Cambridge
O Level

Cambridge International Examinations
Cambridge Ordinary Level

CANDIDATE NAME	
CENTRE NUMBER	
CANDIDATE NUMBER	

7638984299

MARINE SCIENCE **5180/01**

Paper 1 Structured **October/November 2015**

1 hour 30 minutes

Candidates answer on the Question Paper.

No Additional Materials are required.

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
Write your answers in the spaces provided on the Question Paper.

Electronic calculators may be used.
You may lose marks if you do not show your working or if you do not use appropriate units.

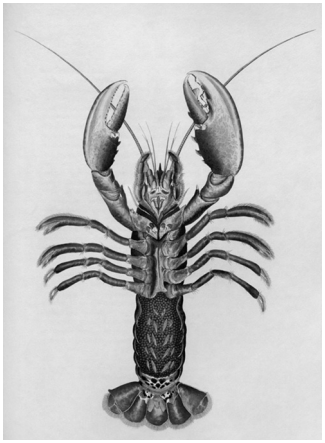
At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.

This document consists of **16** printed pages.

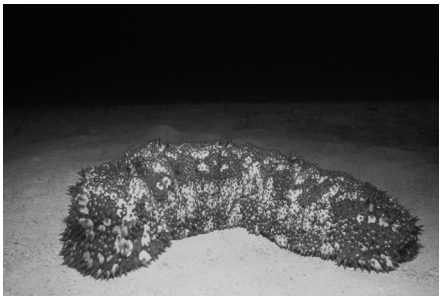
CAMBRIDGE International Examinations

Answer **all** the questions in the spaces provided.

1 Fig. 1.1 shows six different animals, not drawn to the same scale.



A



B

C

D

E

F

Fig. 1.1

(a) (i) Match the letter of the animal to the name of the group to which it belongs.

group	letter
bony fish	
cartilaginous fish	
echinoderms	
arthropods	
cnidaria	
molluscs	

[6]

(ii) State the letter of the animal that has tube feet. ..... [1]

(iii) State the letter of the animal that has stinging tentacles. ..... [1]

(iv) State the letter of the animal that has a carapace. ..... [1]

[Total: 9]

2 **(a)** Complete Table 2.1 to show the use in the human body of each of the molecules listed.

Table 2.1

molecule	use
carbohydrates	
lipids	
amino acids	
nucleic acids	

[4]

(b) State the use of each of these vitamins in a balanced diet.

(i) vitamin A .....

..... [1]

(ii) vitamin D .....

..... [1]

[Total: 6]

[Turn over

3 **(a)** Table 3.1 shows the relationship between age and mass of female North Pacific albacore.

Table 3.1

age/years	2	3	4	5	6	7	8	9	10
mass/kg	1.5	4.0	7.0	10.5	15.0	19.5	23.0	27.0	43.0

(i) Female North Pacific albacore reach maturity at 5 years.
Use Table 3.1 to find the mass of a North Pacific albacore at maturity.

..... [1]

(ii) Using the data in Table 3.1, calculate the mean growth rate per year.
Show your working.

mean growth rate = ... [2]

(iii) State the relationship between age and mass.

.....

..... [1]

(b) Suggest **two** factors that influence the growth rate of North Pacific albacore.

1 .....

.....

2 .....

..... [2]

(c) North Pacific albacore form shoals consisting of large numbers of individuals.

Suggest why shoaling may be an advantage to North Pacific albacore.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

[Total: 10]

4 **(a)** **(i)** Explain the meaning of the term *aquaculture*.

.....

.....

.....

..... [2]

(ii) State **two** advantages of aquaculture over the harvesting of wild stocks of marine organisms.

1 .....

.....

2 .....

..... [2]

(iii) State **one** disadvantage of aquaculture.

.....

..... [1]

(b) Fig. 4.1 shows the status of world aquaculture production of different groups of organisms in 2010.

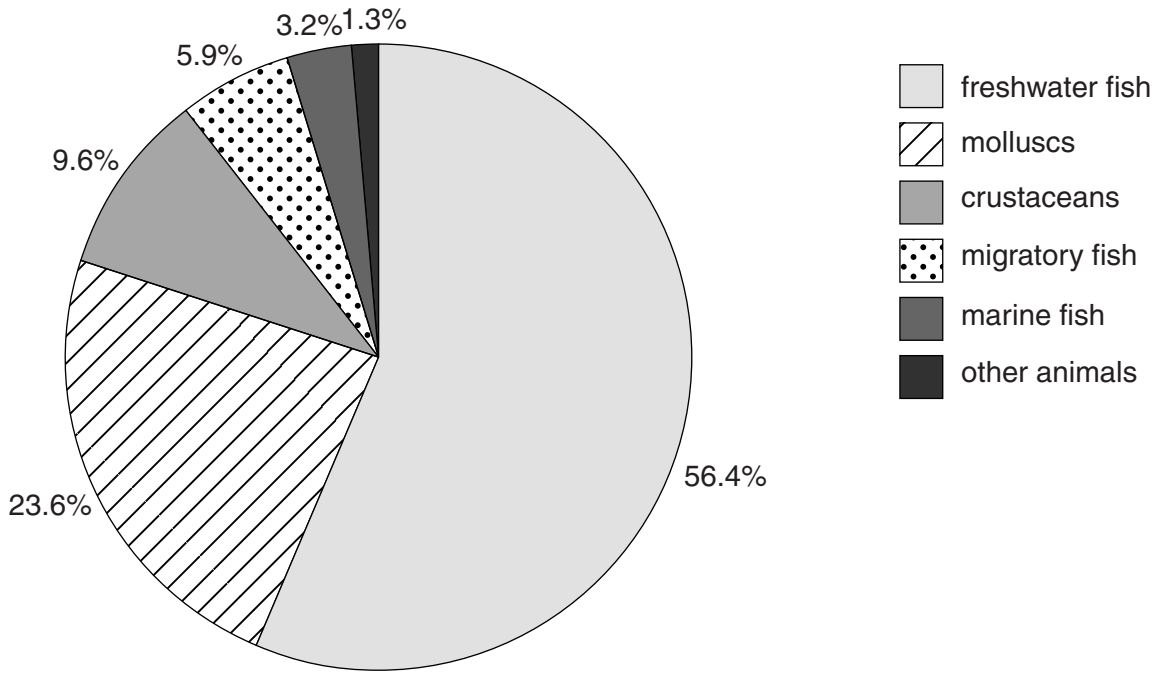


Fig. 4.1

(i) Use Fig. 4.1 to calculate the total contribution of fish to world aquaculture production.

.....% [1]

(ii) The total mass of marine fish produced by aquaculture in 2010 was 1.8 million tonnes. Using the data in Fig. 4.1, calculate the total mass of crustaceans produced by aquaculture.

..... million tonnes [2]

(c) Describe the intensive system of aquaculture used to cultivate some fish species.

.....

.....

.....

.....

.....

.....

.....

..... [3]

[Total: 11]

5 **(a)** Define the term *upwelling*.

.....

.....

.....

..... [2]

(b) Suggest and explain how upwelling affects each of the following:

(i) the sea surface temperature

.....

.....

.....

..... [2]

(ii) the productivity of the sea.

.....

.....

.....

..... [2]

(c) Fig. 5.1 shows part of a marine food web.

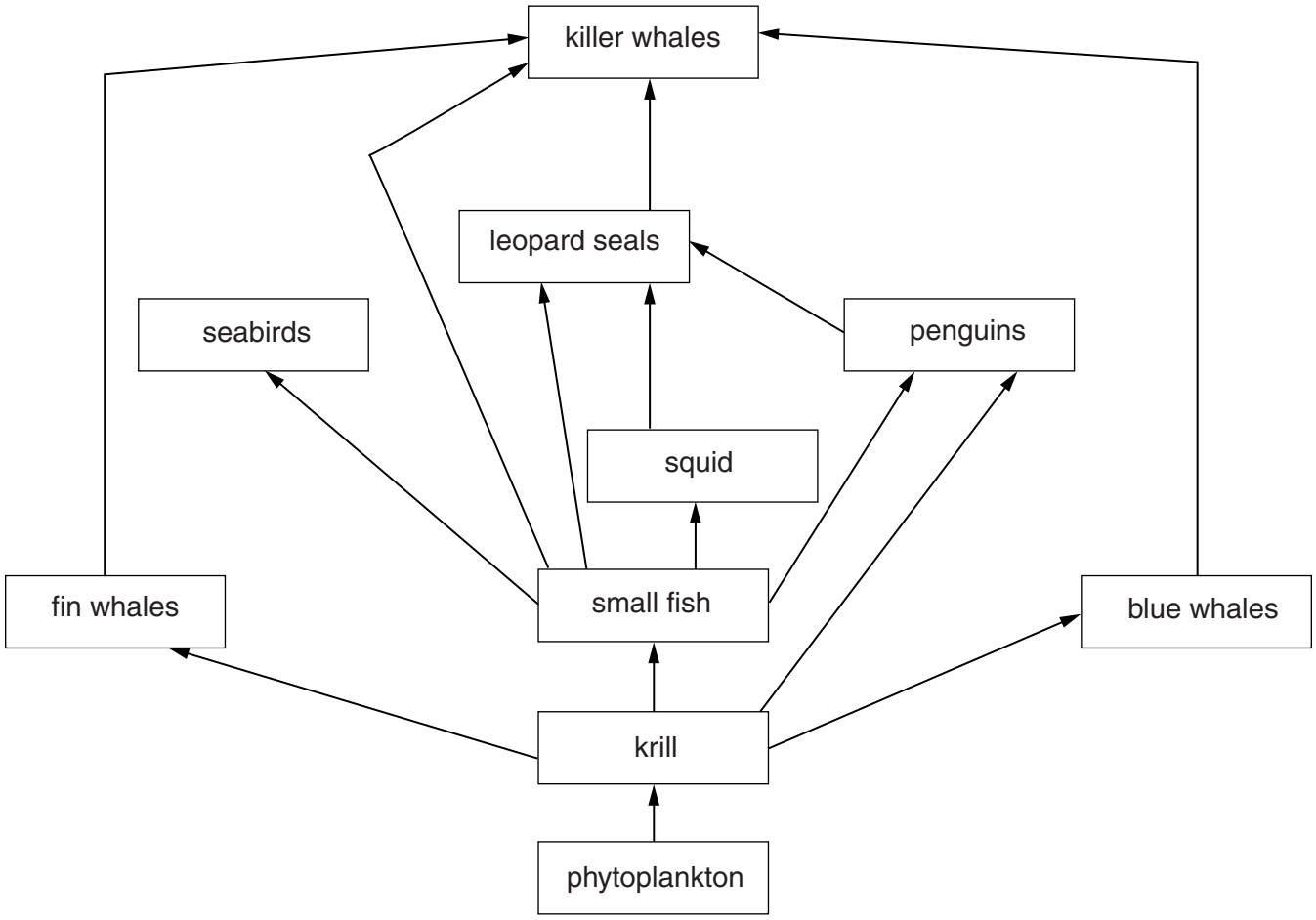


Fig. 5.1

With reference to Fig. 5.1 state which organism

(i) carries out photosynthesis.

..... [1]

(ii) has five predators.

..... [1]

(iii) is a herbivore.

..... [1]

[Total: 9]

6 **(a)** Fig. 6.1 shows the stages in the handling of live grouper.

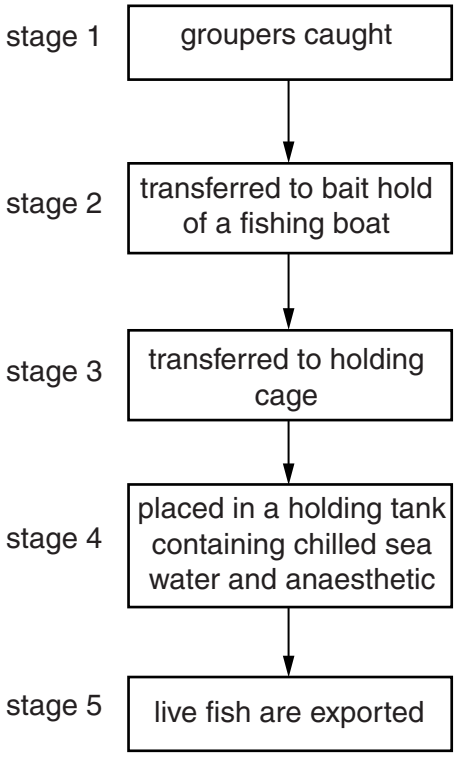


Fig. 6.1

(i) The bait hold used in stage 2 is continuously flooded with sea water.
Suggest reasons for this.

.....

.....

.....

..... [2]

(ii) Suggest why it is important to keep the length of time the fish are kept in the holding cage as short as possible.

.....

..... [1]

(iii) Suggest why the live grouper are placed in chilled sea water and anaesthetic in stage 4.

.....

.....

.....

.....

.....

.....

.....

.....

..... [4]

(iv) State **one** economic advantage to exporters of exporting live groupers rather than dead ones.

.....

..... [1]

[Total: 8]

7 **(a)** Aluminium is an important material used in boat building.
State **two** properties of aluminium that make it suitable as a boat building material.

1 .....

.....

2 .....

..... [2]

(b) Explain what is meant by the term *seamanship*.

.....

.....

.....

..... [2]

(c) Some types of fishing gear are listed below.

boat seine **gill nets** **lift nets** **otter trawl**

pelagic long-lines **pole and line** **purse seine**

State which of these

(i) has a line along the bottom of the net. ..... [1]

(ii) is dragged along the sea bed. ..... [1]

(iii) traps fish by their gills. ..... [1]

(iv) is used in the most sustainable type of fishing. ..... [1]

(d) Fig. 7.1 shows the mean daily catch at a Fish Aggregating Device in different countries.

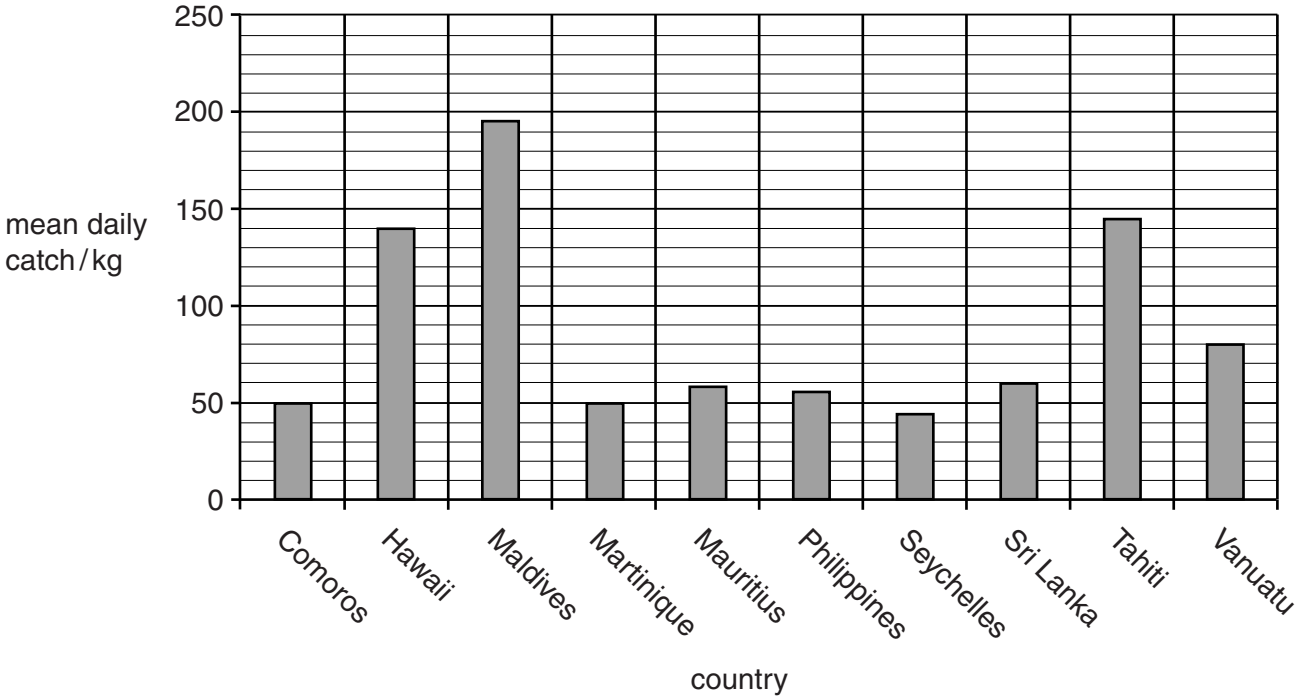


Fig. 7.1

(i) State which **two** countries had the same mean daily catch.

..... and ..... [1]

(ii) Calculate the difference between the mean daily catch in the Maldives and in Vanuatu.

..... [1]

[Total: 10]

8 **(a)** Fig. 8.1 shows a section through the Earth, not drawn to scale.

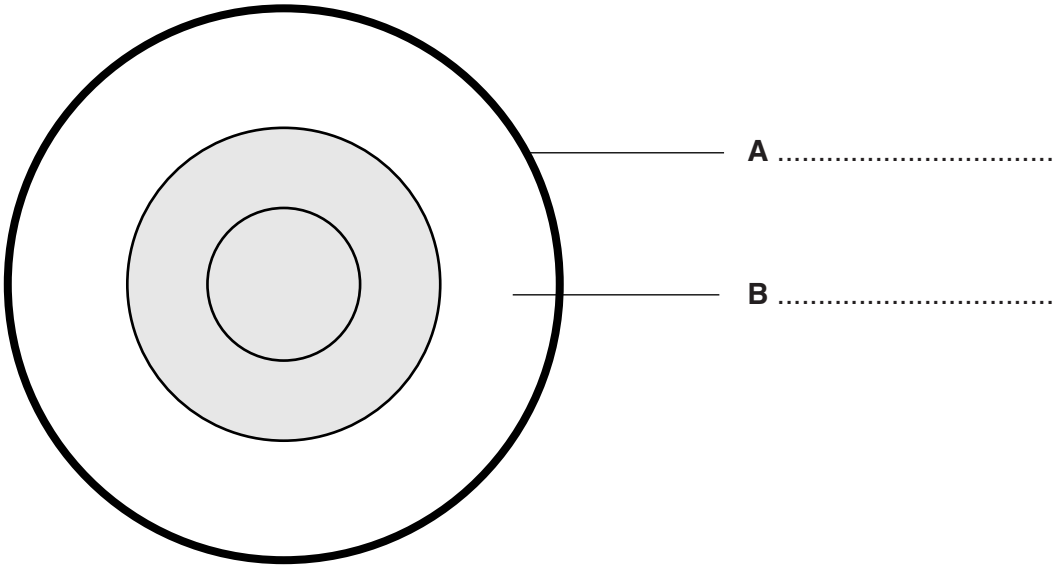


Fig. 8.1

Label parts **A** and **B** on Fig. 8.1. [2]

(b) Fig. 8.2 shows a cross section of the sea bed, not drawn to scale.

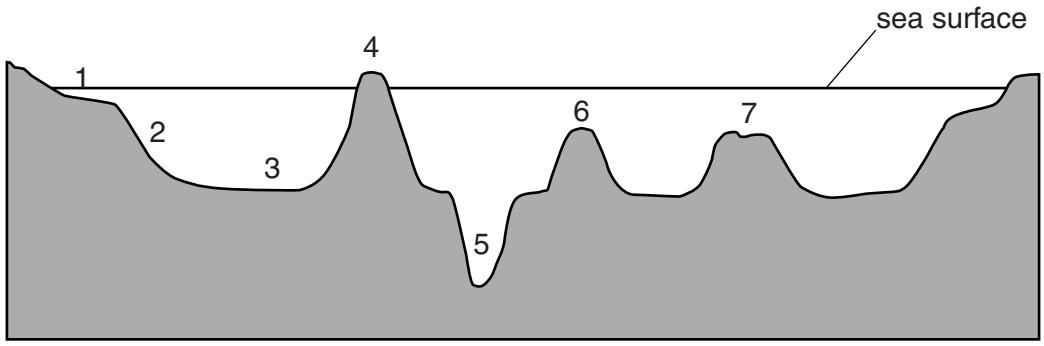


Fig. 8.2

Match the number from Fig. 8.2 which represents each of the following:

(i) the abyssal plain ..... [1]

(ii) an ocean trench ..... [1]

(iii) a volcanic island. ..... [1]

(c) State the number from Fig. 8.2 where most nearshore fisheries resources are found.

..... [1]

[Total: 6]

9 **(a)** Explain the meaning of the term *conservation*.

.....

.....

.....

..... [2]

(b) Table 9.1 shows the numbers of endangered species in various groups of organisms in 1998 and 2010.

Table 9.1

group	1998	2010
mammals	169	188
birds	168	190
reptiles	41	93
amphibians	18	486
fishes	157	369
insects	44	90
molluscs	257	324
plants	909	1616
total	**1763**	

(i) State which group of organisms showed the greatest percentage increase in the number of endangered species between 1998 and 2010.

..... [1]

(ii) Calculate the total number of endangered species for all groups in 2010.

total = ... [1]

(c) State **two** ways in which endangered marine species can be protected.

1 .....

.....

2 .....

..... [2]

[Total: 6]

10 (a) Fig. 10.1 shows the changes in the price of fish over one year.

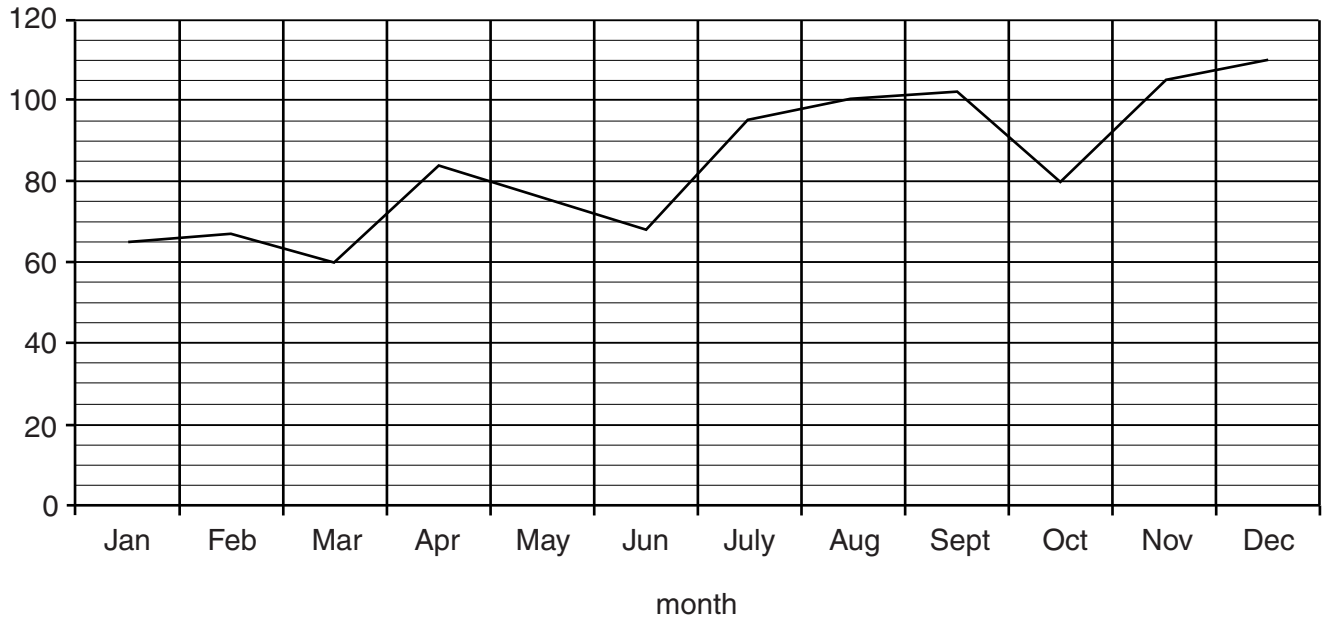


Fig. 10.1

(i) Suggest the label that should be on the y-axis.

.....

..... [1]

(ii) State between which two months the price increase was greatest.

..... [1]

(b) State **three** factors that influence the price of fish.

1 .....

.....

2 .....

.....

3 .....

..... [3]

[Total: 5]