

Forest Quiz

2018

Name _____

School _____

Points _____ / 100 pt

1 FOREST VEGETATION LAYERS. Shrubs and dwarf shrubs in the forest are vitally important for insects and birds.

a) Name the vegetation layers, indicated by arrows, on the printed lines.



b) Name the forest type.

c) Fill in the names of key species of the different layers and the names of animals which make use of them (1–8) on the printed lines.

_____ (1) is fed on by the Finnish National Butterfly _____ (2)

and another springtime butterfly _____ (3). _____ (4)

provides shelter and food for the young of many grouse species,

such as _____ (5),

_____ (6),

_____ (7) and

_____ (8).



d) Forest management can help grouse to thrive in commercial forests. A good game forest is a mixed forest with plenty of dwarf shrubs and trees and bushes of many different sizes growing in dense or sparse thickets. The berries, leaves and shoots of bilberry are an important source of nutrition for grouse. Their young feed on insects found among the bilberries. Bilberry suffers from the heavily disturbed forest floor and lack of shade on felling sites, though it also suffers from lack of light in unthinned forests.

You are a forest owner who wishes to manage the forest to bring in a financial profit, but also to protect things that help grouse to thrive. **Tick the forestry methods that best suit your goals.**

- | | |
|---|--|
| <input type="checkbox"/> Leave thickets with many different species of trees, even young ones. | <input type="checkbox"/> During forest regeneration, use the lightest soil preparation methods possible. |
| <input type="checkbox"/> Fell birches and alders from forests bordering on agricultural fields. | <input type="checkbox"/> Clear out bushes and thickets. |
| <input type="checkbox"/> When felling, favour selection cutting and small-scale clearcutting. | <input type="checkbox"/> Carry out fellings in May-June. |
| <input type="checkbox"/> Leave long distances between retention trees. | <input type="checkbox"/> Grow mixed forests. |
| <input type="checkbox"/> Thin the stands when they are growing strongly. | |
| <input type="checkbox"/> Carry out large-scale clearcutting. | |

/24 pt

2 HERBARIUM. An eighth-grader collected samples for the herbarium with the landowner's permission.

a) Help the kid to connect the labels with the correct samples by filling in the labels with the numbers of the dried samples (1–5).

b) Two sites are wrong. Correct the mistakes by crossing out the wrong name and writing in the correct one.

Number: _____

Name: Iceland moss

Site: Dry upland forest

Number: _____

Name: Hair moss

Site: Moist upland forest

Number: _____

Name: Stairstep moss

Site: Herb-rich forest

Number: _____

Name: Fork moss

Site: Moist upland forest

Number: _____

Name: Reindeer lichen

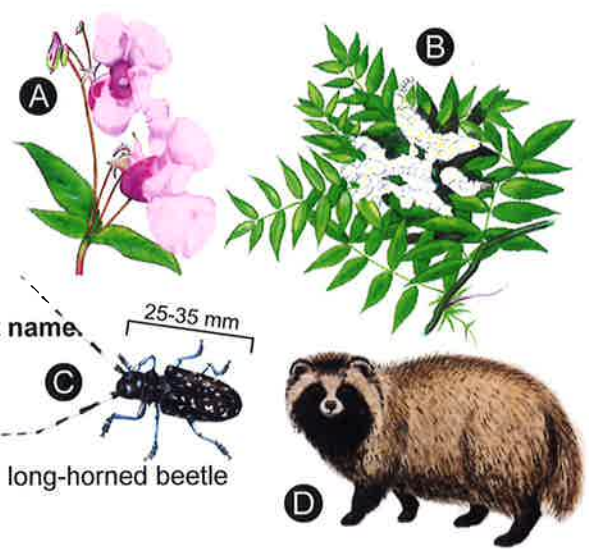
Site: Herb-rich forest

c) Which forest vegetation layer were the samples collected from? _____

d) Are you allowed to collect mosses and lichens on the basis of everyman's rights? _____

3 INVASIVE SPECIES IN FORESTS

a) What does the expression 'invasive species' mean? _____



b) Identify the invasive species in pictures A–D by ticking the correct name.

- A) Fireweed Himalayan balsam Beach rose
- B) Meadowsweet Guelder-rose False spiraea
- C) Large pine weevil European spruce bark beetle Asian long-horned beetle
- D) Pine marten Raccoon dog Wolverine

c) Why are the species mentioned here invasive? Fill in the letters A–D identifying the species on the printed lines.

_____ and _____ compete for pollinators and space. _____ is harmful to forest regeneration.

_____ destroys broad-leaved trees. _____ spreads rabies and intestinal parasites.

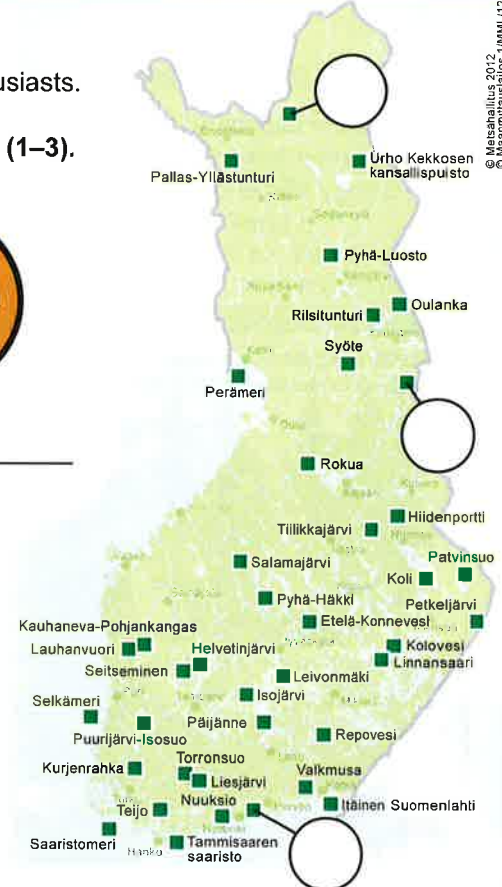
d) What can you do to fight invasive species? Fill in the letters A–D identifying the species on the printed lines.

- Inform the Finnish Food Safety Authority (Evira) immediately about this invasive species! _____
- Organise a weeding-out event in your neighbourhood. _____ and _____
- Stop the species from spreading from gardens to the forest using a root barrier, for example. _____
- Save a specimen in a glass jar for identification. _____
- Become active in game management. _____

4

NATIONAL PARKS safeguard biodiversity and provide services to outdoor enthusiasts.

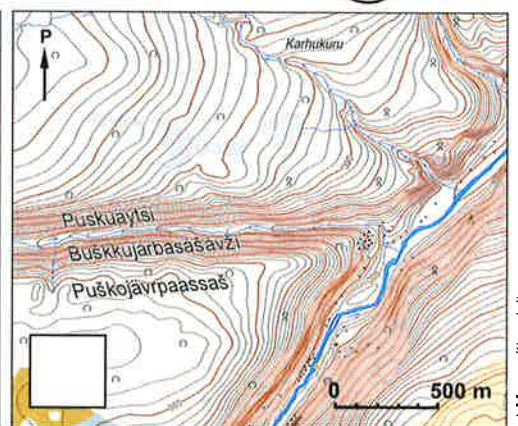
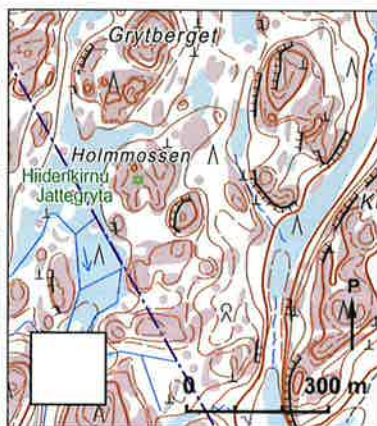
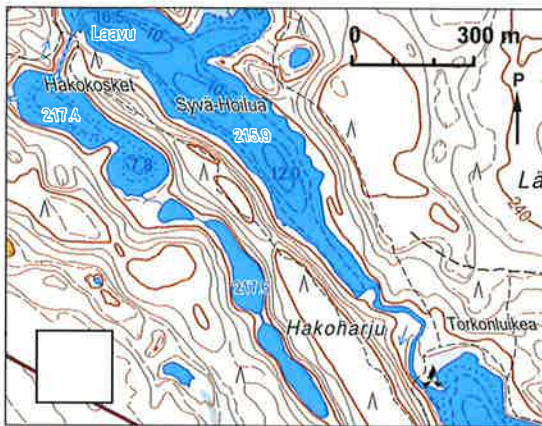
a) On the printed lines, name the animals depicted in the national park logos (1–3).



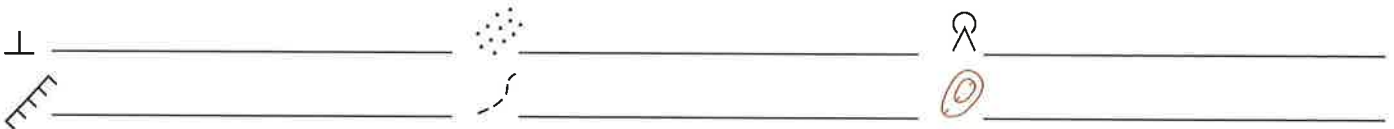
b) Give the correct locations of these national parks by filling in the numbers 1–3 in the circles on this map of Finland.

c) Which one of the three national parks was established to celebrate Finland's centenary in 2017? Number _____

d) Study the topographic maps below to determine which map and which national park mentioned above belong together. Fill in the park numbers 1–3 in the squares on the maps.



e) Explain the symbols on the topographic maps.



f) Look at the topographic map on the left. You hike from the *laavu* (lean-to) at Hakokosket across Hakoharju to the Torkonluieka campfire site. How long is the hike? About _____ meters

g) What signs of the Ice Age can you see on the topographic map? _____

5 SUMMER JOB IN THE FORESTRY SECTOR

Would you like to learn more about forestry during a two-week summer job in the sector? Thirteen summer jobs in different parts of Finland will be raffled among the winners of the schools Forest Quiz. The jobs will be arranged as close as possible to the winners' homes in June 2018.

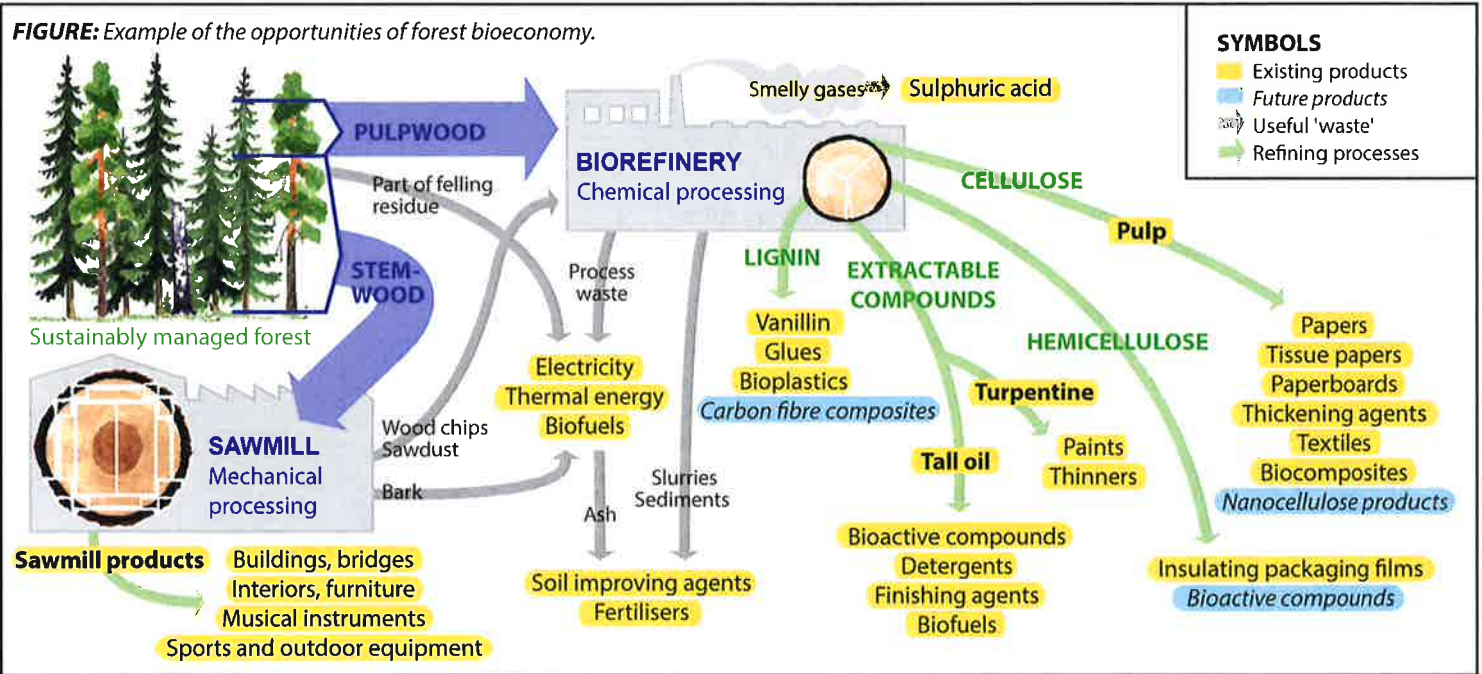
Would you like to take part in the summer job raffle? Yes, please! Not this time, but thanks.

/22 pt

6 WOOD PROCESSING AS PART OF CIRCULAR ECONOMY

Circular economy looks for solutions to the problems of scarcity of materials, energy shortage and climate change. The most important goals as regards production are resource efficiency, use of renewable raw materials, zero waste, energy efficiency and low emissions.

Forest bioeconomy provides an opportunity to achieve the goals of circular economy. A great deal of research is carried out in Finland to allow wood material to be utilised as fully as possible and to process it into products that are even more valuable than before.



a) What production goals are important in circular economy? _____

b) Which part of a tree is used to produce boards? _____

c) What do the symbols FSC or PEFC in a board tell? _____



d) A biorefinery gets its raw material from two sources. What are they? _____

e) What are the four components of wood? _____

f) The main product of the biorefinery is pulp, made of cellulose. List four products which are currently made from pulp. _____

g) List three important products processed from wood which are being developed at the moment. _____

h) In a modern biorefinery, what landfill waste is left over from the wood raw material? _____

i) In as many ways as you can think of, compare the following products as carbon storages: wooden house, book and milk carton. _____

Correct answers

This is an indicative checklist prepared by the Forest Quiz working group. Each teacher can check and score the answers according to their own teaching. However, all teachers in the same schools should use the same scoring.

SCORE

max.
100 pt / 100 pt

1 FOREST VEGETATION LAYERS. Shrubs and dwarf shrubs in the forest are vitally important for insects and birds.

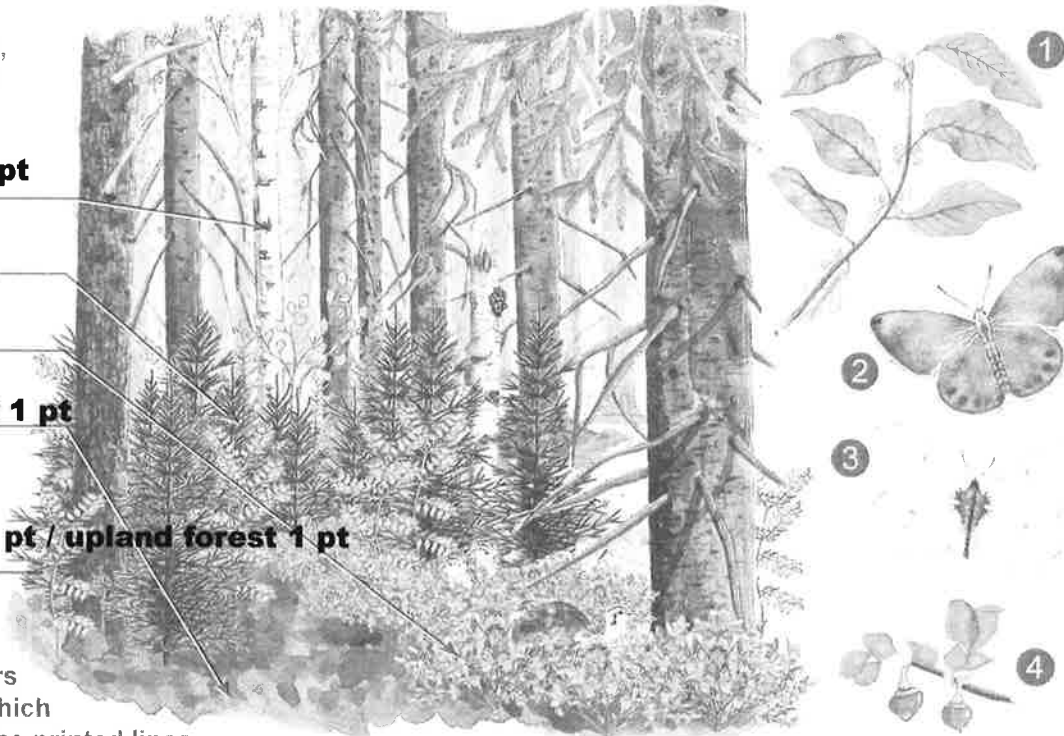
a) Name the vegetation layers, indicated by arrows, on the printed lines.

Tree/canopy layer 1 pt

Shrub layer 1 pt

Field layer 1 pt

Bottom/ground layer 1 pt



b) Name the forest type.

Moist upland forest 2 pt / upland forest 1 pt

c) Fill in the names of key species of the different layers and the names of animals which make use of them (1–8) on the printed lines.

Alder buckthorn 1 pt _____ (1) is fed on by the Finnish National Butterfly **holly blue 1 pt** _____ (2)

and another springtime butterfly **(common) brimstone 1 pt** _____ (3). **Bilberry/Blueberry 1 pt** _____ (4)

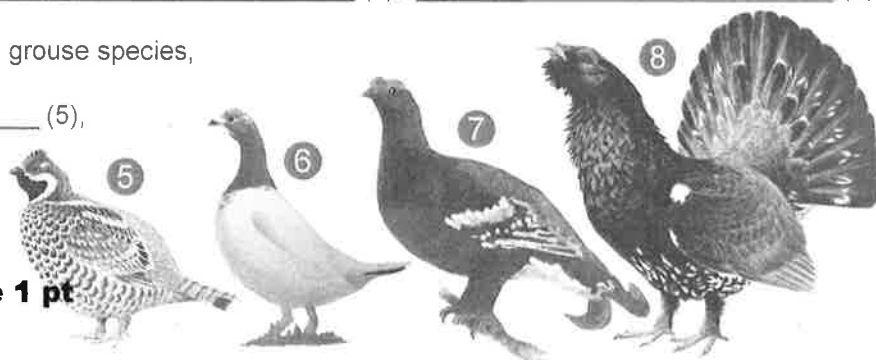
provides shelter and food for the young of many grouse species,

such as **hazel grouse 1 pt** _____ (5),

(willow) ptarmigan 1 pt _____ (6),

black grouse 1 pt _____ (7) and

(western) capercaillie/wood grouse 1 pt _____ (8).



d) Forest management can help grouse to thrive in commercial forests. A good game forest is a mixed forest with plenty of dwarf shrubs and trees and bushes of many different sizes growing in dense or sparse thickets. The berries, leaves and shoots of bilberry are an important source of nutrition for grouse. Their young feed on insects found among the bilberries. Bilberry suffers from the heavily disturbed forest floor and lack of shade on felling sites, though it also suffers from lack of light in unthinned forests.

You are a forest owner who wishes to manage the forest to bring in a financial profit, but also to protect things that help grouse to thrive. **Tick the forestry methods that best suit your goals.**

1 pt Leave thickets with many different species of trees, even young ones.

1 pt Fell birches and alders from forests bordering on agricultural fields.

1 pt When felling, favour selection cutting and small-scale clearcutting.

1 pt Leave long distances between retention trees.

1 pt Thin the stands when they are growing strongly.

Carry out large-scale clearcutting.

1 pt During forest regeneration, use the lightest soil preparation methods possible.

1 pt **You will score by ticking correct answers, but also by not ticking the wrong ones.**

1 pt Clear out bushes and thickets.

1 pt Carry out fellings in May-June.

1 pt Grow mixed forests.

max.
24 pt / 24 pt

2 HERBARIUM. An eighth-grader collected samples for the herbarium with the landowner's permission.

a) Help the kid to connect the labels with the correct samples by filling in the labels with the numbers of the dried samples (1–5).

b) Two sites are wrong. Correct the mistakes by crossing out the wrong name and writing in the correct one.

1 Iceland moss
Number: 4 1 pt
Name: Iceland moss
Site: Dry upland forest

2 Hair moss
Number: 3 1 pt
Name: Hair moss
Site: Moist upland forest

3 Stainstep moss
Number: 1 1 pt
Name: Stainstep moss
Site: Herb-rich forest
~~Moist upland forest~~ 1 pt

4 Fork moss
Number: 5 1 pt
Name: Fork moss
Site: Moist upland forest

5 Reindeer lichen
Number: 2 1 pt
Name: Reindeer lichen
Site: ~~Herb-rich forest~~
Dry upland forest 1 pt

c) Which forest vegetation layer were the samples collected from? From the bottom/ground layer 1 pt

d) Are you allowed to collect mosses and lichens on the basis of everyman's rights? No, you are not. You need to have the landowner's permission. 1 pt

3 INVASIVE SPECIES IN FORESTS

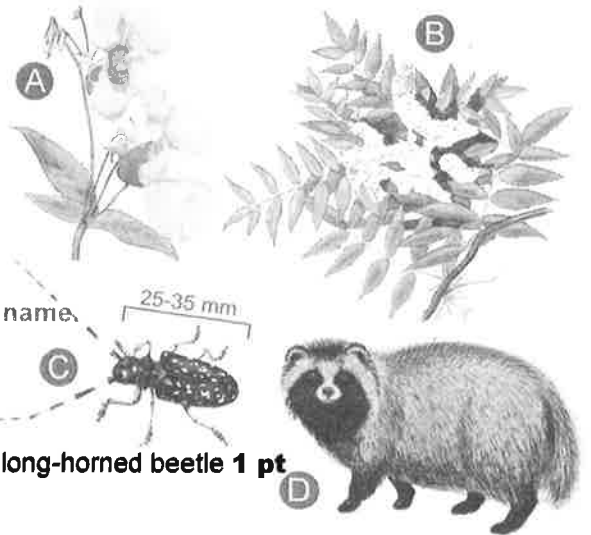
a) What does the expression 'invasive species' mean? _____

Species that

- are not naturally found in an area (1 pt).
 - humans have brought into an area either intentionally or by accident (1 pt).
 - are harmful for the original species in an area (1 pt).
- Maximum total 3 pt.

b) Identify the invasive species in pictures A–D by ticking the correct name.

- A) Fireweed Himalayan balsam Beach rose 1 pt
- B) Meadowsweet Guelder-rose False spiraea 1 pt
- C) Large pine weevil European spruce bark beetle Asian long-horned beetle 1 pt
- D) Pine marten Raccoon dog Wolverine 1 pt



c) Why are the species mentioned here invasive? Fill in the letters A–D identifying the species on the printed lines.

A 1 pt and B 1 pt compete for pollinators and space. B 1 pt is harmful to forest regeneration.

C 1 pt destroys broad-leaved trees. D 1 pt spreads rabies and intestinal parasites.

d) What can you do to fight invasive species? Fill in the letters A–D identifying the species on the printed lines.

- Inform the Finnish Food Safety Authority (Evira) immediately about this invasive species! C 1 pt
- Organise a weeding-out event in your neighbourhood. A 1 pt and B 1 pt
- Stop the species from spreading from gardens to the forest using a root barrier, for example. B 1 pt
- Save a specimen in a glass jar for identification. C 1 pt
- Become active in game management. D 1 pt

max.
27 pt / 27 pt

NATIONAL PARKS safeguard biodiversity and provide services to outdoor enthusiasts.

a) On the printed lines, name the animals depicted in the national park logos (1–3).



Wolverine 1 pt



Eagle-owl 1 pt

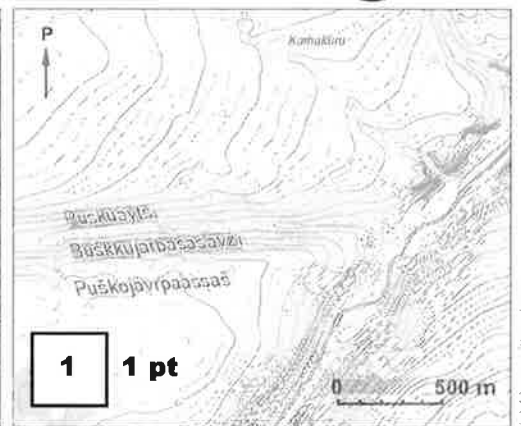
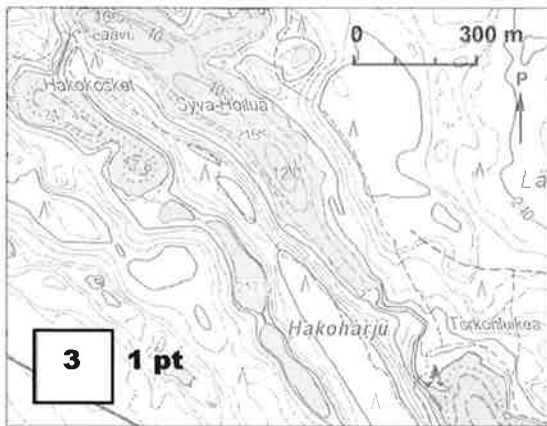


Elk or reindeer 1 pt

b) Give the correct locations of these national parks by filling in the numbers 1–3 in the circles on this map of Finland.

c) Which one of the three national parks was established to celebrate Finland's centenary in 2017? Number 3 1 p

d) Study the topographic maps below to determine which map and which national park mentioned above belong together. Fill in the park numbers 1–3 in the squares on the maps.



e) Explain the symbols on the topographic maps.

- Large boulder / glacial erratic 1 pt**
- Outcrop of stones or rocks 1 pt**
- Mixed forest 1 pt**
- Precipice (steep cliff) 1 pt**
- Trail / track 1 pt**
- Kettle hole 1 pt**

f) Look at the topographic map on the left. You hike from the *laavu* (lean-to) at Hakokosket across Hakoharju to the Torkonluieka campfire site. How long is the hike? About 1500 meters **1 pt**

g) What signs of the Ice Age can you see on the topographic map? Giant's kettle, kettle holes, glacial erratics, eskers, lake basins, rocky outcrops, northwest-southeast orientation. **Answers close to this figure can be awarded half a point.**
1 pt/sign, maximum 4 pt.

SUMMER JOB IN THE FORESTRY SECTOR

Would you like to learn more about forestry in different parts of Finland will be raffled at as close as possible to the winners' homes

Either of the alternatives selected gives 1 point

Would you like to take part in the summer job raffle? Yes, please! Not this time, but thanks.

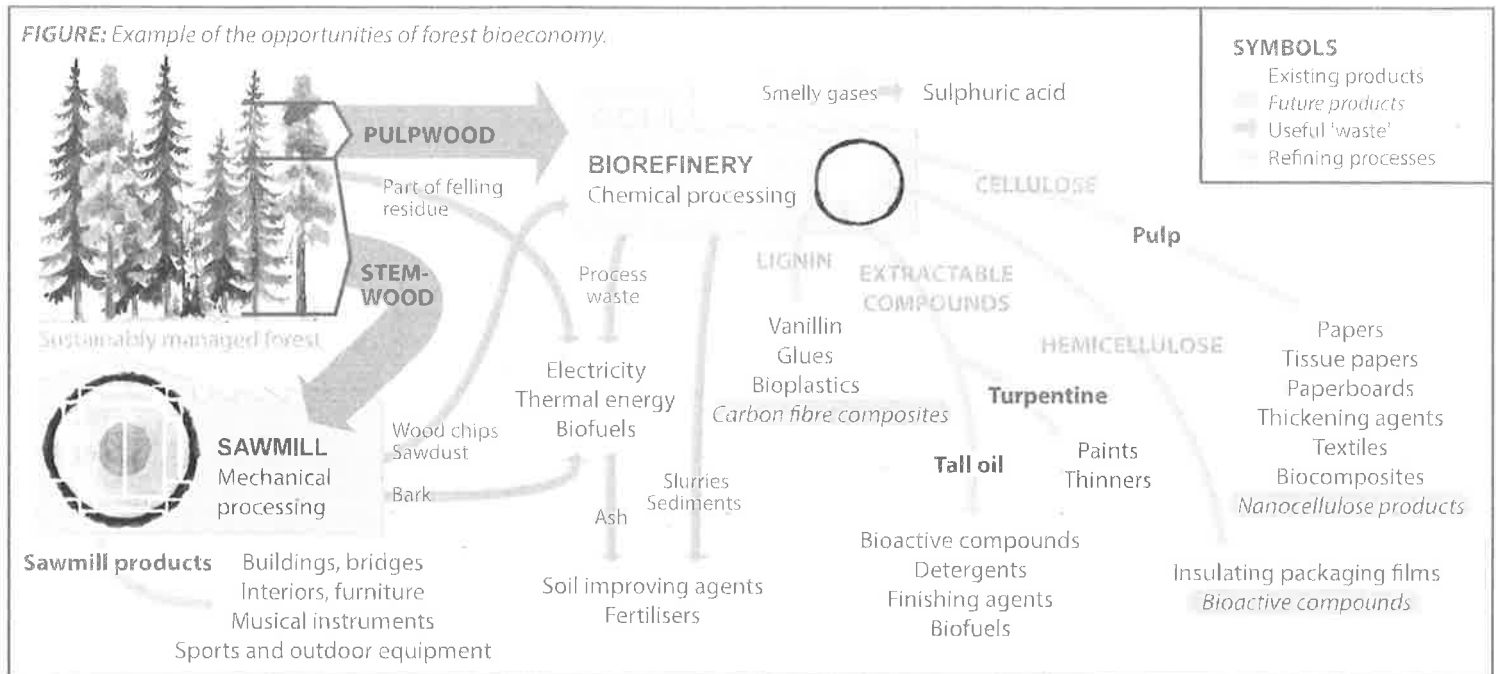
max. 22 pt / 22 pt

6 WOOD PROCESSING AS PART OF CIRCULAR ECONOMY

Circular economy looks for solutions to the problems of scarcity of materials, energy shortage and climate change. The most important goals as regards production are resource efficiency, use of renewable raw materials, zero waste, energy efficiency and low emissions.

Forest bioeconomy provides an opportunity to achieve the goals of circular economy. A great deal of research is carried out in Finland to allow wood material to be utilised as fully as possible and to process it into products that are even more valuable than before.

FIGURE: Example of the opportunities of forest bioeconomy.



- a) What production goals are important in circular economy? Resource efficiency 1 pt, use of renewable raw materials 1 pt, zero waste 1 pt, energy efficiency 1 pt and low emissions 1 pt. Any other important goal will be accepted. max. 5 pt.
- b) Which part of a tree is used to produce ~~boards?~~ Stemwood / Inner parts of stemwood / The thick lower part of a tree (one of these or a different but corresponding wording) 1 pt (the answer can be found in the figure)
- c) What do the symbols FSC or PEFC in a board tell? The timber comes from a sustainably managed forest 1 pt (the answer can be found in the figure)
- d) A biorefinery gets its raw material from two sources. What are they?
1. Pulpwood 1 pt. 2. Wood chips and sawdust from a sawmill 1 pt. (The answer can be found in the figure.)
- e) What are the four components of wood? **Cellulose 1 pt, hemicellulose 1 pt, lignin 1 pt and extractable compounds 1 pt. (The answer can be found in the figure.)**
- f) The main product of the biorefinery is pulp, made of cellulose. List four products which are currently made from pulp.
Paper, tissue paper, paperboard (cardboard), thickening agent, textile (fabric), biocomposite (the answer can be found in the figure). max. 4 pt.
- g) List three important products processed from wood which are being developed at the moment. Carbon fibre composites, nanocellulose products, bioactive compounds (the answer can be found in the Figure). Any other product that is known to be under development will be accepted. 3 pt
- h) In a modern biorefinery, what landfill waste is left over from the wood raw material? Nothing. 1 pt
- i) In as many ways as you can think of, compare the following products as carbon storages: wooden house, book and milk carton.
A wooden house is the largest carbon storage and most likely the longest-lived, unless it burns down. A milk carton may be the shortest-lived, because it contains something we need daily. The wood fibre in milk cartons can be recycled a few times. A book may actually be the longest-lived carbon storage, unless it is recycled, burned or otherwise destroyed. Even a paperback can live for hundreds of years in an archive. max. 6 pt

max.
27 pt / 27 pt