Solve a Problem!

13. What is the mechanical advantage of a lever that can lift a 100 N load with an input force of 20 N? `K/U`

14. (a) Figure 2 shows a class 1 lever. Calculate the work done to move the load 25 cm.
(b) Estimate the amount of work done if the fulcrum were moved so that the input force was twice as far from the fulcrum as the load. Explain your answer. `T/I` `A`
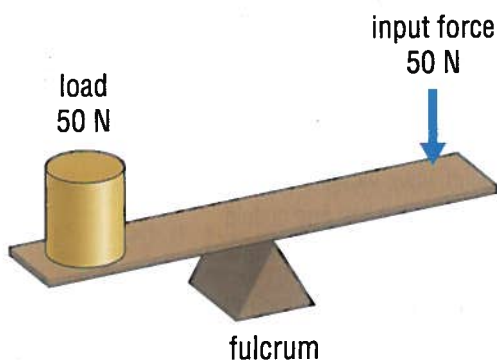

input force
50 N

load
50 N

fulcrum

Figure 2

15. (a) Calculate the work done in Figure 3.
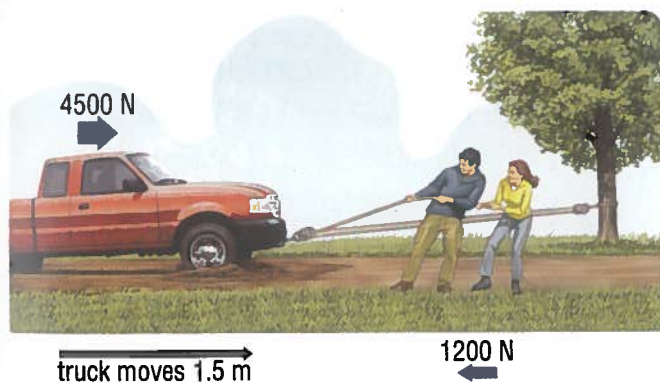(b) Approximately how far will the people have to travel to move the truck 1.5 m? Justify your answer. `T/I` `A`

4500 N

truck moves 1.5 m

1200 N

Figure 3

16. A single movable pulley is being used to move a 140 N load. The pulley is a little dirty, so it adds another 5 N of frictional force.
(a) Can this load be moved with a 75 N input force? Explain your answer.
(b) Would a single fixed pulley work? Explain your answer. `K/U` `T/I` `A` `C`

Create and Evaluate!

17. (a) Compare the benefits and disadvantages of doorknobs versus lever-style door openers (Figure 4).
(b) Which would be easier for people with special physical needs to use? `T/I` `A`

Figure 4

18. Which simple machine do you feel has had the greatest effect on the environment? Explain your reasoning. `T/I` `A`

19. Research devices that make work easier for people with special needs. Select two or three of these devices that apply to concepts discussed in this chapter. Prepare a brief (one-page) report on them. For example, discuss how these devices use simple machines and/or mechanical advantage. `A` `C`

Go to Nelson Science

Reflect on Your Learning

20. (a) Describe a concept in this chapter that you already knew something about.
(b) When and where did you first learn about this idea?
(c) Describe similarities and differences between what you already knew about the idea and what you just learned about it.

21. Think back to the Key Question on the first page of this chapter.
(a) In a brief paragraph, answer the Key Question. You may use diagrams.
(b) Write one or two more questions about the topic of this unit that you would like to explore.