

Unit 3 Sustainability & Interdependence

Key Area 6 Social Behaviour

1. The list of statements below refers to advantages gained by hunting behaviour. Which of the following statements could be true of cooperative hunting?

- 1 Individuals gain more energy than from hunting alone.
- 2 Both dominant and subordinate animals benefit.
- 3 Much larger prey may be killed than by hunting alone.

A 1 and 2 only

B 1 and 3 only

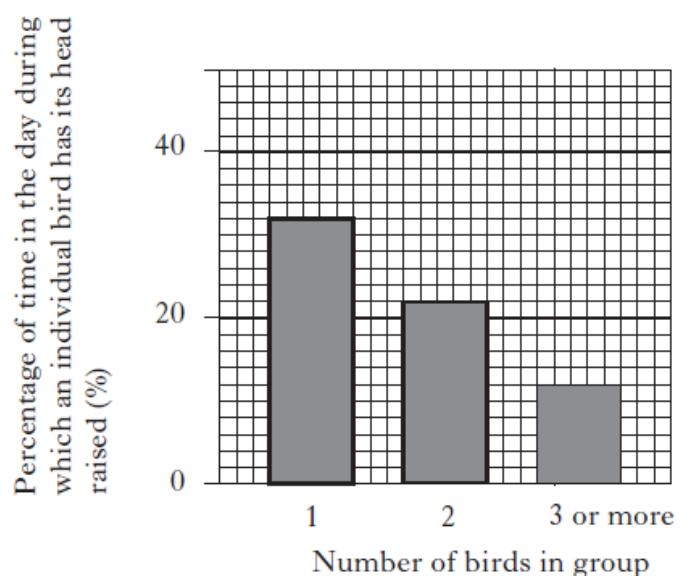
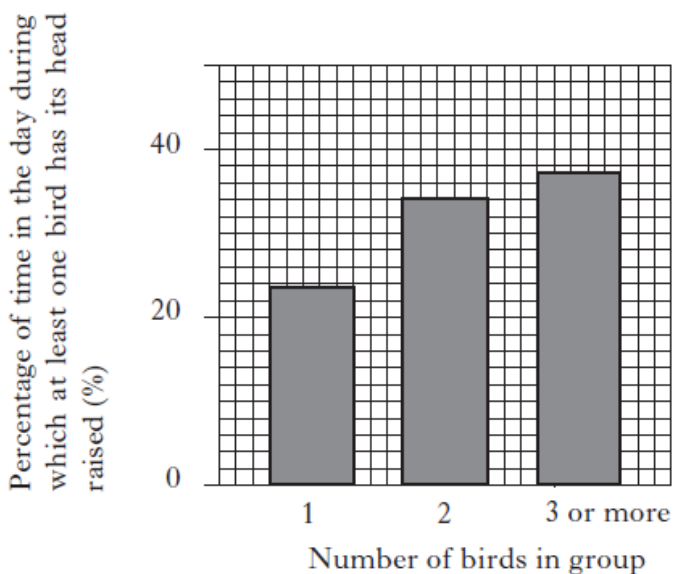
C 2 and 3 only

D 1, 2 and 3

2.

Ostriches are large birds which live on open plains in Africa. They divide their time between feeding on vegetation and raising their heads to look for predators.

The graphs below show the results of a study on the effect of group size in ostriches on their behaviour.



2 continued

Which of the following is a valid conclusion from these results?

In larger groups, an individual ostrich spends

- A less time with its head raised so the group is less likely to see predators
- B less time with its head raised but the group is more likely to see predators
- C more time with its head raised so the group is more likely to see predators
- D more time with its head raised but the group is less likely to see predators.

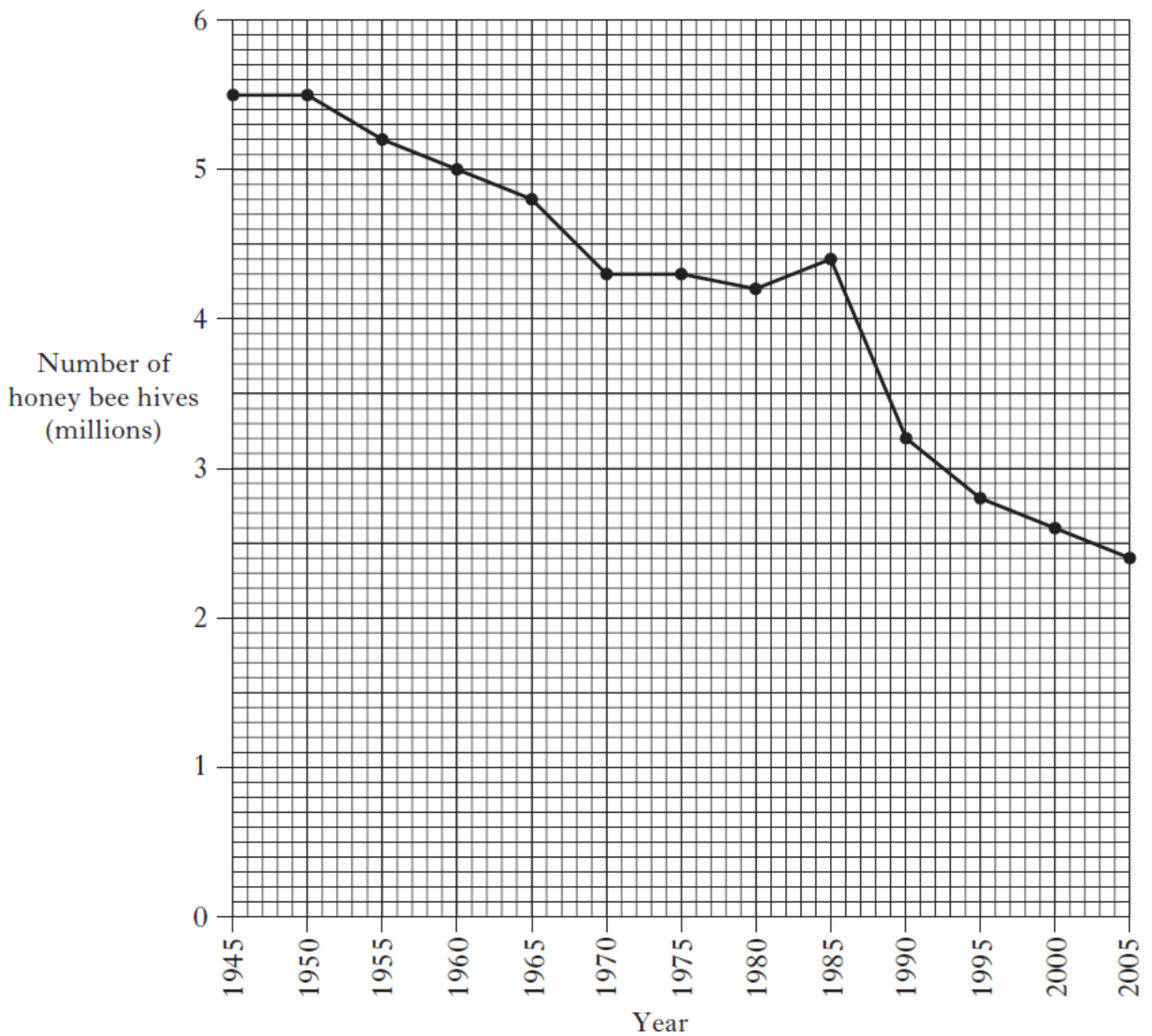
3.

(a) The honey bee (*Apis mellifera*) is a social insect which lives in colonies.

The queen is the only female in a colony that reproduces. Other females are workers which collect food, maintain the colony and care for the developing offspring.

Explain the advantage to the worker bees of caring for the offspring of the queen.

- (b) The graph below shows the changes in the number of honey bee hives kept by bee-keepers in the USA from 1945 to 2005.



- (i) Use values from the graph to describe the changes in the number of bee hives from 1980 to 1995.

3 b continued

- (ii) Express as the simplest whole number ratio, the number of bee hives in 1965 and 2005.

Space for calculation

_____ hives in 1965: _____ hives in 2005

1

4. Which line in the table below best describes the effects of altruistic behaviour on the donor and the recipient?

	<i>Effect on donor</i>	<i>Effect on recipient</i>
A	benefits	benefits
B	benefits	harms
C	harms	benefits
D	harms	harms

5. A pride of lions was studied hunting for three different prey species.

The table below shows the number of hunts carried out and the percentage of hunts that resulted in one kill.

<i>Prey species</i>	<i>Number of hunts</i>	<i>Percentage of hunts resulting in one kill</i>
Buffalo	60	15
Impala	80	30
Wildebeest	80	25

Which of the following conclusions can be drawn from this data?

- A Cooperative hunting allows the lions to hunt more successfully.
- B Lions killed more impala than any other prey species.
- C Buffalo used social defence mechanisms most successfully.
- D More individual buffalo escaped than any other prey species.

6. Which of the following best describes why worker honeybees from the same colony cooperate?
- A They are closely related.
 - B They are keystone species.
 - C Each individual benefits.
 - D This helps them to pollinate flowers.

7.

Baboons are social primates which live in large groups.

Within a group, individuals are ranked in a social hierarchy and have complex social behaviours.

- (a) Some individual baboons form alliances with others in their group to increase their social status.

Give an example of how increased social status can benefit an individual baboon.

1

- (b) Baboons use appeasement behaviour to reduce unnecessary conflict within the group.

Give **one** example of this type of behaviour.

1

- (c) Give **one** feature of parental care in primates which allows complex social behaviour to be learned.

1

8.

Domestic chickens kept in social groups form a social hierarchy in which the most dominant birds give most pecks to others and receive least.

In an investigation, four individual domestic chickens from a group were marked with lettered leg rings. The number of pecks given and received by each bird in one hour was recorded and the results shown in the table below.

		<i>Number of pecks given by each bird to the others</i>			
		W	X	Y	Z
<i>Number of pecks received by each bird from the others</i>	Leg ring letter	W	X	Y	Z
	W	–	0	12	9
	X	15	–	8	7
	Y	0	0	–	0
Z	0	0	10	–	

The social hierarchy among the chickens with the most dominant bird first is

- A Y, Z, W, X
- B X, W, Z, Y
- C Y, W, Z, X
- D X, Z, W, Y.

9.

The list below gives examples of benefits gained from types of behaviour in animals.

- W increased survival of shared genes
- X unnecessary conflict reduced
- Y subordinates gain more food than by foraging alone

Which line in the table below matches correctly types of animal behaviour with the benefits they give?

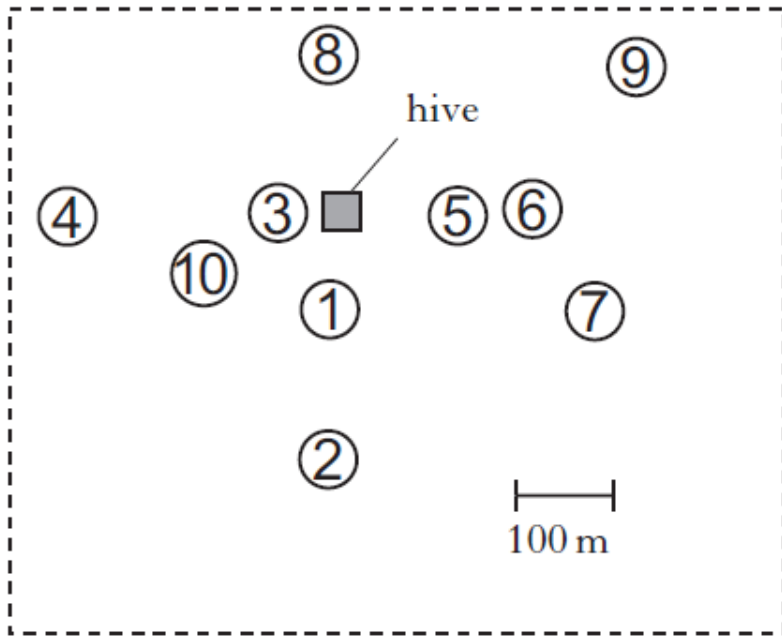
				<i>Type of animal behaviour</i>		
				<i>cooperative hunting</i>	<i>appeasement</i>	<i>kin selection</i>
A	W	X	Y	W	X	Y
B	Y	W	X	Y	W	X
C	X	Y	W	X	Y	W
D	Y	X	W	Y	X	W

10.

Bees are social insects. The workers forage for food and indicate the distance and direction of food sources which they have located, to the rest of their hive, by dance-like movements of two different types.

The diagram below shows a hive and the location of food sources ① – ⑩. The table shows the type of dance workers performed after finding sources ① – ⑧.

Diagram



Table

<i>Food Source</i>	<i>Dance</i>
①	round
②	waggle
③	round
④	waggle
⑤	round
⑥	round
⑦	waggle
⑧	waggle

Which line in the table indicates the dances likely to be performed by workers on finding food sources ⑨ and ⑩?

	<i>Type of dance performed</i>	
	Food Source ⑨	Food source ⑩
A	waggle	waggle
B	waggle	round
C	round	waggle
D	round	round

11.

In primates such as chimpanzees, parental care

- A occurs over a short time period
- B provides time for learning complex social behaviour
- C increases the parent's social status within their group
- D involves appeasement behaviour within a group.

12.

Altruistic behaviour between closely related animals

- A reduces competition between individuals in the population
- B increases the survival chances of the donor animal
- C increases the frequency of shared genes in the next generation
- D reduces unnecessary aggression and conflict in social groups.

13.

On returning to their roost after feeding, vampire bats may regurgitate blood to feed an unrelated individual in the same social group.

This is an example of

- A mutualism
- B altruism
- C social hierarchy
- D kin selection.

14.

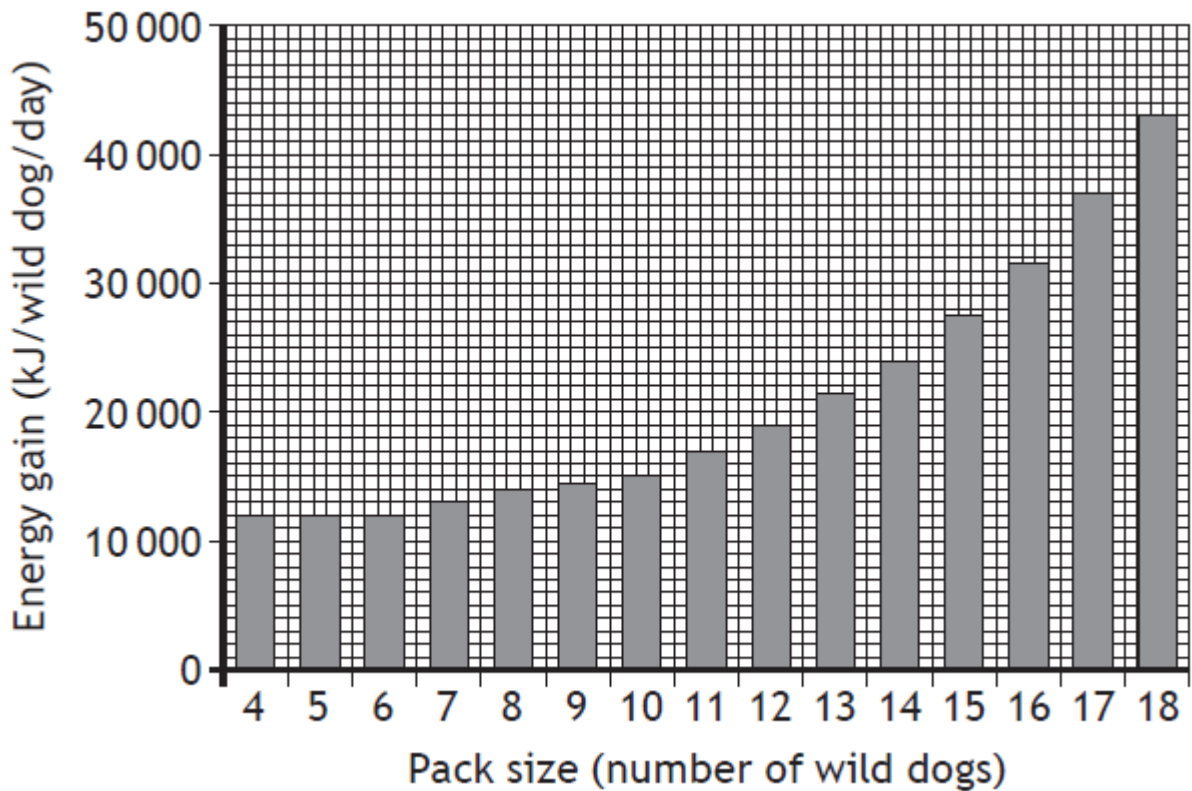
Write notes on primate behaviour.

4

15.

African wild dogs are carnivores which live in packs and use cooperative hunting. Each wild dog requires an average of 30 000 kJ of energy per day for the pack to survive.

The bar chart shows the relationship between pack size and energy gain per wild dog per day.



- (a) Using information from the bar chart, state the minimum pack size
- (i) at which cooperative hunting becomes an advantage; 1
_____ wild dogs
 - (ii) for survival of the pack. 1
_____ wild dogs

- (b) Suggest why wild dogs in larger packs gain more energy per individual from hunting even though there are more animals to be fed. 1
- _____
- _____

- (c) Most of the wild dogs in a pack are related. Usually only one dominant female has offspring which other members of the pack will feed. 1
- Explain why pack members feed offspring which are not their own.
- _____
- _____