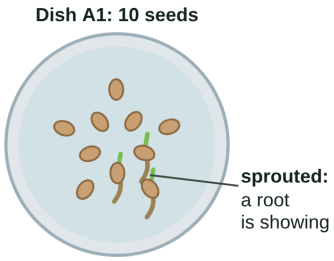
Fair tests: plan one, check others

Names: Class: Date:

Work with a partner. In Part 1 you plan and run a fair test with bean seeds. In Part 2 you check four investigations that other students planned.

PART 1 A fair test with bean seeds

You need: 60 bean seeds, 6 saucers or shallow dishes, paper towel, water, a marker, and a place for each set, such as a windowsill, a dark cupboard or a fridge. A fridge is dark inside, so to test temperature, put the other set in a dark cupboard.



> **Safety.** Don't eat the seeds, and wash your hands after handling them. If seeds or paper towel go mouldy, don't sniff them. Put them in the bin and wash your hands. Wipe up spilt water so nobody slips. Ask an adult before you put anything in a fridge.

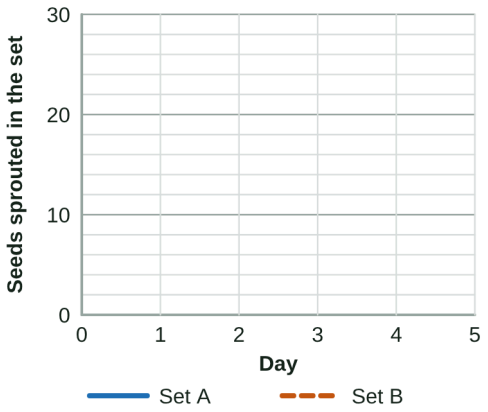
1. Choose the variable you will test: water, temperature or light. Fill in the plan.
2. Fold paper towel into each dish, and label the dishes A1, A2, A3, B1, B2 and B3.
3. Wet the paper towel, and put 10 bean seeds on it in each dish.
4. Set up set A and set B so that only your chosen variable is different, and keep everything else the same.
5. Every day for 5 days, count the seeds in each dish with a root showing, and write the number in the table. Keep the paper damp, unless your test needs dry dishes.
6. Add up each set's sprouted seeds for each day. Draw a line graph with a line for set A and a line for set B.

Our plan

Our question	
The variable we change	
The variable we measure	The number of seeds that sprout in each dish
The variables we keep the same	
Our prediction	

Our results: seeds sprouted in each dish

Dish	Day 1	Day 2	Day 3	Day 4	Day 5
A1					
A2					
A3					
Set A total					
B1					
B2					
B3					
Set B total					



1. Were the counts the same in all three dishes of set A? Why do you think that is?

2. On day 5, did every dish in one set sprout more seeds than any dish in the other set, or do the dish counts overlap? What does that tell you about your variable?

3. What would you change to make your test better?

PART 2 Check these investigations

A fair test you can trust

- Only one variable is different between set A and set B.
- Everything else is kept the same.
- Each set has more than one plant, seed or slice.
- The same thing is measured in the same way in both sets.

For each investigation, decide whether it is a fair test. If it isn't, say how you would change it.

Mia. Mia wanted to find out whether salty water slows bean seedlings. She grew set A on a sunny windowsill with tap water, and set B in a dark cupboard with salty water. Set B grew less, so she said that salt slows bean seedlings.

Is it a fair test? Why?

How would you change it?

Josh. Josh wanted to find out whether temperature affects bread mould. He sealed three slices from the same loaf in their own plastic bags and put them in a fridge, and sealed three more slices in bags in a warm cupboard. He looked at them through the plastic every day for 10 days.

Is it a fair test? Why?

How would you change it?

Lena. Lena wanted to find out whether bean seeds need light to germinate. She put 10 seeds on damp paper towel in the light, and 5 seeds on damp paper towel in a dark cupboard. After 5 days, 9 seeds had sprouted in the light and 4 in the dark, so she said that bean seeds need light.

Is it a fair test? Why?

How would you change it?

Sam. Sam read about a hot summer on the Great Barrier Reef. More corals bleached on a shallow reef than on a deep reef nearby, so he said that the depth of the water decides whether corals bleach.

Is it a fair test? Why?

How would you change it?

Answers (turn the page round). Mia: not fair, because the light and the water both changed. Keep both sets on the windowsill and change only the water. **Josh:** fair. Only the temperature changed, and each set had three bags. **Lena:** not fair, because the sets had 10 and 5 seeds, so the counts can't be compared. Use 10 seeds in every dish, with three dishes in each set. **Sam:** not a fair test. It compares two real places, which can differ in more than depth. GBRMPA says shallow areas with high temperatures and lots of sunlight are most at risk. A survey shows a pattern, not which condition caused it.