



## important hints:

- Watch movie from 5:00 AM and answer question until 23:00.
- Solution movie and points provided at 8:00 the next morning.
- Answer weekend questions (Sat & Sun) until Monday evening 23:00.
- Answer **exactly once**. Answers cannot be changed.
- In case of questions, ask them via contact form on webpage **before** answering.
- Additional hints might be given in the „**hint of the day**“ (red bauble on webpage).
- Start with two jokers. Gain another joker by watching 10 solution movies. Jokers are played automatically in case of need.
- **Audience Joker**: See how the other participants voted and then decide. You can use this joker only once.
- **50:50-Joker**: Reduce the selection to only two options, one correct one and another one. You can use this joker only once.

## Shopping list for PiA<sup>®</sup> – Physics in Advent 2021 [www.physics-in-advent.org](http://www.physics-in-advent.org)

- |  |  |
|--|--|
| 1.)  | • a 4-mm reusable straw  |
| • 50 cent coin   | • a 4-mm drill   |
| • paper disc from a hole punch                             | • plasticine   |
| 2.)  | 8.)  |
| • two cocktail tomatoes                                    | • smartphone   |
| • two water glasses  | • please install the "PhyPhox" app                               |
| • sugar  | • table top or tiled floor                                       |
| • teaspoon   | • table tennis ball  |
| 3.)  | • optional: Flummi, glass marble or other balls                  |
| • bulbous wine glass or cognac glass                       | 9.)  |
| • wooden ball or pea                                       | • table tennis ball  |
| 4.)  | • funnel or PET bottle with a round neck                         |
| • 50 dominoes  | 10.)   |
| 5.)  | • frosted glass created by roughening,<br>e.g. found in a fridge |
| • 1 spool of yarn (1-2.5 cm diameter,<br>made of plastic). | • clear, transparent adhesive strip                              |
| • 1 sheet of paper   | 11.)   |
| • 1 adhesive tape  | • water glass  |
| 6.)  | • green (or blue, red) food colouring                            |
| • 2 teaspoons or 2 tablespoons                             | • multivitamin tablet  |
| 7.)  | • cooking oil  |
| • a PET bottle   |  |



12.)

- 2 small glass bottles (max 1 cm opening, e.g. of food colouring).
- water
- washing-up liquid

13.)

- 1 full & 1 empty glass bottle of sparkling water. (classic, i.e. with a lot of carbonic acid)
- water glass
- metal spoon
- smartphone with "PhyPhox" app

14.)

- saucepan
- cooker for boiling
- water & salt

15.)

- hammer & nail
- metal lid of a peanut or tin can
- wash basin
- steady stream of water

16.)

- colour printer (b/w also works)
- 2 sheets of DIN A4 paper
- scissors
- adhesive for gluing the paper

17.)

- rice
- water, water glass
- cooking pot
- pot lid, preferably made of glass

18.)

- wooden yarn roll (diameter ~5cm), otherwise cardboard toilet roll & cardboard discs
- household rubber band
- match
- pen
- cocktail or shish kebab skewer
- adhesive tape, scissors
- sheet of paper

19.)

- 3 \* 0.5 litre PET bottles
- 2 \* reusable straws
- plasticine
- adhesive tape
- food colouring (optional)
- water
- scissors
- hand or cordless drill (optional)

20.)

- about 20 sheets of DIN-A4 paper
- adhesive tape, scissors
- several books with a total weight of 3 kg
- household scales

21.)

- drinking packet (tetrapack or stand-up pouch) with paper straw.
- 3 drinking glasses
- adhesive tape, scissors
- water
- 4 tablespoons of sugar
- tablespoon
- stopwatch or smartphone

22.)

- 2 \* 1.5 l PET bottles
- 1m craft wire
- bottle (or other object) with 3cm \* 3cm flat lid, e.g. milk bottle
- stones or books to stand the bottle on
- cubic ice cube

23.)

- several balloons
- 2 tablespoons of flour
- small funnel

24.)

- seven thin, long candles
- two household rubber bands
- water glass into which 7 candles just fit
- three individual candlesticks