

# Physics

## Delprov A1

engelsk version

Årskurs

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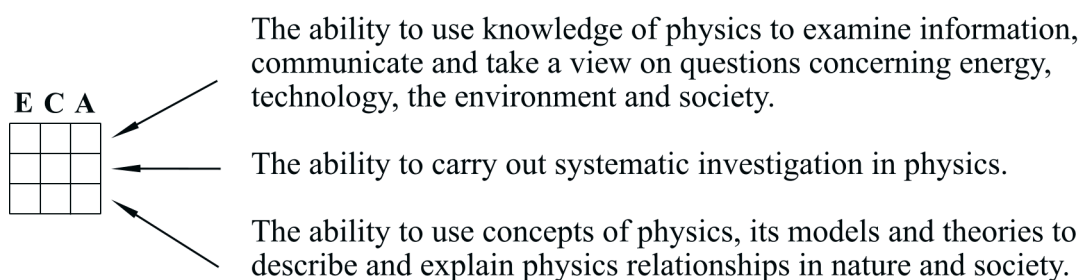
Elevens namn och klass/grupp



## NATIONAL TEST IN PHYSICS 2018

The national test gives you a chance to show what you know about physics. On the right of each question you will find a symbol that tells you which of three abilities you can demonstrate in your answer.

The rows in the symbol describe these different abilities.



For each row you will be able to show your knowledge at three different levels: E, C and A.

For example, the table on the right indicates that the question allows you to show that you can use concepts of physics, its models and theories to describe and explain physics relationships in nature and society at level E and C.


Your answers to the questions should be clearly written so that other persons can read your text and understand your meaning. Therefore it is important that you show all your work.

Time allowed: 75 minutes

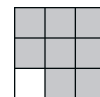
Name: \_\_\_\_\_

School: \_\_\_\_\_ Class: \_\_\_\_\_

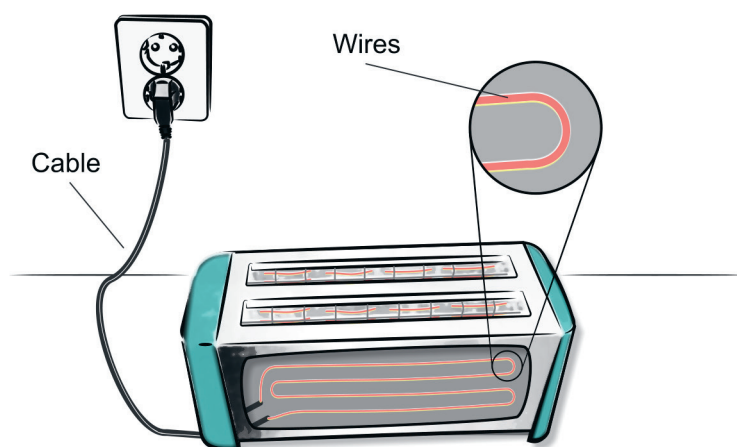
Date of Birth: Year \_\_\_\_\_ Month \_\_\_\_\_ Day \_\_\_\_\_

*Your answers must be written on separate sheets of paper. The question paper must be returned to your teacher together with your answers.*

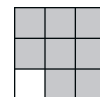
1. What can a household do to protect electric appliances from damage, for example TVs and computers, from damage during a thunderstorm? Give one example.



2. Within a toaster, there are wires. When the toaster is in use, the wires are very warm, but not the cable from the toaster to the plug.



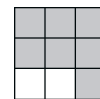
One of the alternatives A–D is describing why the wires are very warm but not the cable from the toaster to the plug. Which?



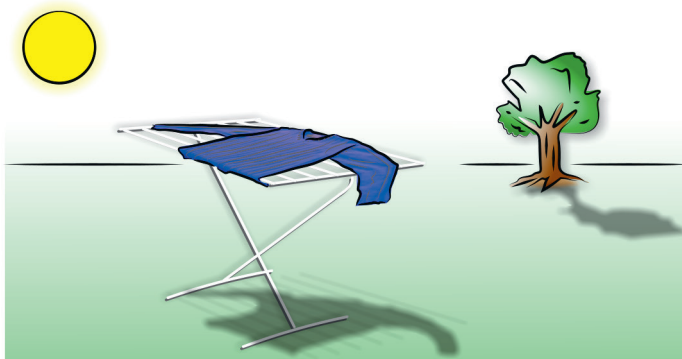
- A. The wires inside the toaster have higher resistance than the cable.
- B. The wires inside the toaster have lower resistance than the cable.
- C. The wires inside the toaster have higher current than the cable.
- D. The wires inside the toaster have lower current than the cable.

3. X-ray staff use a safety smock since they perform x-rays on patients every day. The safety smock can be made of the metal lead.

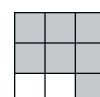
- Why is the safety smock made of lead?
- Why do the staff have to use a safety smock to protect the body?



4. Sara wants to dry her wet sweater outside. She chooses to dry her sweater in the sun instead of in the shade.

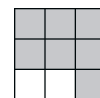


Use your knowledge about phase transitions and the movement of particles and explain why the sweater dries faster in the sun than in the shade.



5. In the four boxes, there are eight statements A–H about stars. Each box has a correct and an incorrect statement.

Choose correct statement from each box.



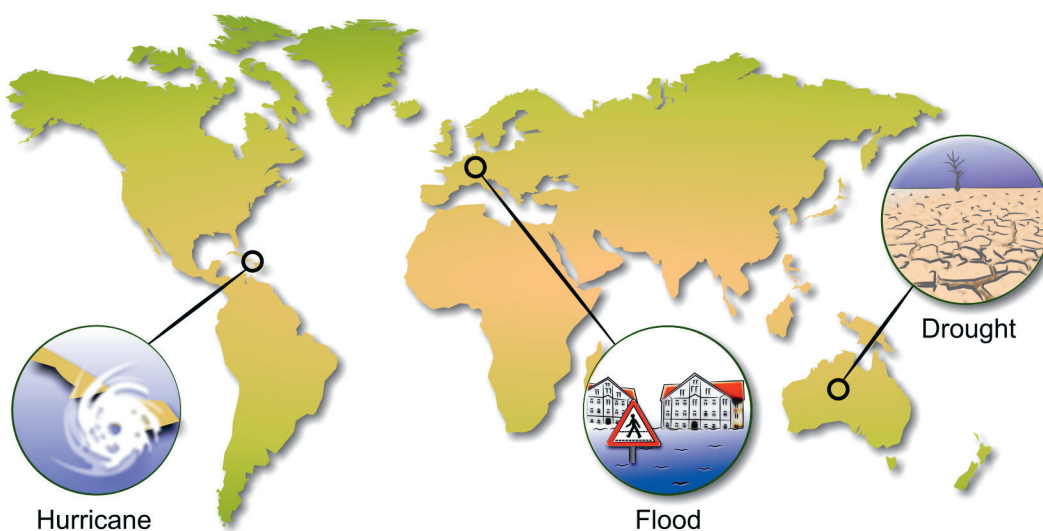
Box 1 { **A.** Stars were only formed during the Big Bang.  
**B.** Stars are constantly formed.

Box 2 { **C.** The mass of stars is decreasing as stars emit heat and light.  
**D.** The mass of stars is constant even though stars emit heat and light.

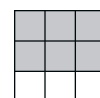
Box 3 { **E.** Stars consist of several different elements.  
**F.** Stars only consist of one element.

Box 4 { **G.** When a star dies, it can become a planet.  
**H.** When a star dies, it can become a black hole.

6. Natural disasters have become more common in the world, for example hurricanes in the Gulf of Mexico, floods in Europe and drought in Australia. It might be caused by an increased mean temperature.

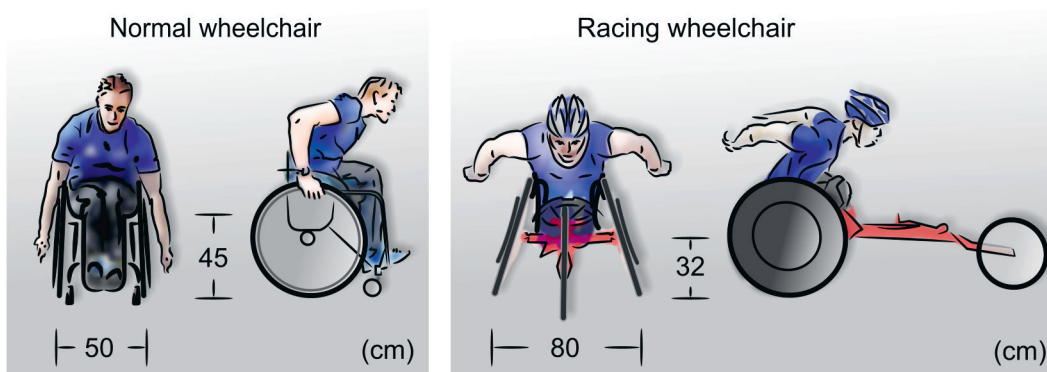


Explain how the raise in temperature affects the occurrence of the three natural disasters

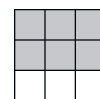


- flood
- drought
- hurricane.

7. When Klas is competing in para athletics, he uses a racing wheelchair. The racing wheelchair has a construction able to take curves at high speed without overturning.



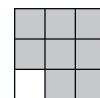
Start from the pictures and give two examples that make the racing wheelchair usable at high speed through curves without overturning. Explain why.



8. The picture presents hot air balloons rising.

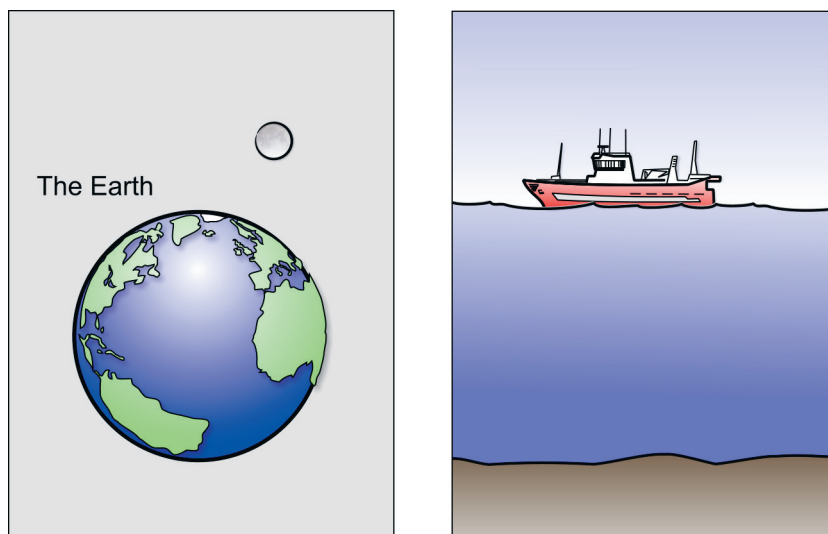


One of the alternatives A–D is important for a hot air balloon to rise. Which?

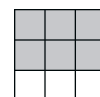


- A. Hot air has lower density than cold air.
- B. Hot air has higher density than cold air.
- C. The particles of the air are moving slower in hot air than in cold air.
- D. The particles of the air have a lower mass in hot air than in cold air.

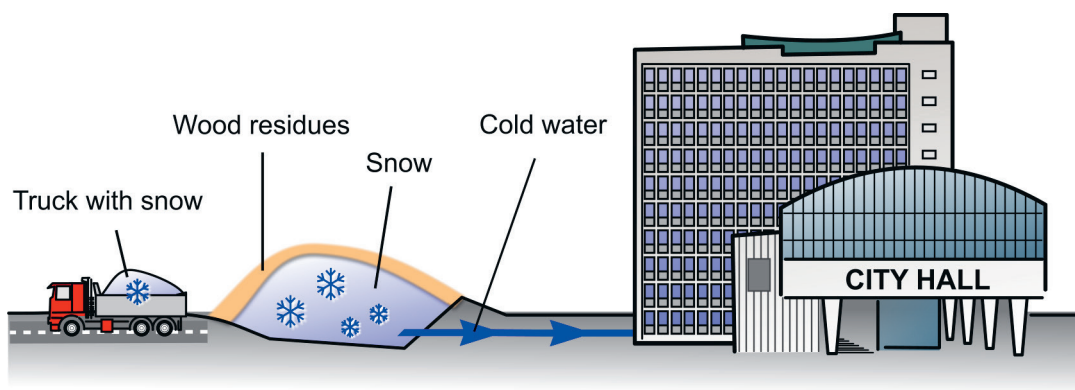
9. To measure large distances, for example between the Earth and the Moon and between the sea level and the seabed, light waves or sound waves can be used.



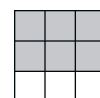
- Are light waves or sound waves used to measure the distance between the Earth and the Moon? Explain why.
- Are light waves or sound waves used to measure the distance between the sea level and the seabed? Explain why.



10. In a city, a large amount of snow is transported from the streets to the city hall. During summer, the cold water from the melted snow is used to lower the temperature in the city hall. To make the snow melt slowly, it is covered with wood residues.



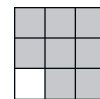
Reason about two consequences in two steps that the use of snow to lower the temperature in the city hall might have on the environment.





11. In the beginning of the 20th century, scientists knew that atoms have a nucleus. Today we know more about the structure of the nucleus of the atom.

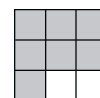
Give one example of a particle in the nucleus.



12. In 1938, scientists discovered that it is possible to split the nucleus of the element uranium. During this nuclear fission, a chain reaction occurs leading to more nuclei splitting. During every split, large amounts of energy is released.

Explain how the discovery of nuclear fission has influenced human's living conditions from:

- a local perspective  
and
- a global perspective.









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