Student's Name _____
THINKING WITH SCIENCE
Observation Quiz
Lesson 11 (The Changing Board)

1. Which of the following is not a simple machine?
   A. lever
   B. gear
   C. pulley
   D. hammer

2. A machine is a device that is designed to make _____ easier.
   A. work
   B. effort
   C. mechanical advantage
   D. fulcum

3. An example of the inclined plane is the:
   A. hammer
   B. wedge
   C. teeter-totter
   D. all of the above

4. The place where a lever is attached is called what?
   A. gear
   B. fulcrum
   C. balance
   D. none of the above

5. On most teeter-totters, the ____ is in the middle.
   A. balance
   B. end
   C. fulcrum
   D. point

6. The thing that you are trying to lift with a lever is called what?
   A. work
   B. effort
   C. fulcrum
   D. all of the above

7. The mechanical advantage can be defined as what?
   A. work divided by effort
   B. fulcrum times effort
   C. fulcrum time work
   D. balance divided by work

8. An example of when the mechanical advantage would be 3 is:
   A. work 3, mechanical advantage 3.
   B. effort 3, work 1.
   C. work 3, effort 1.
   D. work 3, effort 3.

9. How did I know that the work would be 1 when the location of the fulcrum was +1, +2, and +3?
   A. the last nail made the work end go down.
   B. 1 always makes the work go down.
   C. 2 and 3 are more than 1.
   D. none of the above.

10. Why was the mechanical advantage 7, 15, and 25 when the work was 7, 15, and 25?
   A. because the effort was 7, 15, and 25.
   B. because the effort was always 1.
   C. both of the above.
   D. neither of the above.

11. E-7 means what?
   A. seven said "no".
   B. everybody except 7.
   C. both of the above.
   D. neither of the above.

12. Why is a machine with a mechanical advantage of 25 better than one with 15?
   A. because the work is harder.
   B. because the effort is harder.
   C. because the work is easier.
   D. because the effort is easier.

13. A simple machine would be a what?
   A. pulley
   B. car
   C. bicycle
   D. scale

14. A kind of person who can compute the mechanical advantage of a complicated machine might be who?

A. an elementary school teacher.
B. a salesman.
C. a scientist.
D. an engineer.

15. Why should you have known that if the effort was 12 when the fulcrum was on -1, it should be more than 12 when the fulcrum was on -2?

A. because "more than 12" is more than 12.
B. because there were already 12 in the effort side.
C. both A and B above.
D. neither A nor B above.

16. Why is a mechanical advantage of effort 5, work 32 equal to 0.1?

A. because 5/32 = 0.1.
B. because 5 divided by 32 = 0.1.
C. because when you divide 5 by 32, you get 0.1
D. all of the above.

17. Why should the mechanical advantage be close to 1.0 when the fulcrum is in the middle?

A. because the work and fulcrum are both 1.
B. because the work and effort are both 5.
C. because the effort and mechanical advantage are both 1.
D. because the effort and work are approximately equal.

18. Why is the mechanical advantage bigger when the fulcrum is closer to the work?

A. because the work is easier.
B. because the work is harder.
C. because the effort is harder.
D. none of the above.

19. As the fulcrum gets _____ the work, the work becomes _____.

A. farther from, easier.
B. closer to, easier.
C. closer to, harder.
D. none of the above.

20. When the would the mechanical advantage be 5?

A. when the work is 5, and the effort is 1.
B. when the work is 1000, and the effort is 200.
C. when the work is 5, and the effort is 5.
D. when the work is 200, and the effort is 200.

Students's Name Answer Key

OBSERVATION QUIZ FOR "THINKING WITH SCIENCE"

Quiz for Lesson 11 Quiz Number _____

1. A B C **D** E
2. **A** B C D E
3. A **B** C D E
4. A **B** C D E
5. A B **C** D E
6. **A** B C D E
7. **A** B C D E
8. A B **C** D E
9. **A** B C D E
10. A **B** C D E
11. A **B** C D E
12. A B **C** D E
13. **A** B C D E
14. A B C **D** E
15. A B **C** D E
16. A B C **D** E
17. A B C **D** E
18. **A** B C D E
19. A **B** C D E
20. A **B** C D E