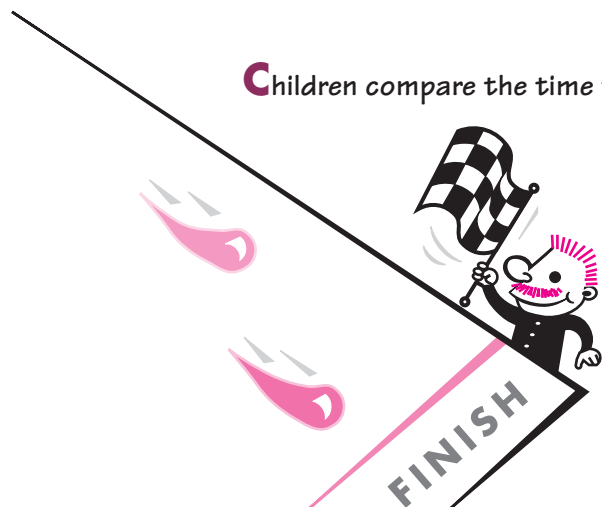


# Fast drops, slow drops



60 mins

**C**hildren compare the time taken for two drops of liquid to travel down a race board in order to explore the concept of duration of time.



## At a glance

- Display two different-coloured solutions and explain that teams are going to try to find out which coloured drop will move faster.
- Demonstrate how to use the eye-dropper and the race board.
- Children experiment freely with both coloured solutions before testing to find out which drop moves faster.
- Children predict which drop will win a 'Drop race' and test their predictions.

**Engage**



**Explore**





## Lesson outcomes

**Children are able to compare the duration of events.**

They show their ability by using the phrases 'more time' and 'less time' when comparing the duration of the journeys of two drops of different liquids.



## Equipment and preparation

- For each team**
- 1 container (eg, yogurt), holding a small amount of blue starch solution (see Preparation)
  - 1 container (eg yogurt), holding a small amount of red starch solution (see Preparation)
  - 2 eye-droppers
  - 1 A4 plastic sleeve, containing a sheet of cardboard and a copy of 'Drop race' (BLM 1.10)
  - newspaper (to cover work area)
  - paper towels
  - job badges for manager and speaker

**Preparation** To make the blue starch solution, combine 200 millilitres of liquid starch with 100 millilitres of water and enough blue water-soluble paint to colour the mixture.

To make the red starch solution, combine 150 millilitres of liquid starch with 150 millilitres of water and enough red water-soluble paint to colour the mixture.

For each team, insert the piece of cardboard in the A4 plastic sleeve and then insert a copy of BLM 1.10. Seal the opening with tape.



## Teaching strategies

- 1 Explain to the children that they are going to hold some 'Drop races' to find out which of two drops is the faster.

*To introduce the activity, encourage children to talk about watching raindrops on window panes or read a poem such as the one below:*

*Two little raindrops running down the glass*

*One is going slowly, one is going fast.*

*This one is winning and that one's coming last.*

*Oh! No it isn't! It's raced right past,*

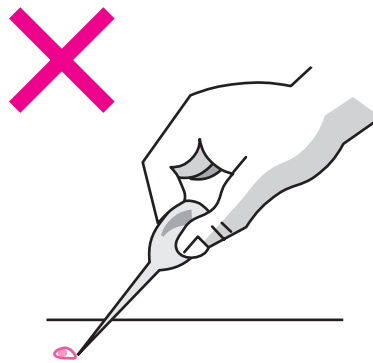
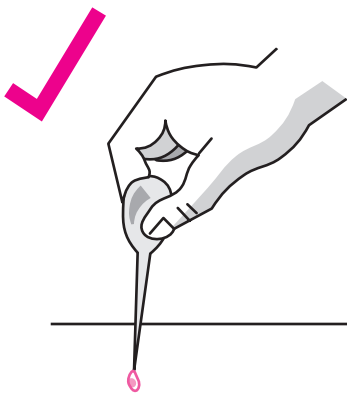
*and now the other raindrop is last, last, last!*



Pair children and allocate jobs.

Ask managers to collect team equipment.

- 2 Demonstrate how to use the eye-dropper to take up a quantity of liquid and squeeze out a single drop onto the plastic-covered board. Show how to make the drops 'run' in all directions by tilting the board.

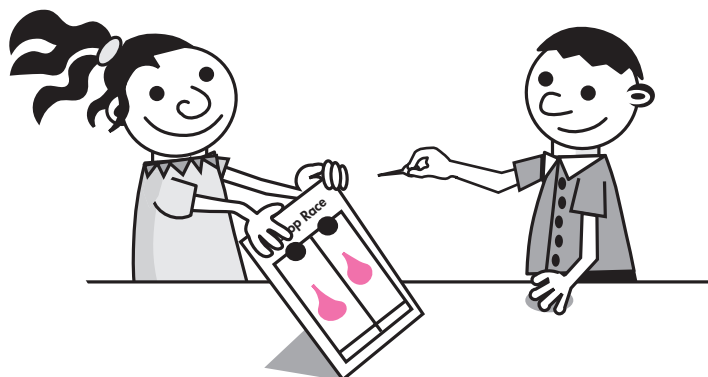


- 3 Allow time for the children to test each liquid. Encourage them to try each liquid several times, taking note of which coloured drop they think moves faster down and around the board.

*The drops behave differently because of the different concentration of starch in the two solutions.*

4 Introduce and explain the 'Drop race' game, as follows:

- With the 'Drop race' board lying flat, place a drop of red liquid on one circle and a drop of blue liquid on the other circle.
- One partner lifts and tilts the board as shown, and the other observes which drop moves faster.
- Wipe the board clean with paper towel and then change jobs for another race.



5 Invite children to predict which drop they think will move faster.

**Which drop do you think will take the shorter time to reach the bottom?**

**Which drop do you think will take the longer time?**

**What do you think might happen in the race between the two drops?**

*Because the children have tested and compared both drops, they will be making predictions rather than guesses.*

*Predictions are based on prior experience.*

- 6 The children then 'race' the drops to find out if their predictions were right.

*Children could perhaps be asked to record their predictions for the 'Drop race' game. They could do this by drawing the coloured drop that they think will move faster.*

- 7 When all teams have run the race several times to confirm results, ask:

**How were you able to tell which drop would take the shorter time, before you started the race?**

**Which drop took the shorter time to reach the bottom?**

**Which drop took the longer time?**

**Did it take more or less time for the faster drop to run down the board?**

*Children should be able to base their explanations on the results of their earlier experiments with the coloured drops.*



## Extensions

**E**xperiment with and compare drops of other liquids such as milk, oil, coloured water, cordial, honey.

**P**lay a game of 'More time, less time'. Ask children to name events that take more time or less time than other events. For example, ask: What takes more time than a sneeze? (Children's answers might include having a bath/a birthday party/snack time/building a tower.) What takes less time than a sneeze? (A blink/a hiccup/a cough.)

In the playground, encourage children to compare the time it takes to:

- walk and then run from one point to another;
- climb up the climbing frame and then jump down;
- let a ball and a sheet of paper fall from the top of the climbing frame to the ground. ☹

# Drop race

Name: .....

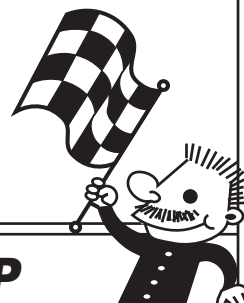
Name: .....

**GO**

**GO**



**STOP**



**STOP**