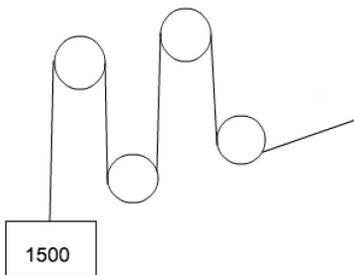
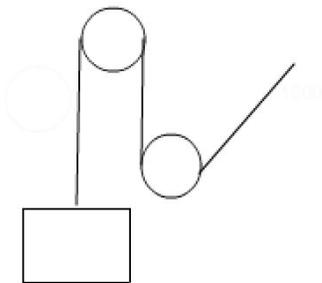


Here's the list of questions that go along with the tutoring video
MECHANICAL REASONING. Use these to follow along with the problems
as they are demonstrated.

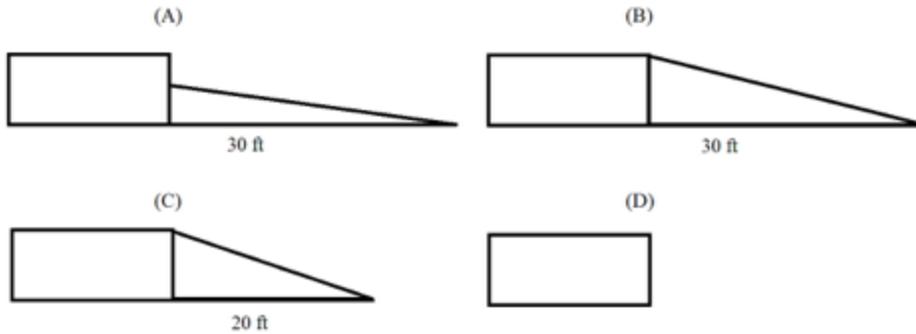
1. If someone tried to move a 2-ton stone with a 12-foot-long lever, which location of the fulcrum would provide the greatest lift?
 - A. 2 feet from the stone
 - B. 4 feet from the stone
 - C. 6 feet from the stone
 - D. 10 feet from the stone
2. Examine the diagram below. How much effort would be required, using this set of pulleys, to lift the 1,500-pound weight?



3. Examine the diagram below. If the cable was pulled 20 feet, how high would the crate rise?



4. Which of the inclined plane diagrams below demonstrates the best mechanical advantage in lifting a heavy object to the height of the platform?

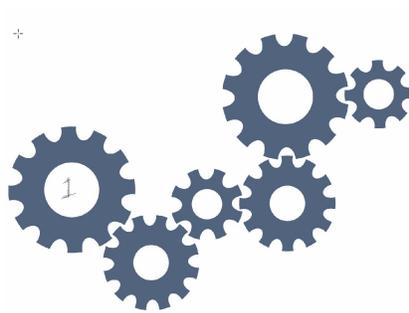


5. Examine the diagram below. What is the mechanical advantage of the inclined plane?



6. If a 510 pound drum of hydraulic fluid is being loaded into the back of a truck by rolling it up an inclined plane, how much effort would it require? The truck bed is 4 feet above the ground and the ramp is 30 feet long.

7. If gear 1 rotates clockwise, which direction will the last gear rotate?

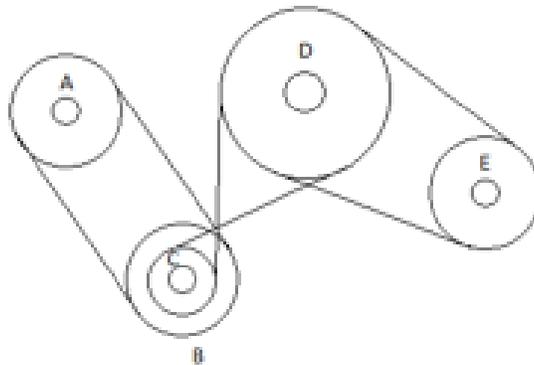


8. If Gear A has 60 teeth, and the connected Gear B has 15 teeth, which of the following is true?

- A. For every rotation of Gear A, Gear B will rotate 5 times
- B. For every rotation of Gear B, Gear A will rotate 2 times
- C. For every rotation of Gear B, Gear A will rotate 3 times
- D. For every rotation of Gear A, Gear B will rotate 4 times

Wheel dimensions are: (use for questions 9-10)

- A – 15 inches in diameter**
- B – 15 inches in diameter**
- C – 10 inches in diameter**
- D – 25 inches in diameter**
- E – 15 inches in diameter**

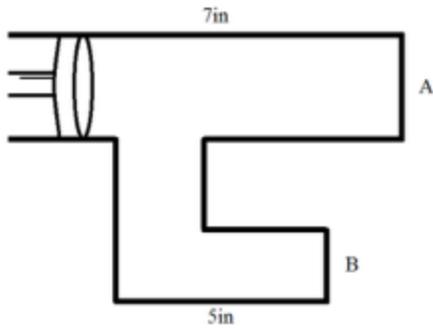


9. If wheel A rotates at a rate of 1,500 rpm (revolutions per minute), how fast would wheel C turn?

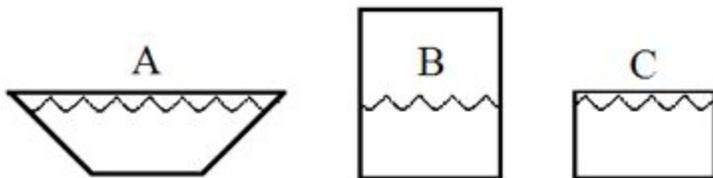
10. If wheel A rotates counter-clockwise, which of the following is true?

- A. Wheels A & D will turn the same direction
- B. Wheel C will turn clockwise
- C. Wheels C & D will turn counter-clockwise
- D. Wheel E will turn clockwise

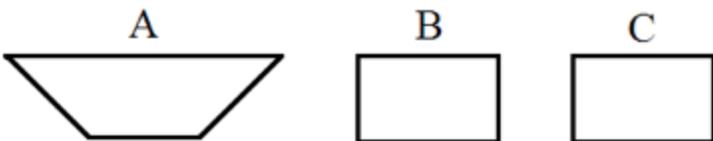
11. Examine the diagram below. Assume the system is filled with water. If the pressure at Point A is 210 pounds per square inch (PSI), what is the pressure exerted on Point B?



12. If all three open containers were filled with fresh water (to the specified height), which would have the greatest pressure at its base? (Assume all bases are the same size)

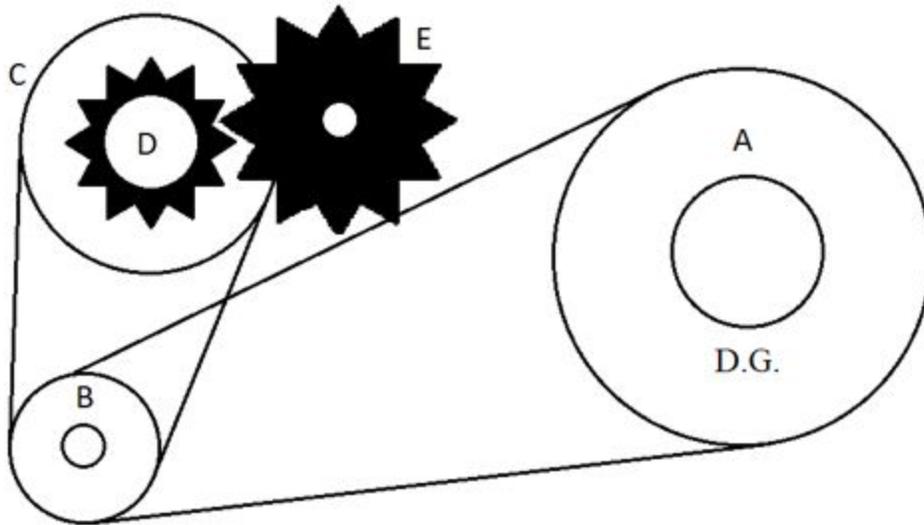


13. If both A and B were filled with fresh water, and C was filled with salt water, which of the three containers would have the greatest pressure at its base? (Assume all bases are the same size)



Use for questions 14-15:

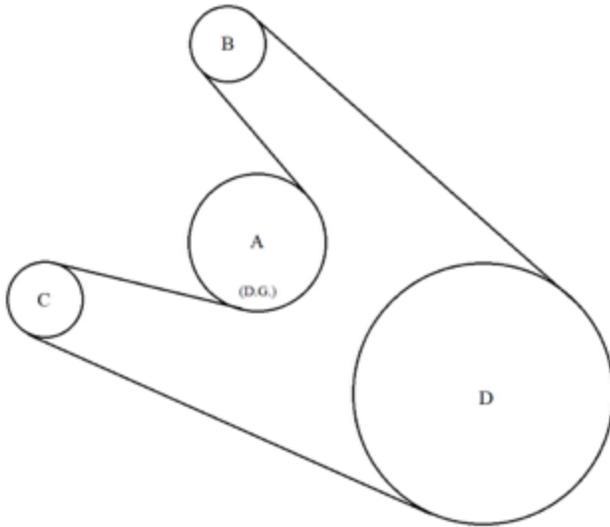
Wheel A is 24 inches in diameter, Wheel B is 8 inches in diameter, Wheel C is 16 inches in diameter, Gear D has 12 teeth, and Gear E has 18 teeth. Wheel C and Gear D are attached to the same shaft.



14. Examine the diagram above. If Wheel A rotates clockwise, which direction will Gear E turn?
15. If Gear D turns 1 revolution clockwise, how many revolutions will Gear E make?

Use for questions 16-17

Wheel A is 16 inches wide, Wheels B & C are both 8 inches wide, and Wheel D is 20 inches wide.



16. Examine the diagram above. If wheel A rotates 4 revolutions clockwise, which of the following statements is true?

- A. Both A & D will turn 4 revolutions clockwise.
- B. Both A & D will turn 4 revolutions counter-clockwise.
- C. Wheel B will turn clockwise.
- D. Wheels A & D will turn in different directions.

17. If Wheel A turns at 1,400 rpm (revolutions per minute), how fast will wheels B & C turn?

18. A system has an object at the base of a 16-foot lever, with the fulcrum placed 4 feet away. What is the mechanical advantage of the system?

19. If someone is loading an ATV into their truck, which sits 4 feet above the ground, how long should the ramp be assuming they are only capable of pushing 200 pounds and the ATV weighs 450 pounds?