

GCSE Biology B (Twenty First Century Science)
J257/02 Depth in Biology (Foundation)

Question Set 18

1 Some students are playing a game.

Their teacher has scattered small green straws and small red straws over a large area of grass.

In each round of the game, the students have to run around and pick up as many straws as they can in 10 seconds.

(a) The straws are like a population of prey.

Which statement is an example of **variation** between the straws?

Tick (✓) **one** box.

They are all small.

They are different colours.

They are in different places on the grass.

They will not all be picked up.

[1]

(b) The straws are 'hunted' by the students, who are like predators.

Explain why the **green** straws are better suited to 'survive' in the grassy environment.

(answer at end of questions)

[2]

(c) The students are in competition to pick up as many straws as they can.

Suggest **one** example of variation between students that could affect their ability to compete for the straws.

speed of the children

[1]

(d) Which biological process is the game a model of?

Tick (✓) **one** box

Mutation

Natural selection

Reproduction

Selective breeding

[1]

(e) The students play several rounds of the game.

(i) Straws that have been picked up are **not** put back on the grass after each round.

The total population of straws left on the grass will therefore be smaller after several rounds.

Predict one **other** way in which the population of straws left on the grass will have changed after several rounds of the game.

[1]

the proportion of green straws will be bigger, and the proportion of red straws smaller.

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Explain why the **green** straws are better suited to 'survive' in the grassy environment.

the green straws camouflage against the grass, so they are less likely to be spotted by the children and collected. Hence they are better suited.

[2]

[1]

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Suggest **one** example of variation between students that could affect their ability to compete for the straws. *speed of the children*

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- (ii) The student who picks up the **fewest** straws in each round has to drop out of the game. The total population of students will therefore be smaller after several rounds.

Predict one **other** way the population of students will have changed after several rounds of the game.

Explain your answer.

[2]

the population will be faster, and probably shorter, as these individuals can reach down to the ground to pick up straws quicker, so are less likely to be eliminated from the game.

Total Marks for Question Set 18: 8

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