



## 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 2024 [www.physics-in-advent.org](http://www.physics-in-advent.org)

- 1.)
  - a piece of thin cardboard (2 cm \* 4 cm)
  - Scissors
  - Water basin or washbasin
  - some liquid soap or washing-up liquid
- 2.)
  - 2 tubs (250 g each) of date or cherry tomatoes (or small mandarins or small balls)
  - DIN A4 copy film (or paper or document cover)
  - Punch
  - Pattern bag clips or adhesive strips
  - Parcel string
  - flat plate
  - Soup plate
  - Kitchen scales
- 3.)
  - Two identical marbles
  - Twelve straight rails for a wooden railway or a tube with a diameter that is thicker than the marbles or books
- 4.)
  - Textbook, approx. 18 cm \* 24.5 cm in size
  - 1cm thick object (e.g. school book)
  - two wooden blocks or stabilising objects
  - small bouncy ball (approx. 20 mm diameter)
  - large bouncy ball (approx. 30-40 mm diameter)
- 5.)
  - Textbook, approx. 18 cm \* 24.5 cm in size
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  - two wooden blocks or stabilising objects
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  - large bouncy ball (approx. 30-40 mm diameter)
- 6.)
  - smart phone with pre-installed „PHYPHOX“ App
- 7.)
  - two identical glass bottles
  - Hot water from the tap or kettle
  - two balloons
  - Bucket or washbasin
- 8.)
  - Water bottle with a flat base (jam jar or mustard jar also works)
  - Wooden skewer or cardboard strip
  - Adhesive strips
  - Water
- 9.)
  - a narrow tall glass (Kölsch glass, champagne glass or narrow vase)
  - Sunflower oil
  - Ice cube that fits in the glass (a cube cut in half will also work)



10.)

- 2m long folding rule
- Adhesive tape
- Door handle or hook
- Parcel string

11.)

- Large, heavy book
- 30-40 cm long board or book
- Wooden skewer
- Adhesive strips
- Waterproof lunch box
- Water

12.)

- Light teaspoon (plastic, but metal is also possible)
- Water jet from the tap

13.)

- 1 cent coin (1.6 cm diameter)
- Pipette or straw
- Water

14.)

- two grapes
- Glass of still water
- Glass of sparkling water "classic"

15.)

- Disposable drinking cups (plastic or cardboard)
- Scissors
- Bowl
- Water
- Washing-up liquid

16.)

- 0.3l or 0.5l bottle
- Water glass
- Water

17.)

- Balloon
- Drinking glass
- Matches

18.)

- Water glass
- Water
- 7 tacks with plastic cover

19.)

- a balloon
- Sand
- Spoon
- Small funnel
- Tiny funnel that fits into the glass straw
- Water
- Glass straw
- Wooden skewer
- strong adhesive tape

20.)

- DIN-A4 sheet of paper
- Scissors

21.)

- Parcel string
- Scissors
- 10 paper clips
- 3 ballpoint pens
- Wall hook or door handle

22.)

- DIN-A4 paper
- Scissors
- Adhesive strips
- 1 cent coin
- Water glass

23.)

- two balloons
- two clothes pegs
- a biro
- Strong adhesive tape

24.)

- two ping pong balls
- a straw
- two rulers (30 cm long)