

PRACTICE TEST
for
MECHANICAL CONCEPTS

THIS TEST MIMICS THE STYLE OF TEST FOR MECHANICAL CONCEPTS USED BY
THE PLANT OPERATOR SELECTION SYSTEM (POSS).

PRACTICE for MECHANICAL CONCEPTS

The Plant Operator Selection System (POSS) includes a test for Mechanical Concepts. Mechanical concepts are seen in everyday life, can be quite simple, and yet are actually founded on the principles of physics, material properties and basic electrical properties. This test gages your ability to draw appropriate conclusions regarding mechanical principles.

To help you prepare, a practice test follows with 26 different scenarios. Each scenario gives you a picture to illustrate a particular situation. For each situation, there will be one correct answer out the three possible answers shown. This practice test helps you to practice determining the appropriate outcome for each situation, and within a suggested time limit.

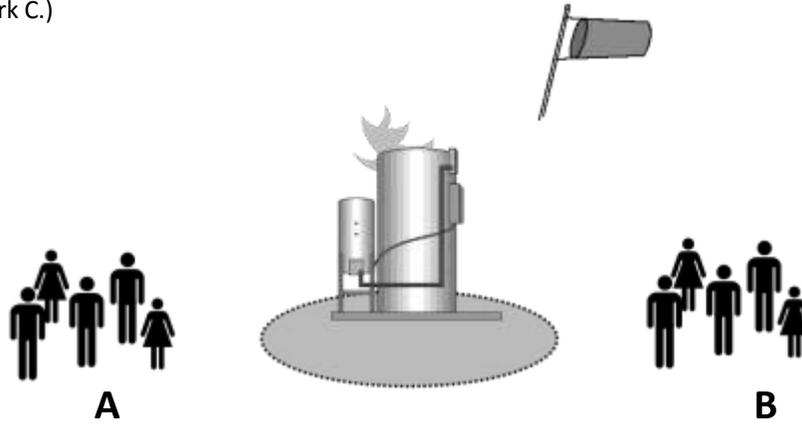
The questions you answer will be multiple-choice, A, B or C. The correct answer depends upon your accurate determination of the outcome posed by the situation. Set a timer for 13 minutes. Carefully consider each situational problem for the outcome that will occur. Select the appropriate answer on the answer sheet by completely filling in the circle your choice of A, B, or C. You should be able to answer all 26 questions within the 13-minute time limit.

Practicing by taking this test will familiarize you with the style of the real selection test. To create conditions most like a real test:

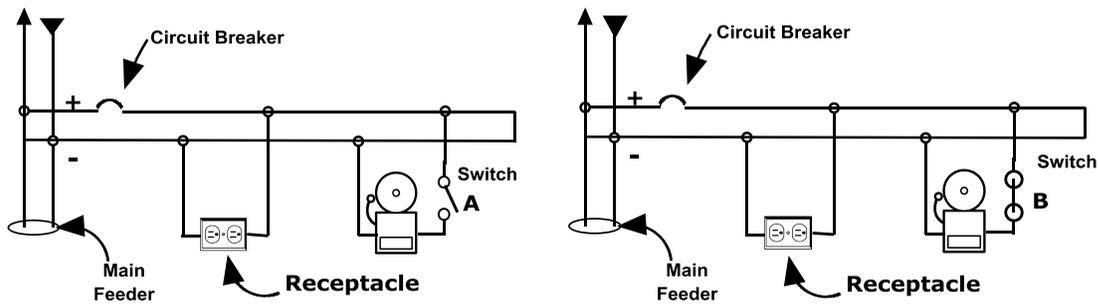
- Practice by completing all 26 test questions
- Be sure to set a timer before beginning each part
- Do not look at the answers that follow at the end until you have completed all the test questions

MECHANICAL CONCEPTS PRACTICE TEST

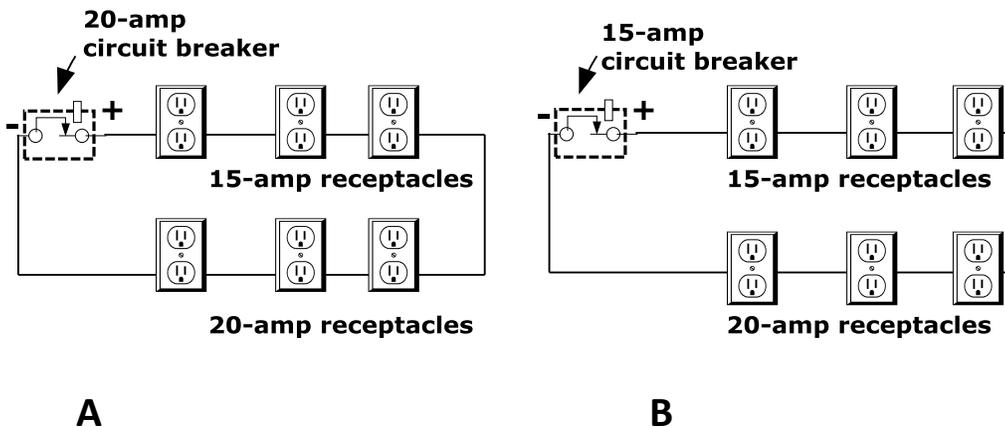
1. If the tank shown ruptures and the windssock points in the direction shown, which group of people are in the safest evacuation area (A or B)? (If equal, mark C.)



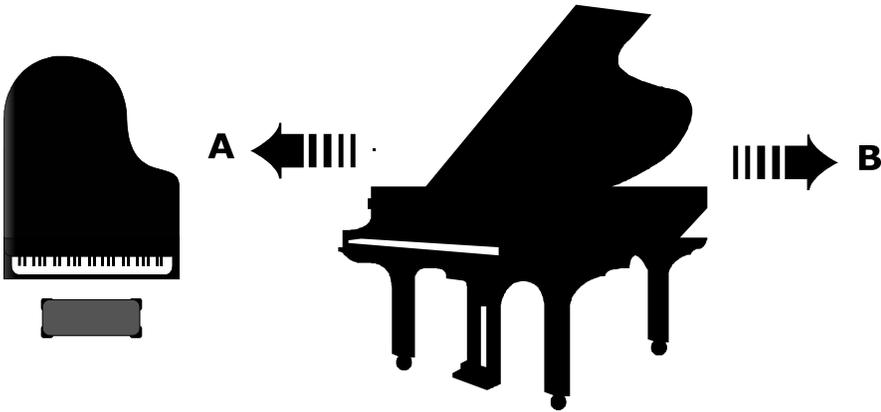
2. Should the switch be in position (A) or position (B) for the receptacle to operate? (If the receptacle will operate when the switch is in either position, mark C.)



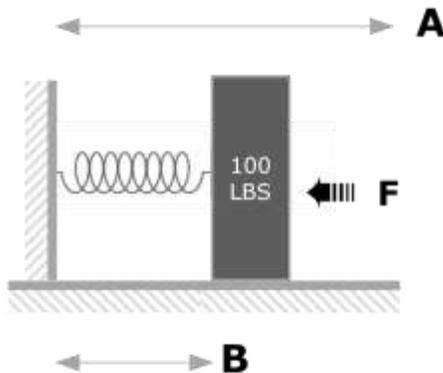
3. Which circuit breaker shown in (A) or (B) will most likely trip first and shut off when all receptacles are used to the maximum capacity (amperage)? (If neither or both, mark C.)



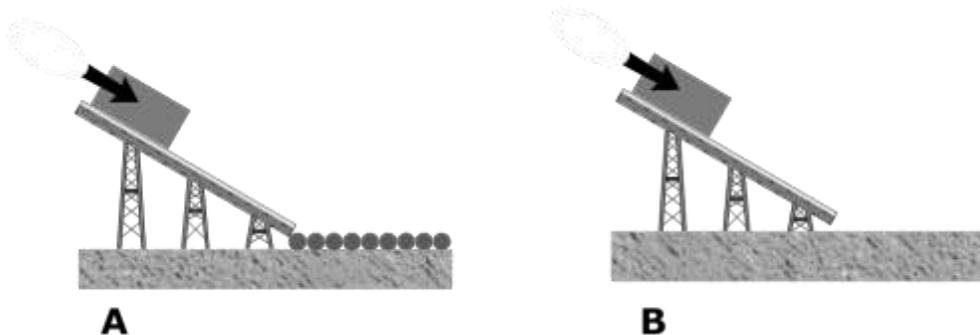
4. As the piano is played, will a person standing at position (A) or position (B) hear a greater sound intensity? (If equal, mark C.)



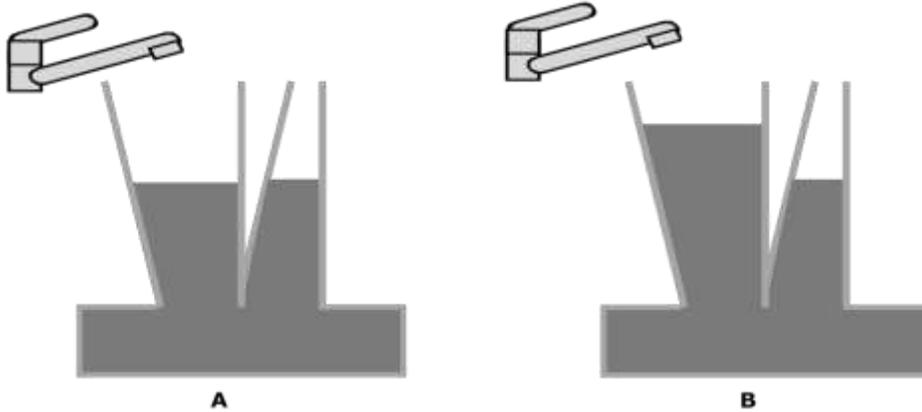
5. The force applied is large enough to move the object weighing 100 LBS toward the wall, which in turn, compresses the spring. If the force is released suddenly after the spring is compressed, will the object move back to the right, for a distance further from the wall than it was originally, (A), or will it more likely move only back to its original position and stop (B)? (If neither applies, mark C.)



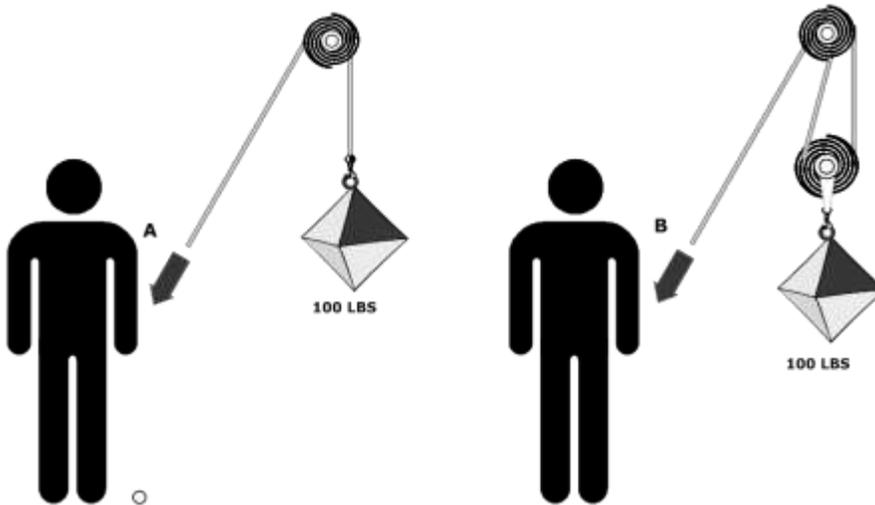
6. Each conveyor belt moves the same load at the same speed down an identical incline. When the load gets to the bottom, will it stop more easily on the roller surface shown in (A) or the flat surface shown in (B)? (If equal, mark C.)



7. The faucets in each view turn on simultaneously releasing the same flow of water in gallons per minute. Which view, (A) or (B), better represents how the tubes will fill? (If neither is correct, mark C.)



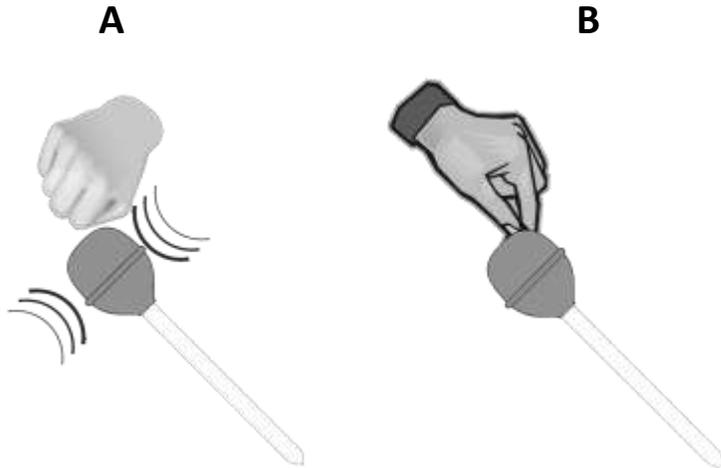
8. Which person (A or B) has the easier job lifting the 100-pound load, given the pulley arrangements shown? (If equal, mark C.)



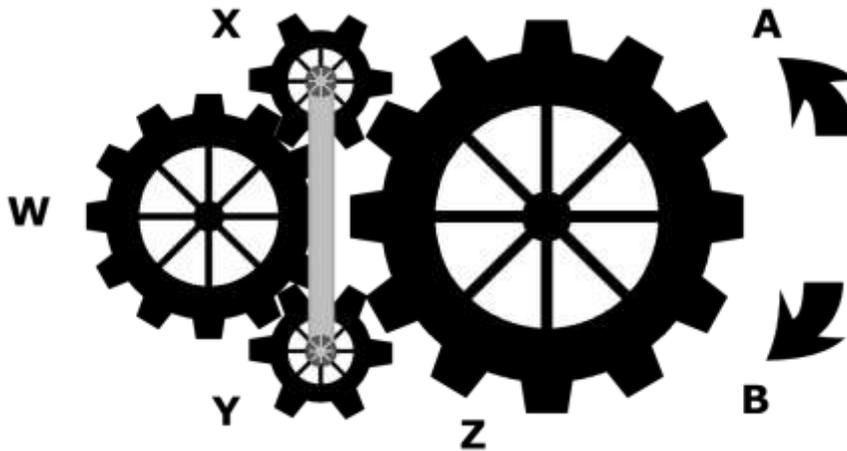
9. Both rooms are the same temperature to begin with, before the boiler flame is activated. Which room, (A or B) will likely become hotter when the boiler is activated and water continuously flows through the piping in the direction of the arrow? (If equal, mark C.)



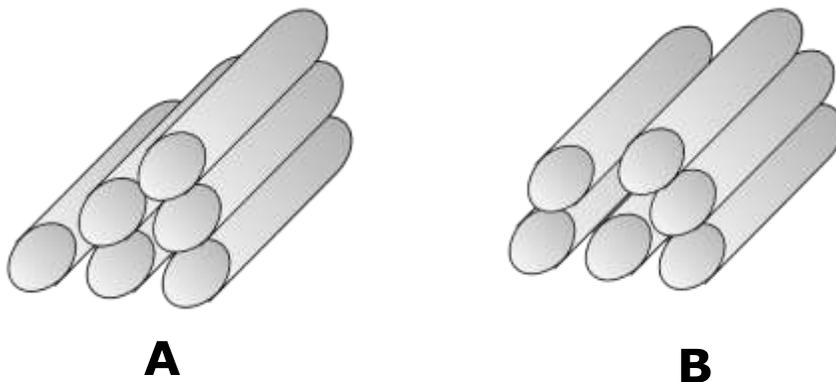
10. Squeeze bulb A is squeezed and then released before picking up liquid. Squeeze bulb B is not squeezed. Which bulb's syringe will pick up more liquid (A or B)? (If equal, mark C.)



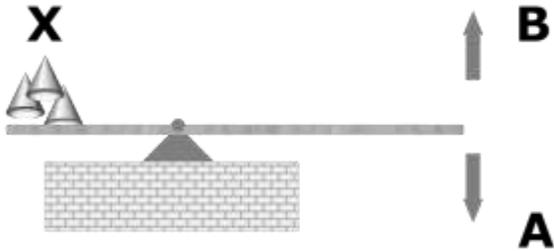
11. When the gear W moves clockwise, will gear Z move in direction A or B? (If no movement, mark C.)



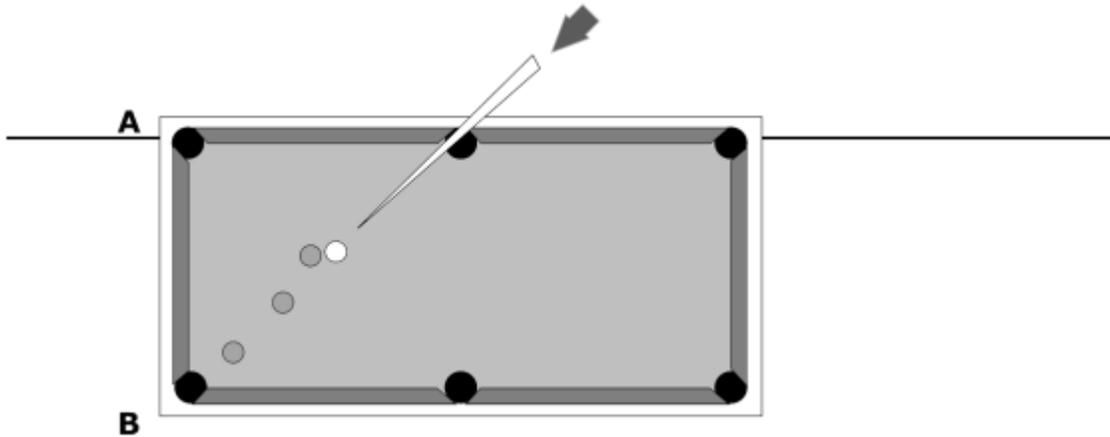
12. Which stockpile is more stable on a flat surface, (A or B)? (If equal, mark C.)



13. When the cone-shaped weights are placed at position X, the lever stays level. When the weights are removed, will the lever move up toward B or down toward A? (If the lever will not move, mark C.)



14. A strong force moves the pool cue in the direction shown. The cue hits the white ball "dead-on" (in the center of its profile). After the white ball is hit, will a ball be more likely to drop into the pool table pocket at corner (A) or (B). (If equal possibility, mark C.)



15. When skating on the same path, will a skater have an easier time stopping with a skate of the type and position shown in (A) or (B)? (If equal, mark C).

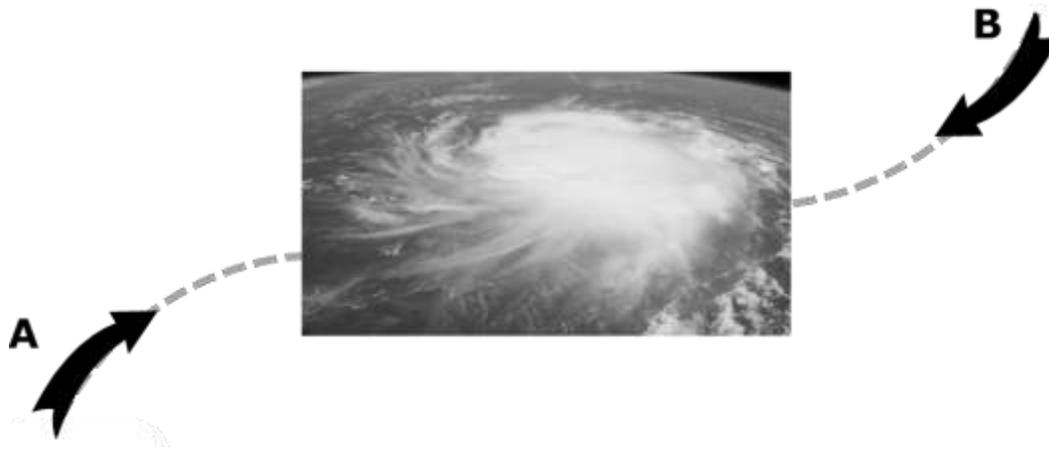


A

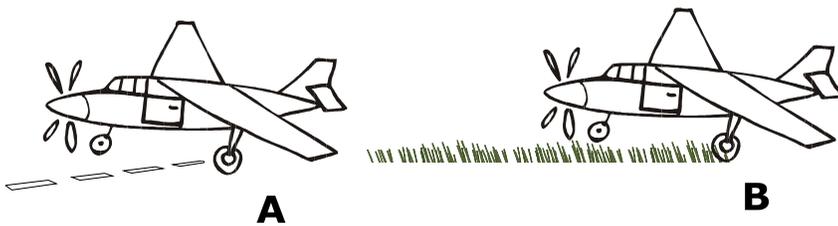


B

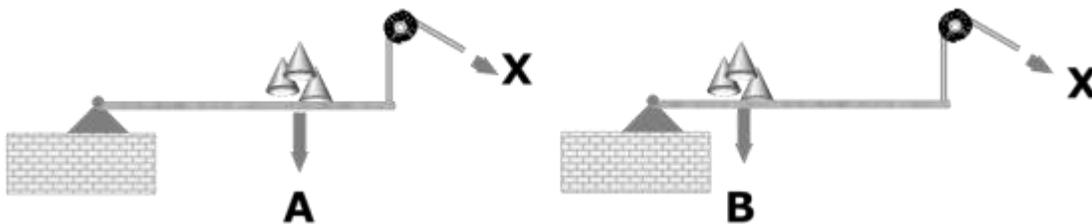
16. Based upon the satellite photo of the tropical storm, has the storm more likely come from the direction (A) or (B)? (If each direction is an equal possibility, mark C.)



17. Airplane A and B are the same model, with identical engines, loaded mass, and propeller speed. Both are on a level runway. The runway beneath Airplane A is paved. The runway beneath Airplane B is grass. Both airplanes take off at the same time. Which airplane (A or B) will become airborne first? (If equal, mark C.)



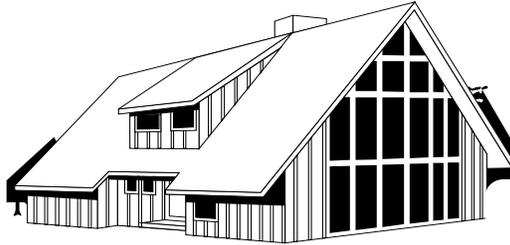
18. The mass loaded at point A is equal in weight to the mass loaded at point B. Will the force of the pull at X need to be larger when the load is at point (A) or point (B)? (If equal, mark C.)



19. Which home's roof is more likely to withstand a heavy snow load without collapsing (A or B)? (If equal, mark C.)



A



B

20. The scrap metal pile shown has been placed below a powerful magnet. Which magnet position, (A or B) is the most likely placement of the magnet to attract the scrap metal as shown? (If equal, mark C.)

A



B



21. When the knots are pulled tight, which knot, (A or B) is less likely to slip off of a pipe? (If equal, mark C.)



A

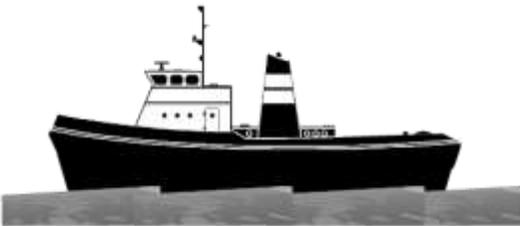


B



Direction of Pull or Load

22. Both tugboats are the same size and capacity. Each tugboat has the same cargo load, same power, and same size crew, but shows a very different profile on the water. One tugboat operates in salt water and the other in fresh water. Is tugboat (A) or (B) working in fresh water? (If both tugboats could be working in either fresh water or ocean water yet have a different profile, mark C.)



A



B

23. Balloons A and B are in different regions of the country. The outside temperature is lower in the region where Balloon A is located than it is where Balloon B is located. If the burner for each balloon remains on long enough for one balloon to begin to rise, which balloon rises faster (A or B)? (If equal, mark C.)

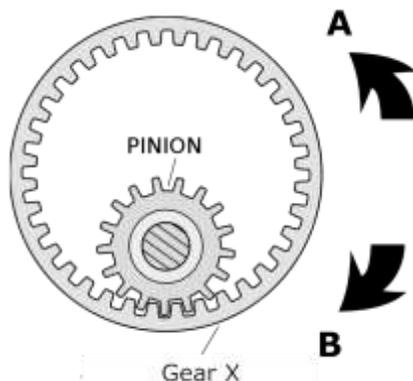


A

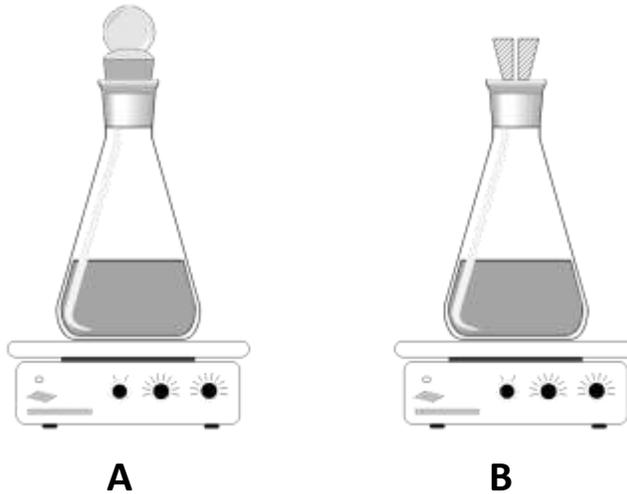


B

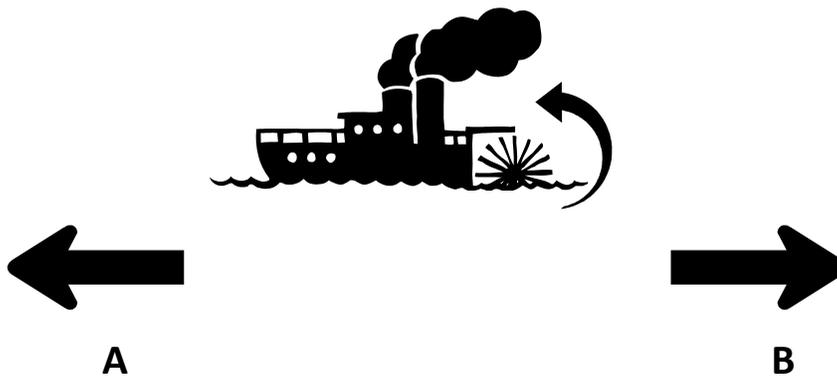
24. As the pinion gear moves clockwise, will the outer gear X move toward (A) or (B)? (If no change in movement of the outer gear X, mark C.)



25. Both flasks contain the same amount of water and air. A tight fitting glass stoppers Flask A. Flask B was stoppered by manually pushing a vented cork into the top opening. If both flasks are heated at the same temperature for the same time, which flask will be safer to handle (A or B)? (If equal, mark C.)



26. The steamboat's paddlewheel is turning in the direction shown. Will the steamboat move in direction A or B? (If equal, mark C.)



Answers with explanations begin on the next page.