

Activity Instructions

Part I - Making Latex Bouncy Balls

The following items will be needed for this part of the activity:

per group or student:

- liquid latex
- measuring spoons
- paper cup
- water
- vinegar
- food colouring
- stir stick

The following steps will make one liquid latex ball.

Step 1

Pour 1 tbsp (15 mL) of liquid latex into a paper cup (**Figure 1**). Add 1 tsp (5 mL) of water and mix the two together.



Figure 2

Step 2

Add 1 tbsp of vinegar to the paper cup (**Figure 2**). To produce a coloured ball, a few drops of food colouring may be added at this stage.

Step 3

Stir the liquid latex and vinegar until the mixture begins to adhere to the stir stick (**Figure 3**).



Figure 1



Figure 3

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Step 4

Remove the mixture from the stir stick and shape it into a ball. The final product is shown in **figure 4**. The latex balls can be stored for two to three years.



Figure 4

Part II - Making PVA-Cornstarch Bouncy Balls

The following items will be needed for this part of the activity:

per group or student:

- paper cup
- white glue
- cornstarch
- borax and water mixture (see *Prep Instructions*)
- food colouring
- stir stick
- measuring spoons

The following steps will make one PVA/cornstarch ball.

Step 1

Add 1 tbsp (15 mL) of white glue and 1 tbsp (15 mL) of cornstarch to a paper cup.

Step 2

Add 1/2 tbsp (7.5 mL) of the borax and water mixture (**Figure 5**).

Step 3

Wait 10–15 seconds.



Figure 5

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Step 4

Stir the mixture until a rubbery substance, which adheres to the stir stick, is formed.

Step 5

Remove the substance from the stir stick and roll it into a ball (**Figure 6**).

Step 6

If the mixture is too sticky to roll smoothly, apply a little of the borax solution to the outside of the ball and roll until smooth. If the mixture is too soft, add more of the borax solution. If the solution is too watery, add more cornstarch.



Figure 6



Figure 7

Step 7

The final product should resemble **figure 7**. To prevent the balls from drying out, store them in a sealed plastic bag until needed and re-roll to adjust their shape before using again. It is not recommended to store the PVA/cornstarch balls for extended periods of time, as they will grow mold.

Part III - Making a Large Latex Bouncy Ball

The following items will be needed for this part of the activity:

- paper cup
- stir stick
- liquid latex
- vinegar
- water
- mixing bowl or medium-sized container
- food colouring
- measuring cup or beaker

Step 1

Measure out 50 mL of liquid latex and pour it into a paper cup (**Figure 8**).



Figure 8

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Step 2

Add 10 mL of water.

Step 3

Stir to mix the water and liquid latex. Add food colouring if desired.

Step 4

Pour the water and latex mixture into a mixing bowl.

Step 5

Add 50 mL of vinegar to the mixing bowl and stir.



Figure 10



Figure 9

Step 6

The latex should begin to harden once the vinegar is added. Form a ball with the portion of latex which has hardened. To increase the size of the ball, roll it into the remaining latex (**Figure 9**).

Step 7

Keep rolling the ball into the latex until all the ingredients are used up. The completed ball should resemble the ball shown in **figure 10**.

Part IV - Testing the Bouncy Balls

The following items will be needed for this part of the activity:

- desk or table
- ball jump (see *Prep Instructions*)
- 2 metre sticks

Step 1

Ask two student volunteers to hold the ball jump. Hand each volunteer a metre stick and have them stand approximately 3 ft. apart to keep the string taut. Position the volunteers so that the ball jump is approximately 2 ft. in front of a desk or table (**Figure 11**).



Figure 11

Step 2

Ask the students to predict whether the latex ball or the PVA/cornstarch ball of the same size will bounce higher.

Step 3

Place a ball at the top of the ramp and release it, allowing the ball to roll down the ramp and bounce once on the floor before going over the ball jump (**Figure 12**).



Figure 12

Step 4

If the ball bounces high enough to go over the jump, slide the string up by 5 cm and repeat Step 3. Continue to raise the height of the string and repeat Step 3 until the ball is no longer able to make the jump. Ask students to record the last height the ball was able to clear.

Step 5

Test the two different sizes of liquid latex balls as outlined in Steps 3 and 4, once again asking students to make a hypothesis beforehand about which ball will bounce higher.