Farming and Fishing

1. Use the following table to answer the questions

Year	Mass of fish caught by UK fishermen from ALL SOURCES in thousands of tonnes	Mass of fish caught by UK fishermen from SUSTAINABLE SOURCES in thousands of tonnes	Percentage of fish caught from sustainable sources
2002	690.0	427.8	62.0
2004	655.0	396.6	60.5
2006	619.0	386.0	62.4
2008	589.0	436.1	74.0
2010	611.5	465.0	

a. Calculate the percentage of fish caught from sustainable sources in 2010.

b. Describe the patterns shown in the table.

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c. Suggest reasons for the patterns shown.

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d. State two methods of maintaining fish stocks.

2. Intensive farming methods are often used to make biomass and energy transfers more efficient.

a. Determine if each of the following statements is an advantage or a disadvantage of intensive farming:

Animals can be transported in small spaces over long distances.	
Keeping temperatures constant reduces the energy that an animal uses to thermoregulate. The energy saved is used for growth.	
Movement of animals is restricted.	
Antibiotics used in farming can be a threat to human health, causing antibiotic resistance.	
Animals cages can be very small and stressful.	
Restricting the movement of animals so that energy used for movement is reduced and more can be used for growth.	
Slaughtering techniques can be inhumane.	
Animals are easily treated with antibiotics to prevent them from getting infections.	
Fewer animal pests to eat crops or cause disease in livestock.	
Animals are packed closely together, increasing the risk of disease spreading.	

b. Use the table to help you evaluate the advantages and disadvantages of using intensive farming methods.

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3. Another way to increase the efficiency of biomass transfer is by limiting the length of food chains. The table below shows the energy available to humans from two different food chains:

Food chain	Energy transferred to humans in kJ per hectare of crop
Wheat → humans	900 000
Wheat → pigs → humans	90 00

a. Explain what the arrows represent in a food chain.

b. Compare the amount of energy the two food chains transfer to humans.

c. Suggest a reason for the difference in the amount of energy the two food chains transfer to humans.

d. Explain how this data could be used as evidence to promote a vegetarian diet.