East Renfrewshire Council: Education Department Practitioner Moderation Template Barrhead High School



Prior to the moderation exercise, please complete the following information and submit it to your facilitator with assessment evidence from one learner that you judge to have successfully attained the Es' and Os'.

| Experiences and Outcome | Exp | eriences | and | Outcomes | s: |
|-------------------------|-----|----------|-----|----------|----|
|-------------------------|-----|----------|-----|----------|----|

Selected from unit of work on Biodiversity and Interdependence:

I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. **SCN 3-01a**

I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. **SCN 3-02a**

| Loorning | Intontiono |
|------------|-------------|
| ı eanıma ı | Intentions: |
| | |

See attached sheet listing learning intentions.

LI number 2 - 8(c)

Success Criteria:

See attached sheet.

SC number 2-7 as listed on pupil record sheet.

Briefly outline the context and range of quality learning experiences that have been provided making reference to the chosen design principles.

Breadth:

Report writing skills (literacy), Calculations (numeracy), Critical Thinking (skill).

Challenge and Enjoyment:

Pupil learned new practical skills through investigation and was challenged when drawing conclusions based on their findings.

Application:

Use of newly developed skills to sample and identify living organism. Through sampling environmental factors make association between environmental conditions and distribution.

Record the range of assessment evidence that was gathered to meet the success criteria (Say, Write, Make, and Do) considering breadth, challenge and application.

SAY: Evidence of dialogue with learner is noted with a description of the learners' comments and responses.

WRITE: Written assessment evidence is shown in pupil responses to questions linked to area of focus. Written conclusions based on pupils practical investigations. Evidence is also present in the learner's written responses written assessment paper for the topic.

DO: Evidence of completion of practical activities and interpretation of findings can be seen in pupil jotters. Photographs from practical work can also be seen.

Briefly outline the oral/written feedback given to the pupil on progress and next steps, referring to the learning intention and success criteria.

- Annotation of SC number allows learner to link feedback to LI and SC.
- Teacher discussion and oral feedback given to learners throughout unit of work.
- Appropriate comments written to support and encourage learner to be successful.
- Peer feedback given following pieces of work that were peer assessed.
- Teacher feedback on written test given to individual pupil as well as whole class feedback when going over test highlighting what was required to be successful.
- Completion of Pupil Reflection booklet allows pupils to reflect on what they have achieved in the unit and identify areas for further development.

Pupil Voice:

What have you learned? How did you learn? What skills have you developed?

Pupil:

- engaged in dialogue with teacher to make comments on work and discuss progress.
- completed topic record sheet throughout the unit to show where they have covered the SC across the unit of work.
- completed self and peer assessment on tasks throughout the unit.
- on completion of the unit of work the pupil completed a self-evaluation sheet in which they have recognised their strengths and areas for further development. There is also comment on how they intend to develop identified area.
- also completed their Pupil Reflection Book (evidence not included)

| Did the learner successfully attain the outcomes? Y | ES |
|---|----|
|---|----|



Knowledge and understanding of scientific ideas, principles and concepts related to Planet Earth.

Level 3

- Identify living things using biological keys.
- Collects and analyses increasingly complex data and information, for example, temperature and light intensity, to suggest reasons for the distribution of organisms within different habitats.
- Describes the process of photosynthesis (using the word equation) in terms of reactants (raw materials) and products.
- Applies knowledge gained from practical investigations to explain how green plants make their own food in the form of sugars and store this as starch.
- Investigates and presents information on how plants help to sustain life, for example, by providing oxygen, food, habitat, raw materials and medicines.

Level 4

- Describes how plants and animals depend on each other for food, shelter and pollination, using scientific vocabulary such as 'population', 'community' and 'species'.
- Explains the possible effects of removal or addition of species on food webs and biodiversity.
- Summarises research findings to provide examples of structural, physiological and behavioural adaptations which lead to species survival.

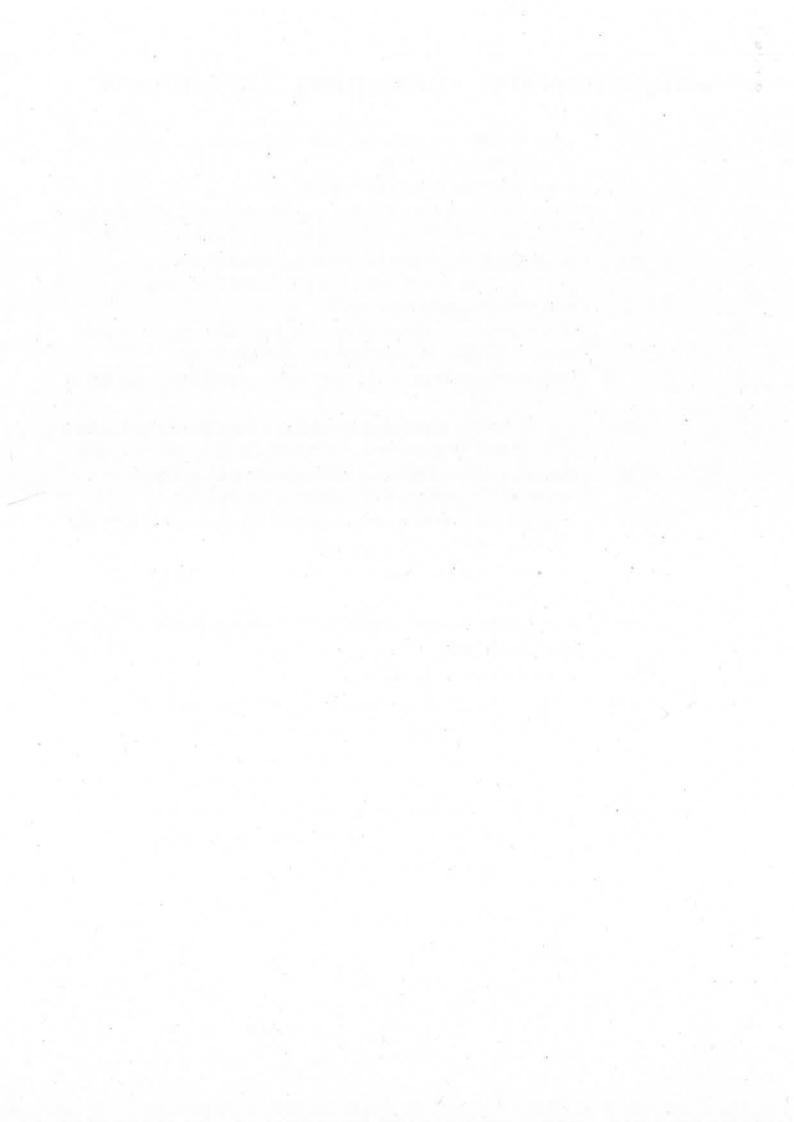
These are the success criteria for the learning experiences above. Tick off each one when they have been completed.

| No. | You should be able to | LIS | Jotter | Research Tasks | Practical |
|-----|---|----------|--------|-------------------|-----------|
| 1 | Explain and give examples of the following: Habitat, ecosystem, biodiversity, distribution, community, species, population and adaptation | 1(a)-(e) | | | |
| 2 | Use and describe different methods of sampling organisms. | 2-3 | | | |
| 3 | Correctly use branched and paired statement keys to identify sampled organisms. | 4 | | | |
| 4 | Sample environmental factors and describe how these impact distribution of organisms | 5(a)-(c) | | | |
| 5 | Describe photosynthesis and the products of this reaction. | | 13/ | | |
| 6 | Use findings from practical investigation to identify requirements and products of photosynthesis. | 7(a)-(c) | | | |
| 7 | I can describe the importance of plants in relation to food chains/webs. | 8(a)-(d) | | | |



Biodiversity -Learning Intentions

| 1 | (a) | I can explain the meaning of an ecosystem and habitat and | |
|-----|-------|---|--|
| | //- \ | give examples of these. | |
| | (b) | I can describe what biodiversity is. | |
| | (c) | I can explain the meaning of a community and population. | |
| | (d) | I can explain distribution and factors that affect this. | |
| | (e) | I can explain and give examples of adaptations. | |
| 2 | | Describe how to estimate the populations of organisms in a environment using a quadrat. | |
| 3 | - | Use methods of sampling such as a pitfall trap to sample living organisms in their natural environments. | |
| 4 | | Use biological keys to identify living organisms collected in pitfall traps. | |
| 5 | (a) | Use different apparatus to measure environmental factors such as soil temperature, soil moisture and light intensity. | |
| | (b) | Describe how sampling of the environment can give scientists information of organism distribution. | |
| | (c) | Suggest how certain environmental factors can affect the distribution of living organisms. | |
| 6 | (a) | I understand that plants make their own food through photosynthesis. | |
| . 4 | (b) | I understand what is required and what is produced during photosynthesis. | |
| 7 | (a) | I can plan an experiment. | |
| | (b) | I can carry out experiments safely and accurately. | |
| | (c) | I can collect results and form conclusions. | |
| 8 | (a) | I can explain why plants are vital to life on Earth. | |
| | (b) | I know that a food chain starts with a plant (producer). | |
| | | | |
| | (c) | I can describe the flow of energy in a food chain. | |
| | (d) | I know that food webs can be drawn to represent the | |
| | | feeding relationships in a habitat. | |





Knowledge and understanding of scientific ideas, principles and concepts related to Planet Earth.

Level 3

- Identify living things using biological keys.
- Collects and analyses increasingly complex data and information, for example, temperature and light intensity, to suggest reasons for the distribution of organisms within different habitats.
- Describes the process of photosynthesis (using the word equation) in terms of reactants (raw materials) and products.
- Applies knowledge gained from practical investigations to explain how green plants make their own food in the form of sugars and store this as starch.
- Investigates and presents information on how plants help to sustain life, for example, by providing oxygen, food, habitat, raw materials and medicines.

Level 4

- Describes how plants and animals depend on each other for food, shelter and pollination, using scientific vocabulary such as 'population', 'community' and 'species'.
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| 3 | Correctly use branched and paired statement keys to identify sampled organisms. | 4 | | | 1 |
| 4 | Sample environmental factors and describe how these impact distribution of organisms | 5(a)-(c) | | ~ 8 · . | |
| 5 | Describe photosynthesis and the products of this reaction. | | | | • |
| 6 | Use findings from practical investigation to identify requirements and products of photosynthesis. | 7(a)-(c) | | ×3 | |
| 7 | I can describe the importance of plants in relation to food chains/webs. | 8(a)-(d) | | | |

Biodiversity -Learning Intentions

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|---------------------------|--------------|---|
| profession and | (b) | I can describe what biodiversity is. |
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| | 1 | I know that food webs can be drawn to represent the |
| | (d) | feeding relationships in a habitat. |

| | Measuring Environmen | tal Factors |
|-----|--|--|
| • | Environmental factors are a | actors which ean |
| | Examples of these are mois | ture content of the temperature. |
| | These can be measured by meter, a light meter and e | using a moisture sour thermometer |
| | These are the forefore who living things might live: | ch affect where |
| | N.1+ | |
| | light | |
| | temperature | |
| . (| pH (acidic, neutral, alkaline) | |
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| | Sampling Ecosystems |
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| | A variety of different sampling methods can used to sample organisms in a ecosystem e.g.: pooters, sweet netspit ray und tree beating. |
| ļ | Sampling is carried out to: |
| • | Monitor the population of a particular living oraginism. Study a living organism. |
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Quadrats

| i i i i i i i i i i i i i i i i i i i | Quadrats | | | |
|---------------------------------------|---|--|--|--|
| SCZ | SC2 Quadrats are used to estimate to of a particular stationary living a ecosystem | | | |
| | Aimito estimate the number of plantain behind our classroom | | | |
| | Number of Plantains 1 15 2 8 2 7 | 1=17.5 accdes -100 | | |
| | 3 21 4 24 5 13 average 17 | 1=12.5 garden = 100 b=8 garden = 172 | | |
| | Area of quadrat=0.25 |) m | | |
| | lenghth of section, 1=101m breadth of section, b=16m area of section=1xb=1,616m | Area=1444m2 | | |
| | Number of quadrats in se | ction = area of section curea of guarant = 1444 : 0.25 = 5,776 | | |
| | | = 5,776 | | |
| | | e or quadrat × number of quadra | | |
| | Good | 5776 = 98,192 | | |
| | | | | |

| Months of plantam calculated by all groups: 198,199. 130,537 515,520 69,312 5144,440 640,432 69,310 =667.705 - 7 close groups 95,386 Therefore as a class we have determined that there are 95,384 plantam in the gross are a actual our clo | | |
|--|---|---|
| Number of plantain calculated by all groups: 198,199 2130,537 515,520 469,312 5144,440 640,432 169,312 =667,705-7 1005 average 95,386 Therefore as a class are bone determined first there are 95,386 plantain in the gross area outside our class. | 1 | |
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| 1 98,192 2 130,537 5 115,520 4 69,312 5 144,410 6 40,432 7 69,312 = 667.705 - 7 = 105: averes 95,386 Therefore as a class we have difference of that there are 95,386 plantan in the grass are a actual our de | | |
| 1 98,192 2 130,537 5 115,520 4 69,312 5 144,410 6 40,432 7 69,312 = 667.705 - 7 = 105: averes 95,386 Therefore as a class we have difference of that there are 95,386 plantan in the grass are a actual our de | | Number of plantam calculated by all groups: |
| 2 130,537 3 115,520 4 69,312 5 144,410 6 40,432 7 69,312 = 667.705 - 7 | | |
| 3 (15,520 4 69.312 5 (44,440) 6 40.432 7 69.310 = 667.705 ÷ 7 = close average 95,386 Therefore as a class the hove determined that there are 95,381 planton in the grass area outside our de | | |
| 4 69.312 5 144.440 6 40.432 7 69.312 = 667.705 ÷ 7 105. average 45,386 Therefore as a class we have ditermined that there are 95.381 plantain in the grass area outside our class. | | |
| 5 144,440 6 40,432 7 69,312 = 667.705:77 close average 95,386 Therefore as a class we have determined that there are 95,386 plantam in the grass area article our class. | 4 | 115,520 |
| 6 40,432 -667.705-7 close average 95,386 Therefore as a class we have determined that there are 95,386 plantam in the gross area outside our class. | 4 | 69.312 |
| 6 40,432 -667.705-7 close average 95,386 Therefore as a class we have determined that there are 95,386 plantam in the gross area outside our class. | 5 | 144,440 |
| 7 69.300 = 667.705 ÷ 7 close were on 95,386 Therefore as a class we have determined that there are 95,386 plantan in the grass area autoide our class. | | |
| = 667.705 - 7 - closs average 95,386 Therefore as a class we have determined that there are 95,384 plantain in the grass area arts de our cla | | |
| Therefore as a class we have determined that there are 95,384 plantain in the grass area article our class. | | |
| Therefore as a class we have determined that there are 95,386 plantam in the grass are a autoide our de | | |
| and 95,386 plantam in the grass area autoide our de | | C. 67 27 CARACTO 121200 |
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Biodiversity

Environmental factors and plants

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The number and type of plants in an area depend on physical environmental factors. You are going to try to find out if the numbers of one type of plant (e.g. daisy) depend on the amount of moisture in the ground, amount of light and the soil temperature

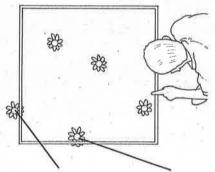
Method

- A Throw the quadrat randomly
- B Count the number of plants you are investigating. Write the number into the table.

Wash your hands after touching plants. Take care when throwing quadrats.

Apparatus: Quadrat Soil moisture meter Soil thermometer Light meter

- C Push the moisture meter probe into the ground in the centre of the quadrat and write down the reading in the table.
- D Repeat the above procedure with the soil thermometer.
- E Use the light meter to measure the light intensity at the soil surface in the centre of the quadrat and write down the reading in the table
- F Repeat steps A-E in four different areas.



Do not count this plant. It is less than half-way into the quadrat.

Count this plant. It is more than half-way into the quadrat.

Recording your results





| Quadrat No. | Number Of Plants | Soil Moisture Reading | Soil Temperature (°C) | Light Intensity | Other Observations (e.g. steepness of slope etc.) |
|----------------|------------------------|-----------------------------|-----------------------------|--------------------|---|
| 1 | 15 | 3 | 14 | \mathbb{C} | Flat grass |
| 2 | 8 | 3 | 14 | | flat grass |
| 3 | 27 | 4 | 13 | B | Slight Shack |
| 4 | 24 | 4 | 14 | B | Slight Shade |
| 5 | 13 | at of the second | 14 | C | Slight Shad |

Biological Keys

In order to identify the organisms collected in a pitfall trap, a brological key must be used

There are two types of keys that can be used!

Branched Key Paired Statement Key

Biological Keys

To identify organisms in a sample a key must be used.

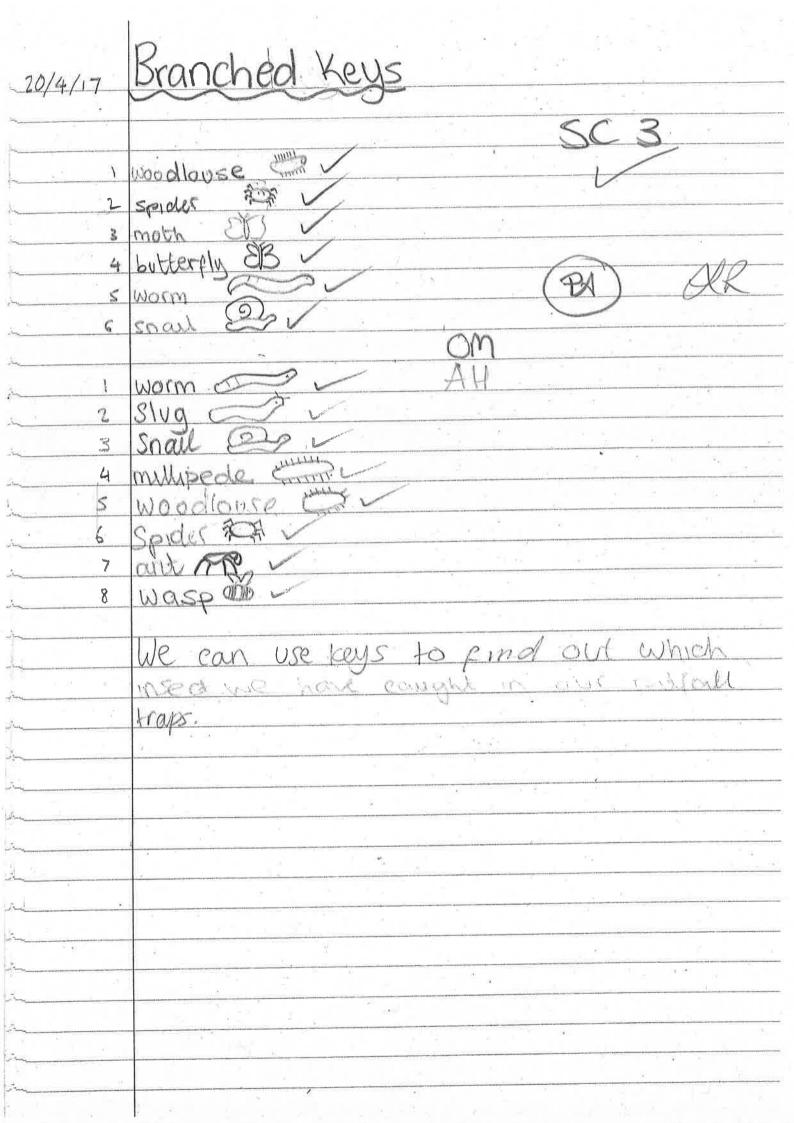
A branching key

prickles no prickles (Holly) jagged edge smooth edge (Elm) lobes no lobes (Oak) (Beech)

A paired statement key for leaves

| ESS. | | 430000 |
|------|--------------------------------|--------|
| 1, | with prickles with no prickles | |
| 2. | jagged edge | |
| | smooth edge | 3 |
| 3. | lobes | Oak |

no lobesBeech



| 2012.1- | Paired Statement Keys |
|---------------------------------------|--|
| 26/4/17 | TOWER SCALETING IN THE |
| / | MIS / COL |
| | AH & (3) |
| | Mr Forgetful SX) Mr Impossible |
| ,2 | Mr Impossible |
| 3 | Mr Clumsy - |
| Łą. | Mr Happy |
| S | Mr Happy L Mr Strong L |
| C . | MIC Grumpu |
| 7- | Mc Fossy - // |
| 8 | Mr Noisyra |
| | |
| A # | Reptule Fish Amphibians |
| | |
| | P-Izard G-basking shork E-newb |
| Sill and Assembly | C-adder 1-flounder 1-frog |
| A | M-slow worm D-trout M-toad. |
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Paired Statement keys STARS 27/4/17 1 Are they male? - 90 to 2 b fre they pemoles-go to 2 a Tre they dressed up as a character- 90 to 4 1 They ho not diressed up - go to 5 3 a she a singer-Beyonce 5 heyre not a singer-go to 7 4 Are they green - Sharek

6 West green-go to 6

50 Does he have blood have - Chris Hemsworth 5 Does he have brown hair-go to step 8 6 a Is the mask covering the whole face - Darth Vader b The mask is covering half their pace-Bostman Ta Does she have bland hair-Scarlet Johanson Does she have brown heur-tyma Walson alle is wearing a hat - Bruno Mars 5 He isn't wearing a hat Fire Downe Junior Welldone

1417 Petral Trap Investigation 4im: The aim of this experiment is to make a parall trap to sample insects Method I be a trowel to dig a hole in the grass big enough to get a cup in labout 120mm deep) 2) Place the cop in the hole. s) Add extra mud around the cup but don't sut the mud in the cup 4) Hide the cup with cut grass. 5) Leave the cup and come back after a day to check what you've caught. Hypothesis think I will eater some worms and ounts in the pitfall trap.

| - 1 | Pitfall To | rap Invest | igation | |
|-----|-----------------------------|--|----------------------------------|--------------------------------------|
| | Results: | , | | SC4 |
| | Pitfall Trap | Soil Moist | Organis | sms / |
| | 2 | 4 | Nothin | 19 |
| | | to identify | | 0 |
| | Minibeas | t Identification body with visible wings | ition Key | Popil commant |
| | body with one pair of wings | risible body with yes | a shell no | Hypothesis was income as there |
| | wasp translucentw yes | | ody segmented es no ow harvestma | works or |
| | | terfly yes centipede | no woodlouse | trap. |
| | socul. The m | ey I have i collected in loisture level news must | in this | area was |
| | Evaluation | prove my ini | | |

Setting pitfall Haps.



Pitfall trap 2.

Photosynthesis

Learning Objectives:

· Write down a word equation of the process of photosynthesis.
· Name the raw moderials and products of photosynthesis.
· Name two other special requirements needed for photosynthesis.
· Explain my plants need to photosynthesise.

Photosynthesis

Carbon Dioxide Carbon Dioxide Chicose Containing Chlorophyte.

Green plants make their own food in a chemical reaction called photosynthesis. The plant uses carbon dioxide gas from the air and water from the soil to make a sugar called awards. This also produces axygen gas released into the air light energy from the sun and a green chemical called chloropyll, found in pidnts leaves are needed for the reaction to happen.

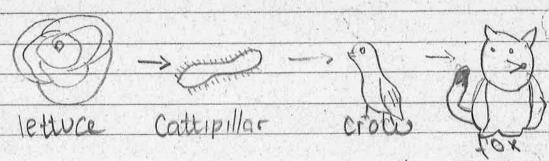
Dood

| Sp | Photosynthis Equation | | | |
|-----------|--|--|--|--|
| | | | | |
| | Photosynthesis: | | | |
| | | | | |
| | carbon draxide + water light energy glucose + oxygen | | | |
| | | | | |
| 100 | Testing a leap por Storch | | | |
| . 50 | | | | |
| 6 | odine can be used to test leaves for starchithis shows us | | | |
| | if photosynthesis has accured | | | |
| Stage 1- | First boil a beaker of uniter then place the leap in por 30: | | | |
| Stone 2 | Place the leap in a lest tobe of worm alcohol. The | | | |
| - 10000 | Now place the leaf in the warm water beaker for a | | | |
| Stage S- | Short time his softens the leg for the lodine test. | | | |
| Stage 4- | Add a drop or locking to the leaf of there is staron on | | | |
| .0 | The leap the lockine will turn from brown to Blue/Black | | | |
| 7/6/11 | Testing a leaf for Starch | | | |
| | | | | |
| dark: | Conclusion Conclusion | | | |
| | | | | |
| light: | Our least tested positive | | | |
| | for starch because | | | |
| vongoted: | the lockine twined Blill | | | |
| | Black where chlorophyll was present | | | |

| | Testing A Leaf For Starch |
|----|---|
| SC | Conclusion |
| 6 | Leaf I tested negative for Starch which med it didn't carry out photosynthesis |
| | Leaf 2 tested positive for storch which mean: it did carry out photosynthesis. |
| | Leaf 3 tested positive for starch but only in the green area. This means the photographic only happened where the Chlorophyll was: |
| | When the lodine turns brown/orange to bive/black, it indicates that photosynthesis has occured. |
| | Discussion - pupil comment Starch made when chlorophyl and light are there so this nost mean that plants need these to be able to carry out pholosythesis |
| | |

Producers and Consumers

Because green plants produce their own food they are called producers-they begin each food chains. Animals need to 'ear' food and cannot make their own, so they are called consumers. energy made by producers are then passed down ronsumers tood Chain A food chain is a sequence which shows how each individual feeds on the organism below to in the chain-toch arrow shows the direction of the energy plan



The arrows show direction of energy being passed along the food chain

- 2) Crows and foxes are carmyores
- 3) Crows and foxed are predestors
- 4) Contupitors, crows and poxes are consumus
- 5) lying things get their energy from the sun
- 6) If there was no lettuce the rest of the

| LL. | Plants |
|----------|--|
| SC | 1 Lanco |
| 7 | Verta, |
| 7) | Plants are an important part of ecosystems |
| · | because they can use the sun to produce |
| - | pood and they take in CO2 and release oxygen. They are at the beggining of pood chains |
| 1 | oxygere may are at the regginner of poor mains |
| 8) | Plants get their food from the suns |
| | Plants get their food from the suns energy and use chlorophyll and produce glucas |
| | |
| - 7 | Plants are essential to sustain life. |
| <u> </u> | Welldone Some good detailed |
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Biodiversity and Interdependence



| Name: | T-t* | | Date: | |
|-------|------|--|-------|--|
| | | | | |

My Experiences and Outcomes:

I can sample and identify living things from different habitats to compare their biodiversity and can suggest reasons for their distribution. SCN 3-01a

I have collaborated on investigations into the process of photosynthesis and I can demonstrate my understanding of why plants are vital to sustaining life on Earth. SCN 3-02a

I understand how animal and plant species depend on each other and how living things are adapted for survival. I can predict the impact of population growth and natural hazards on biodiversity. SCN 4-01a

| Core Success Criteria – Self assessment | Colour in or circle | |
|---|---------------------|--|
| Explain and give examples of the following: Habitat, ecosystem, biodiversity, distribution, community, species, population and adaptation | @@® | |
| Use and describe different methods of sampling organisms. | @@ <u></u> | |
| Correctly use branched and paired statement keys to identify sampled organisms. | © @8 | |
| Sample environmental factors and describe how these impact distribution of organisms | © @8 | |
| Describe photosynthesis and the products of this reaction. | @ @8 | |
| Use findings from practical investigation to identify requirements and products of photosynthesis. | © | |
| I can describe the importance of plants in relation to food chains/webs. | © @8 | |

| chains/webs. | 900 |
|--|----------------|
| My Comment: | |
| I succeeded in | 2 - 3 |
| All of the success criteria but | notall |
| Parts of 1 | |
| I need to work on | |
| Take care when reading values of Completines tables, definition of Por | Pulation and |
| Answering more questions on grave Factice. Complete all lines when | oh i |
| Pactice Complete all lines when | to get |
| tables in future Revise and ans | swer further |
| juestions on population and co | mmunities in a |
| Ecosystem | |
| | |



Barrhead High School Science Faculty

Level 3 Science Biodiversity And Interdependence Test

| Name | |
|---------|--|
| Class | |
| Teacher | |
| Date | |

Creat result well done! You need to do a bit of revision on population and community.

Mark

28/30



Take time and care when reading

Part A

In questions 1-10, there is only one correct answer. Write the letter for your answer in the box beside the question.

| 1. | The p | lace | where | an | organism | lives | is | called its | |
|----|-------|------|--------|----|------------|-------|----|------------|--|
| | c p | ucc | MILLOL | un | or garnoin | 11462 | 13 | cuneu 113 | |



- A. biospace
- B. community
- C. burrow
- D. habitat



2. An area that contains living organisms, interacting with each other and their surroundings is called



- A. a biodiversity
- B. a community
- C. an ecosystem
- D. an environment



3. All of the living organisms of the same type living in the same place is called a



- A. biodiversity
- B. community
- C. family
- D. population



4. All of the plants and animals living in a particular ecosystem is called the



- A. biodiversity
- B. community
- C. distribution
- D. population



5. The number and variety of organisms found in a particular ecosystem is called its



- A. biodiversity
- B. community
- C. distribution
- D. sustainability



| 6. Many organisms have special physical features at them to survive in their environment. This is calle | nd behaviour that allow d |
|---|------------------------------|
| SC A. adaptation | |
| B. camouflage | * 4 |
| C. dependability | |
| D. sustainability | 17 |
| 7. Which of the pieces of equipment below would living organisms in a woodland area? | be used to sample the |
| A. a light meter | 15 |
| B. a pitfall trap | |
| C. a thermometer | |
| D. a trowel | 13/1/ |
| D. anower | |
| 8. Which of the pieces of equipment below would <u>need</u> the <u>environmental</u> <u>factors</u> in a woodland area? | ot be used to measure |
| A. a light meter | |
| B. a moisture meter | 5 00 V |
| C. a quadrat | |
| D. a thermometer | |
| G. d mermometer | |
| 9. Which of the statements below describes photosyn | thesis? |
| A. animals releasing energy from sugar | 27 |
| B. plants releasing energy from sugar | |
| C. animals making sugar using energy from the | sun |
| 5 D. plants making sugar using energy from the s | sun |
| 10. The four steps in testing a leaf for starch are liste in the correct order. | d below. They are not |
| rinse the leaf in warm water for 10 seconds. boil the leaf in alcohol until the green conditions. drip iodine onto the leaf put the leaf in boiling water for 2 minutes. | lour disappears |
| 50 The correct order is | |
| / A 1 2 4 3 | 8 |
| A. 1, 2, 4, 3 B. 4, 2, 1, 3 | |
| B. 4, 2, 1, 3 | |
| C. 2, 4, 1, 3 | 18/ |
| D. 3, 4, 2, 1 | D |

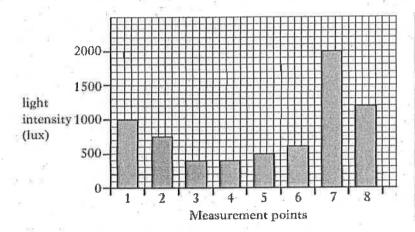
Part B

Write your answers to the following questions in the spaces provided.

1. An investigation was carried out into the effect of light intensity on the distribution of a type of garden plant.

The light intensity was measured and the percentage of the ground covered by the plant was recorded at eight different measurement points in a large garden.

The results are shown below.

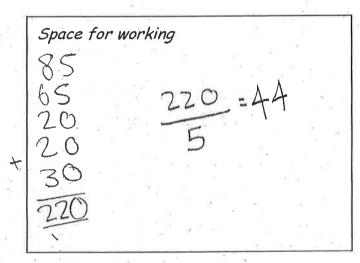


| Measurement points | Ground cover of the plant (%) |
|-----------------------|----------------------------------|
| a 1 | 85 |
| 2 | 65 |
| 3 | 20 |
| 4 | 20 |
| 5 | 30 |
| 6 | 35 |
| 7 | 100 |
| 8 | 90 |

Use the information in both the graph and the table above to answer the following questions:

(a) From the graph, which measurement point had the highest light intensity reading?

(b) Using information from the table, calculate the average percentage ground cover of the plant for the first five measurement points.

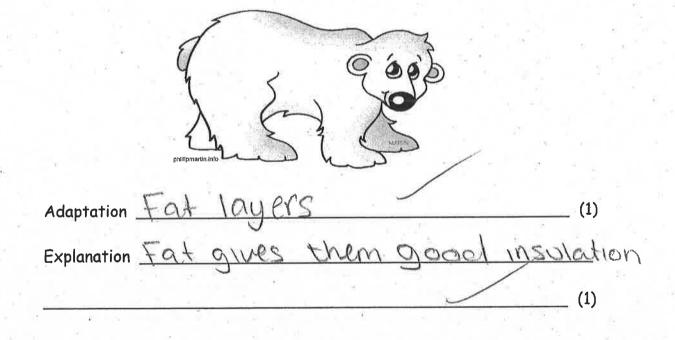


Answer 4 4 % (2)

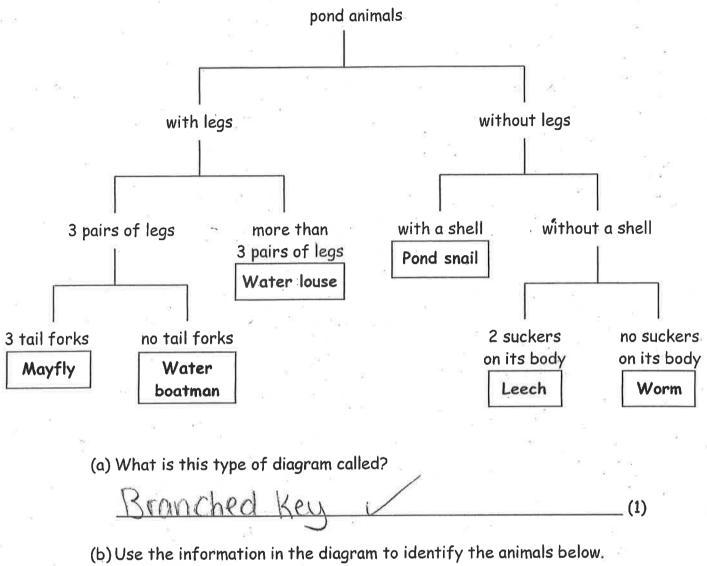
| (c) From the graph, what is the | Answer 350 lux |
|--|--|
| (d) Using the graph, describe measurement point 4 to 7. | e how the light intensity changes fro |
| It increased | (1 |
| (e) <u>Underline</u> the correct word in | n the bracket in the sentence below: (1 |
| The results show that this conditions. | s plant grows better in (bright/shady |
| (f) Other than light intensity, n could affect the distribution | name one other environmental factor the |
| Soil moisture | (1 |

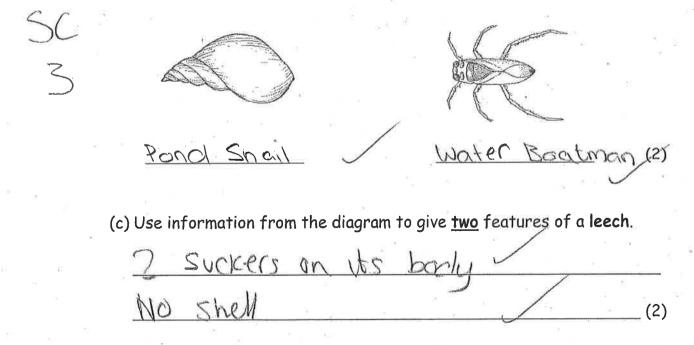
2. Polar bears have thick fur to keep them warm in the Arctic.

Describe one other way that a polar bear is adapted to survive in the Arctic and explain how this feature helps the polar bear to survive.

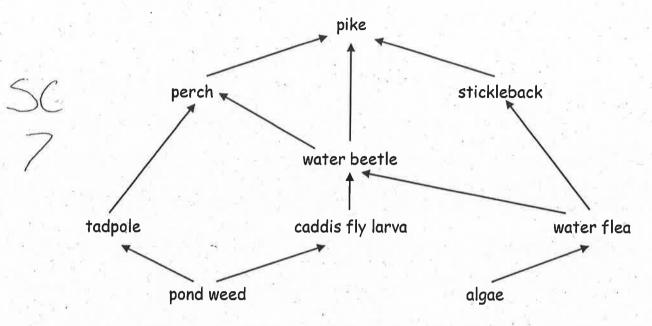


3. The diagram below can be used to identify some animals found in a pond.





4. The diagram below shows a food web from a pond.



Use the information in the diagram to answer the following questions.

(a) Complete the table below by entering T if the statement is true and F if the statement is false.

| Statement | Tor F |
|---|-------|
| Water beetles are eaten by water fleas and caddis fly larvae | F |
| Pike are not eaten by anything | |
| Tadpoles are eaten by perch which are eaten by pike | T |
| | |

(b) Name one producer shown in the food web.

| 11 | |
|-------|---------|
| MIQUE | (1) |
| | - A |

(c) A predator is an animal that hunts and kills other animals for food. Name one predator shown in the food web.

| CILI | | |
|--------------|-----|-------|
| Stickleboict | . \ | (1) |
| | | , ×-, |

(d) Animals are in competition with each other if they eat the same food. Name two animals that are in competition with each other in this food web.

tadpole and Condolles fly larva(1)