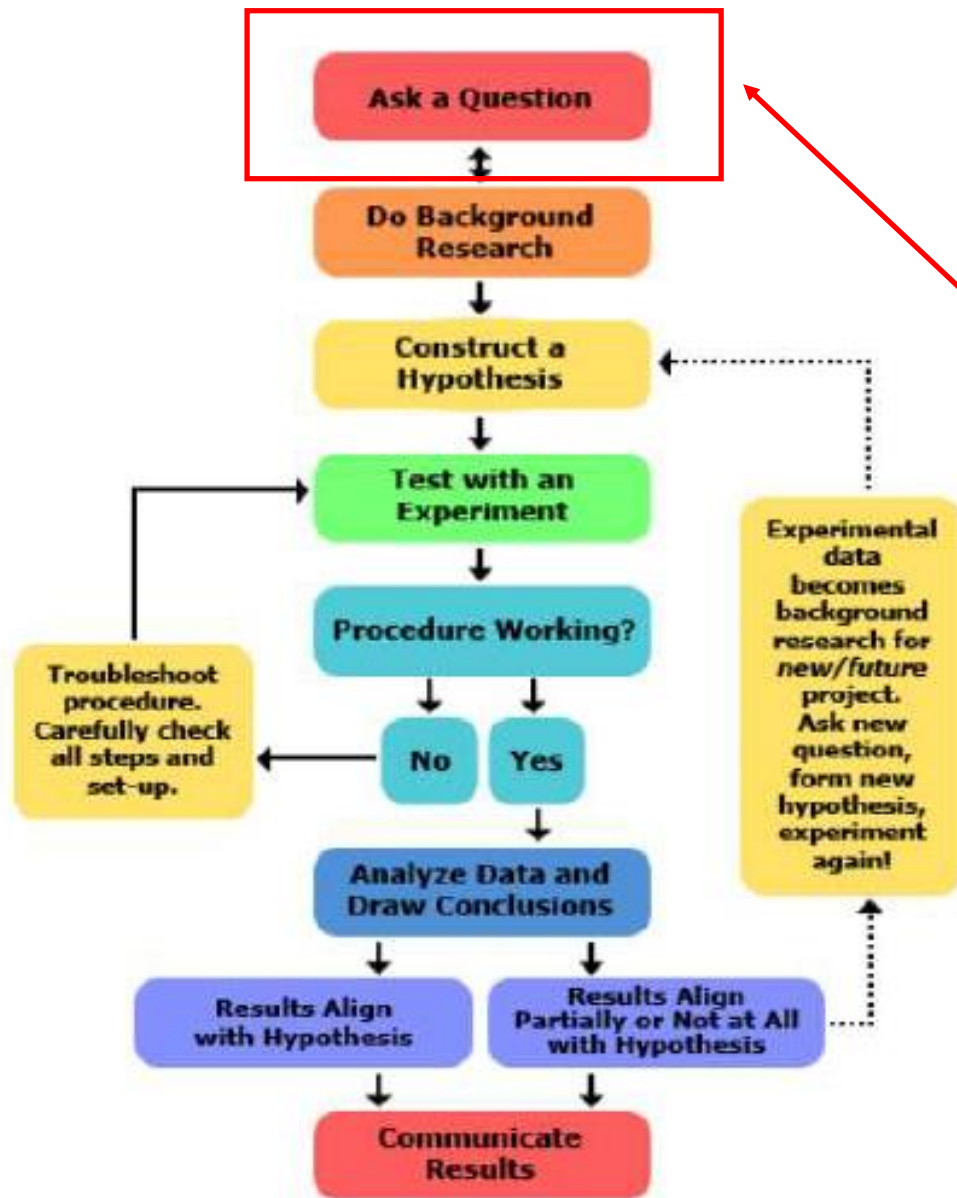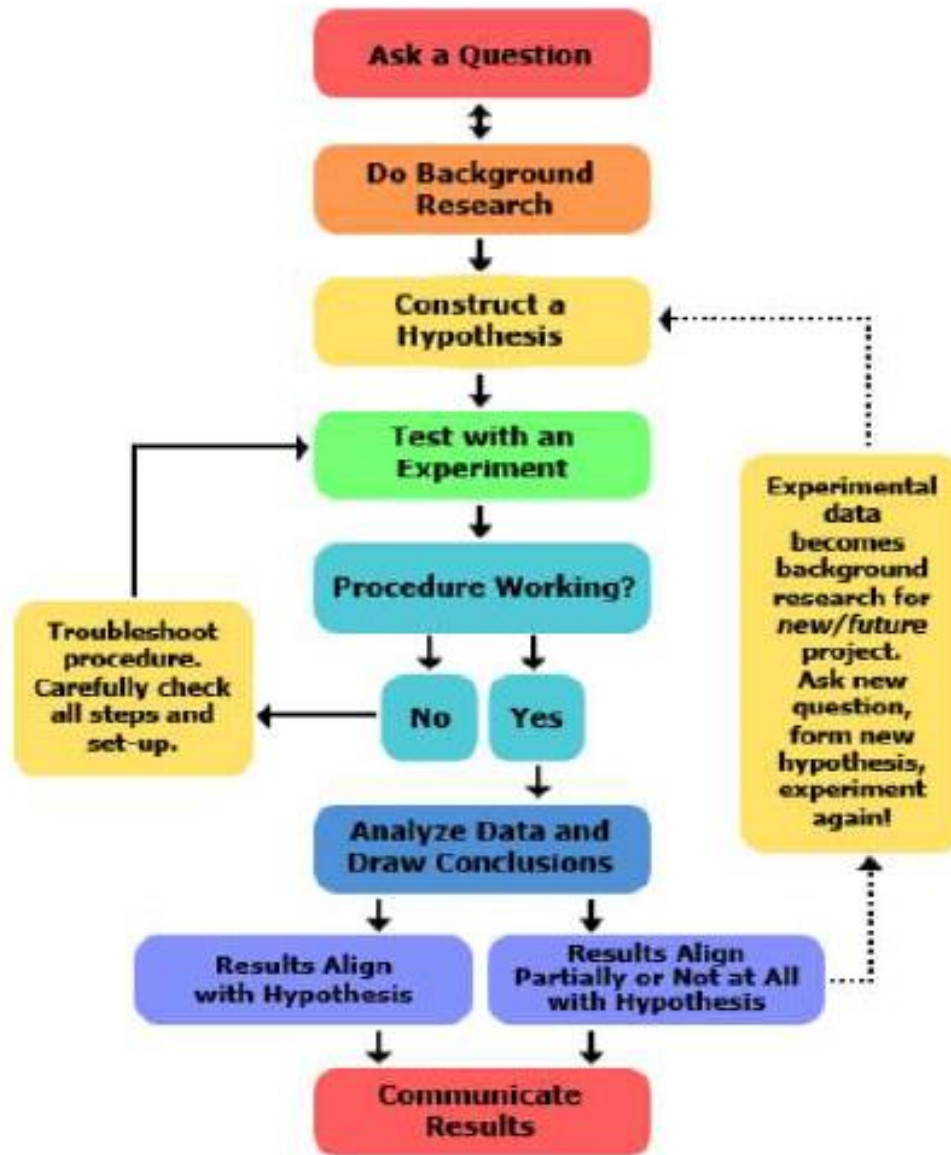
What is a hypothesis?

What is a purpose?

What is a question?

Helps us in the start the thought process and to decide if we'll perform scientific discovery through a purpose or hypothesis

Diagram ©sciencebuddies.com

Diagram ©sciencebuddies.com

What is a characteristic that a purpose, question, and hypothesis must share in the scientific thought process?

Diagram ©sciencebuddies.com

What is a characteristic that a purpose, question, and hypothesis must share in the scientific thought process?

Must be as specific as possible.

Diagram ©sciencebuddies.com
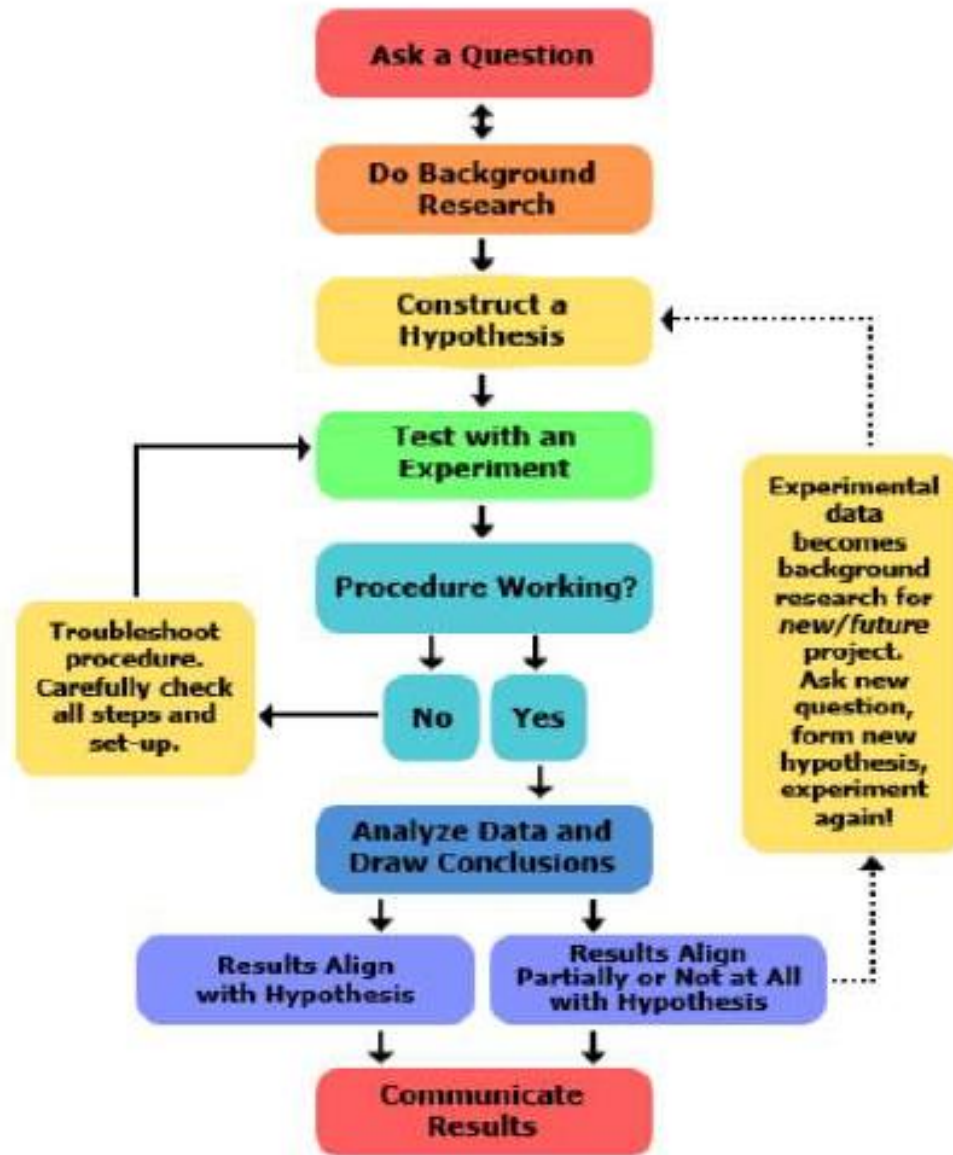
Between a purpose, hypothesis, and question, which one is usually the most difficulty to come up with?

Which is a hypothesis, which is a purpose?

- Determine whether the mountain waves can carry microbes into the stratosphere.

- The concentration of microbes will be 95% less in the stratosphere compared to ground level.

Which is a hypothesis, which is a purpose?

- Determine whether the mountain waves can carry microbes into the stratosphere. purpose

- The concentration of microbes will be 95% less in the stratosphere compared to ground level. Hypothesis

Diagram ©sciencebuddies.com
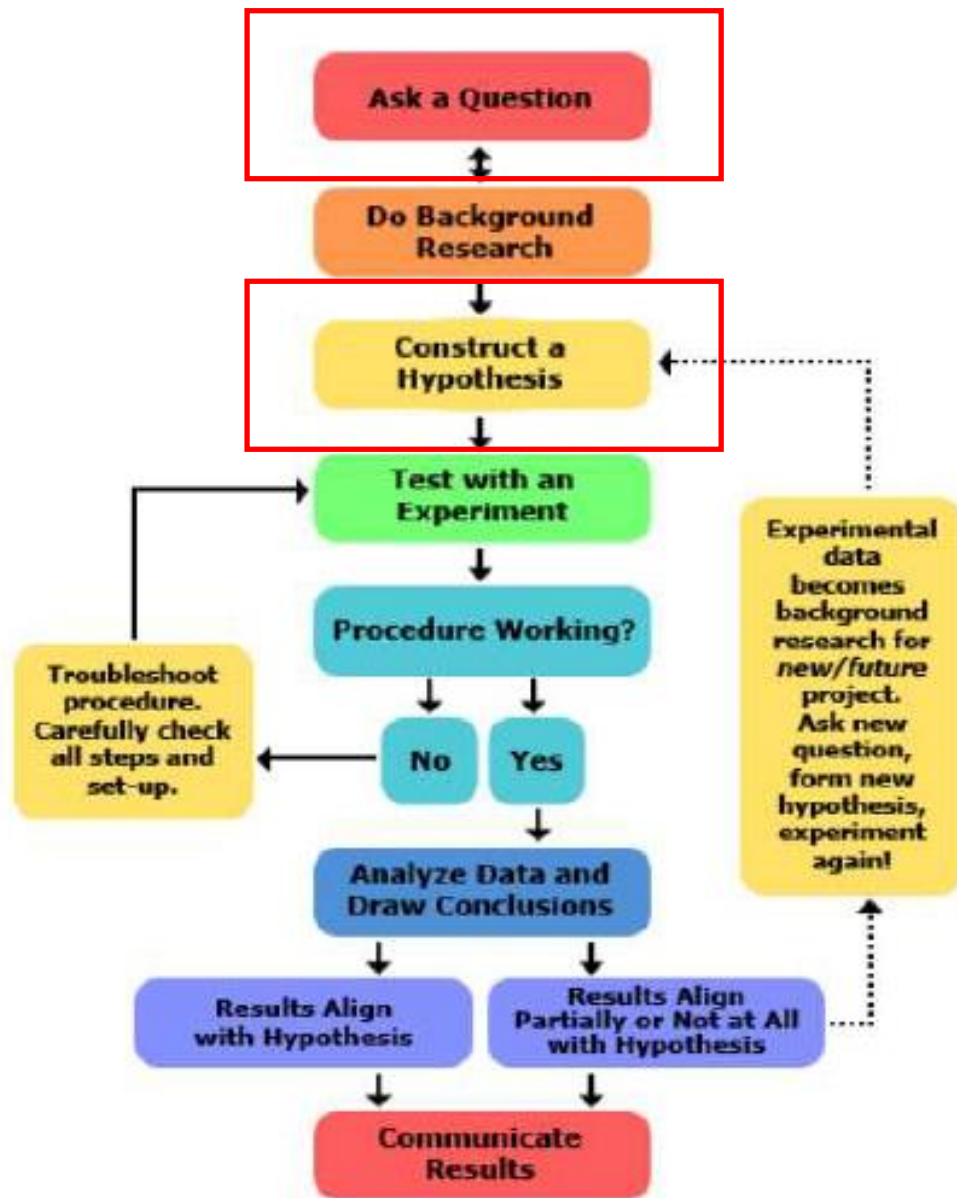
Design the following:

a) A hypothesis related to today's workshop?

b) A purpose related to today's workshop?

c) A question related to today's workshop?