Biology 183 Marine Biology
Pima Community College, Downtown Campus

Worksheets for Unit 4

Unit 4 Learning Objectives
To see the Unit 4 Learning Objectives, go to the Biology 183 Unit 4 website.

Unit 4 Activities

Step 1: Read Chapter 7, pages 115-134 in your textbook (Marine Biology, 9th ed., by Castro and Huber) and answer the questions in these worksheets. For hints or to double-check your answers, go to the Biology 183 website.

NOTE: Chapter 7 is broken into 2 parts: Unit 4 covers the first half of the chapter and Unit 5 covers the second half of the chapter.

Step 2: Do the review activity entitled “Comparing Invertebrates, Part 1.” There are worksheets for this activity later in this packet. Directions are on the Biology 183 website. This activity can be done at home and does NOT require internet access. This activity is not worth any points but is an excellent review and study tool for your test.

Step 3: For lab points, do the lab activity entitled “Survey of Marine Invertebrates, Part 1.” There are worksheets for this activity later in this packet. Directions are on the Biology 183 website. This lab must be completed at the Biology Learning Center. When you have completed the lab activity, take your results to the front desk in the Biology Learning Center to receive lab points.

Step 4: For lab points, do the lab activity entitled “Using a Dichotomous Key, Part 1.” There are worksheets for this activity later in this packet. This lab must be completed at the Biology Learning Center. When you have completed the lab activity, take your results to the front desk in the Biology Learning Center to receive lab points.

Step 5: Optional: Gallery of Marine Life: Visit the Gallery of Marine Life website and learn more about the intertidal marine organisms in the Northern Gulf of California while practicing what you have learned for this unit. There are practice quizzes on the website. The link to the website is on the Biology 183 website.

Step 6: Optional: Invertebrate Specimens: Explore kits with examples of invertebrates from the phyla and classes covered in this unit. This optional activity
must be completed in the Biology Learning Center. Directions are on the Unit 4 website.

**Step 7:** Prepare for the Unit 4 exam. The exam will consist of 40 multiple-choice questions. Thirty questions will be “factual” in nature (to assess whether you learned the facts in this unit). Some of these 30 questions may come from material you learned during your lab activities. To prepare for the 30 “factual” questions, try the multiple-choice practice quiz for Unit 4. Go to the Biology 183 website for the link to this practice quiz. The answers are at the end of the practice quiz.

The remaining 10 questions will be a lab practical quiz—You will use a dichotomous key and your knowledge of marine invertebrates and biology to identify features and taxonomy of several specimens. Your lab exercises (Steps 2, 3, and 4) and the Optional Activities will help you prepare for this part of the exam.

**Step 8:** Come in to the Biology Learning Center to take your Unit 4 exam. The exam will consist of 40 multiple-choice questions.

**STEP 1: TEXTBOOK WORKSHEETS**

1. Describe the Kingdom Animalia.

2. What are the two major types of animals?

3. Compare the abundance of invertebrate vs. vertebrate animal species.
4. Name the eight phyla of invertebrates about which you are responsible for learning in this unit. List at least one representative type of organism from each phylum. (p. 116-134).

Sponges

5. Generally describe sponges, including their level of organization, body plan and symmetry, and life styles. (Fig. 7.1, Table 7.1)
6. REVIEW: What are tissues? What are organs? What are organ systems? (chapter 4)

7. What is suspension feeding? What is filter feeding? What is passive suspension feeding? (Fig. 7.3)

8. Define the terms sessile and mobile.

9. Briefly describe how sponges feed, using collar cells and oscula.

10. Describe the structural support of sponges.
11. Preview: What is siliceous? What is calcareous? (chapter 2)

12. Describe reproduction in sponges.

13. What is metamorphosis?

14. Briefly describe the diversity of types of sponges in the ocean. Include encrusting sponges, glass sponges, boring sponges, and coralline sponges.

15. Describe the economic significance of sponges.
Cnidarians: Radial Symmetry

16. Generally describe cnidarians, including their level of organization, body shapes and symmetry, and life styles. (Table 7.1)

17. Fill-in the blanks on the following two cnidarian body plans. Label the aboral and oral surfaces, the tentacles, the bell, and the mouth.

18. Describe radial symmetry. (Fig. 7.6)

19. Describe the cnidarian body plan.
Cnidarians: Radial Symmetry: Types of Cnidarians

20. What are the three classes in the Phylum Cnidaria about which you are responsible for learning?

21. Generally describe the Class Hydrozoa, including the general body plan of its members. (Fig. 7.8)

22. Name and describe at least one representative type of hydrozoan. (Fig. 7.7 and 7.9)

23. Generally describe the Class Scyphozoa, including the general body plan of its members, and name at least one representative type of scyphozoan.
24. Name and describe at least one representative type of scyphozoans.

25. Generally describe the Class Anthozoa, including the general body plan of its members, and name and describe at least one representative type of anthozoan.

26. Briefly describe feeding and digestion in cnidarians.
27. Briefly describe the tissues of cnidarians.

**Comb Jellies: Radial Symmetry Revisited**

28. Generally describe comb jellies, including their level of organization, body plan and symmetry, and life styles. (Fig. 7.12, Table 7.1)

**Bilaterally Symmetrical Worms**

29. What is bilateral symmetry? What are its advantages and disadvantages compared to radial symmetry? (Fig. 7.13)
Bilaterally Symmetrical Worms: Flatworms

30. Generally describe flatworms, including their level of organization, body shape and symmetry, and life styles. (Table 7.1)

31. Name the most commonly seen type of marine flatworms.

32. Briefly describe the organ systems of flatworms.

Bilaterally Symmetrical Worms: Ribbon Worms

33. Generally describe ribbon worms, including their level of organization, body shape and symmetry, and life styles. (Fig. 7.14, Table 7.1)
34. Briefly describe the organ systems of ribbon worms.

Bilaterally Symmetrical Worms: Nematodes

35. Generally describe nematodes, including their level of organization, body shape and symmetry, and life styles. (Table 7.1)

36. Briefly describe the organ systems and bodies of nematode worms.

Bilaterally Symmetrical Worms: Segmented Worms

37. Generally describe segmented worms, including their level of organization, body shape and symmetry, and life styles. (Fig. 7.16, Table 7.1)
38. Generally describe the Class Polychaeta, including the general body plan of its members, and name at least one representative type of polychaete. (Fig. 7.15)

39. Fill-in the blanks on the diagram of the polychaete body plan. Label the posterior and anterior ends, segments, and parapodia.

40. Name at least one representative type of polychaete. (Fig. 7.16 and 7.17)
41. Briefly describe the organ systems and bodies of polychaete worms.

**Molluscs: The Successful Soft Body**

42. Generally describe molluscs, including their level of organization, symmetry, and life styles. (Fig. 7.20, Table 7.1)

43. Describe the typical molluscan body plan. (Fig. 7.19)
44. Fill-in the blanks on the diagram of the typical molluscan body plan (gastropod). Label the shell, mantle cavity, gills, mouth, and operculum.

45. What are the four classes in the Phylum Mollusca about which you are responsible for learning?
   1
   2
   3
   4

46. Generally describe the Class Gastropoda, including the general body plan of its members and their life styles. (Fig. 7.20, 7.21, and 7.22)
47. Review: What is benthic? (chapter 4)

48. Describe nudibranchs. What is their common name?

49. Generally describe the Class Bivalvia, including the general body plan of its members and their life styles. (Fig. 7.23 and 7.24)

50. Generally describe the Class Cephalopoda, including the general body plan of its members and their life styles. (Fig. 7.25 and 7.26)
51. Briefly describe octopuses. (Fig 7.25)

52. Fill-in the blanks on the diagram of the octopus body plan. Label the head, eye, arms, siphon, and suckers.

53. Briefly describe squid. (Fig. 7.27)

54. Generally describe the Class Polyplacophora, including the general body plan of its members and their life styles. (Fig. 7.28)
Molluscs: The Successful Soft Body: Biology of Molluscs

55. Generally describe feeding and digestion in molluscs.

56. Generally describe the nervous system and behavior of molluscs.

57. Generally describe reproduction and life history of molluscs.