Marine Education

Homer's Index
Calculate the biodiversity of a marine ecosystem using Simpson's diversity index (SDI)

Simpson's Diversity Index (SDI) =

$$1 - \left(\frac{\sum n(n-1)}{N(N-1)} \right)$$

N=total number of organisms of all species
n=number of organisms of one species

Name:

Date:

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Research Question

When carrying out an investigation or conducting research, you always have a research QUESTION. The question must be *specific* (so the answer is specific) and have a dependent and independent variable.

E.g. Is there a difference in <u>species diversity</u> between an <u>inshore reef</u> and an <u>offshore reef?</u>
(A good start is to compare two samples)   (dependent variable)   (Sample number 1)   (Sample number 2)

To answer this question, the Simpsons Diversity Index (SDI) provides a value between 0 and 1 for each sample, indicating their level of species diversity, which you can then compare. If an ecosystem has a SDI of 1 this means it has infinite diversity. Whilst a SDI of 0 means it has zero diversity (i.e. only one species).
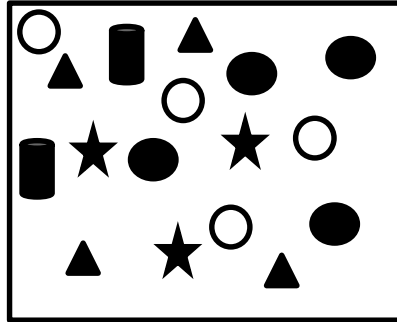
Note: SDI is actually calculating the probability that 2 randomly selected individuals will be of 2 *different* species (or categories). 100% = 1.0 and 0% = 0.

Activity: Complete the tables below using the following data:
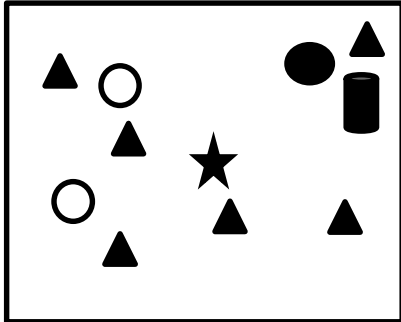
Inshore Reef   Offshore Reef

▲ Species A
● Species B
▮ Species C
★ Species D
○ Species E

INSHORE REEF			OFFSHORE REEF		
IDENTIFY	**COUNT**	**STATS**	**IDENTIFY**	**COUNT**	**STATS**
Name	**n**	**n(n -1)**	**Name**	**n**	**n(n -1)**
Total	**N**	**∑n(n-1)**	**Total**	**N**	**∑n(n-1)**
Simpsons Diversity Index Calculations	N(N-1)=	SDI =	**Simpsons Diversity Index Calculations**	N(N-1)=	SDI =

Q Is there a difference in <u>species diversity</u> between an <u>inshore reef</u> and <u>offshore reef</u>? **Ans.** [Yes] [No]
Circle your answer