



## 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 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.

This year, you can also receive PiA messages via Telegram channel <https://t.me/PhysicsInAdvent>

## Shopping list for PiA – Physics in Advent 2020

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

- 1.)
  - cardboard (about DIN-A4 size)
  - scissors, ruler
  - household rubber band
- 2.)
  - 2 water glasses
  - a little milk
  - ballpoint pen or pencil
  - smartphone with slow-motion function
- 3.)
  - three rolls of toilet paper
  - a smartphone or other frequency generator with headphone jack
  - earphones with separable loudspeakers
  - adhesive tape for marking
- 4.)
  - well jumping bouncy ball
  - a table with flat underside, preferably without edges or other objects under the table top
  - adhesive strips for marking
- 5.)
  - at least four sheets of A4 paper (coloured or white)
  - scissors, straws
  - transparent adhesive strips
- 6.)
  - candle, funnel (about 15 cm long and 14 cm diameter)
- 7.)
  - mobile phone with camera and flash
  - transparent adhesive strips
  - waterproof pens in blue and purple
  - white chalk or flour
  - kitchen grater, washbasin
- 8.)
  - funnel, table tennis ball
  - beaker or bowl, water
- 9.)
  - 10 domino stones



- 10.)
- (digital) kitchen scale, water
  - larger water container, into which a fist fits
- 11.)
- a mirror of the size approx. 40 cm \* 60 cm (e.g. of the bathroom cabinet)
- 12.)
- water glass or measuring cup, water
  - raisins, wooden stick (or fork)
  - oil (sunflower or olive)
- 13.)
- non-transparent bowl
  - piece of cardboard (5 cm \* 5 cm), scissors
  - pin (>2 cm long) with colourful head
- 14.)
- four tea lights, two coins
  - two transparent bowls
  - two drinking glasses of the same size (big enough for three tea lights)
  - a screw cap of a bottle
- 15.)
- three hard-boiled eggs
  - three water glasses
  - three empty toilet paper rolls
  - small tray or breakfast board
- 16.)
- tea light, 2 clothespins
  - 2 CD sleeves with transparent cover
- 17.)
- tea lights, cover of a CD case
  - water glass, watering can
- 18.)
- water atomizer (e.g. for flowers), water
  - window pane
- 19.)
- two water glasses, water
  - two straws
- 20.)
- beverage can
  - pointed slotted screwdriver or scissors
  - two drinking glasses
  - bent straws with large diameter (>2 mm)
  - adhesive tape
  - plasticine
  - water tub or sink, water
  - stop watch
- 21.)
- transparent plastic cup
  - candle, pliers
  - nail or metal paper clip
  - bent straw
  - drip pan or washbasin
- 22.)
- cork (as wide and high as a thumb)
  - 81 paper clips
  - 30 cm high container or 10l bucket
- 23.)
- two tea lights with aluminium cover
  - small slotted screwdriver or nail
  - sturdy scissors, sewing thread
  - long ruler or broom handle
  - magnet as strong as possible, e.g. a bar magnet from school or a strong fridge magnet
- 24.)
- a large water glass, water
  - sunflower oil or olive oil
  - syrup, e.g. maple syrup