Draw an Exercising Figure: Joint Bends and Motion Poses

Original tasks 1, 2 / complete keys

Task 1

Draw a side-lunge pose. Use a left hip angle of 120 degrees, left knee angle of 100 degrees, right hip angle of 170 degrees, and right knee angle of 175 degrees. Label all four angles and state which leg is more bent.

Answer: The left leg is more bent because its knee angle (100 degrees) is smaller than the right knee angle (175 degrees). The left hip is also more bent than the right hip.

Reason: Smaller angle means a deeper bend at that joint. Left knee 100 is well below right knee 175, so the left leg carries the deeper bend. Hip comparison follows the same rule: 120 is more bent than 170.

Check: Confirm each label sits at its joint vertex and compare the two knee numbers directly: 100 < 175 means left knee is more bent.

Task 2

Draw a forward reach with both arms at shoulder angle 90 degrees and elbow angle 160 degrees. The torso is vertical and both knee angles are 175 degrees. Label the four arm angles and both knee angles, then state whether the arms are horizontal or overhead.

Answer: The arms are horizontal because a shoulder angle of 90 degrees places the upper arm at a right angle to the vertical torso line. The elbows are nearly straight at 160 degrees, and the knees are nearly straight at 175 degrees.

Reason: A 90-degree shoulder angle from a vertical torso line points the upper arm sideways at shoulder height. Elbow 160 is close to straight (180). Knee 175 is also close to straight, so the legs are nearly extended.

Check: Verify that 90 degrees from vertical reads as horizontal, and that 160 and 175 are both closer to 180 than to 90.

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Original tasks 3, 4 / complete keys

Task 3

Draw a bent-over lift with hip angle 70 degrees, knee angle 110 degrees, shoulder angle 80 degrees, and elbow angle 150 degrees. Keep the back line straight from hip to head. Label all four angles and state whether the hip or the knee is more bent.

Answer: The hip is more bent because 70 degrees is smaller than the knee angle of 110 degrees. The back line stays straight and the arms hang with a slight elbow bend.

Reason: Comparing 70 and 110 at their respective joints shows the hip has the deeper bend. The straight back line is a separate check from the angle labels and must be verified visually.

Check: Compare 70 < 110 for the bend question, then trace the hip-to-head line to confirm it has no waist bend.

Task 4

Invent an original exercise pose that is not running, walking, or seated. Label at least three joint angles in degrees, keep paired joints within 10 degrees if the pose is symmetric, and write one sentence explaining how a reader can check your labels.

Answer: One valid answer is a diagonal reach: left shoulder 140 degrees, right shoulder 100 degrees, left elbow 170 degrees, right elbow 120 degrees, both knee angles 170 degrees. A reader can check each label by placing the vertex at the joint and comparing the drawn segments to the stated number.

Reason: The pose is an exercise motion, is not running, walking, or seated, and labels four joints. The asymmetric shoulders and elbows are allowed because the pose is intentionally asymmetric, and the near-straight knees are labeled consistently.

Check: Confirm at least three labels exist, each is in degrees at a joint vertex, and the written check sentence describes the vertex-and-segments method.

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Source rubric / reflection

- [ ] At least three joint angles are labeled in degrees at the correct vertices.
- [ ] Each labeled angle matches the drawn limb segments within about 10 degrees by eye or protractor.
- [ ] The pose is an exercise motion and is not running, walking, or seated.
- [ ] Symmetric poses keep paired joint angles within 10 degrees of each other, or asymmetry is noted.
- [ ] The torso line is straight in the lift pose and hinges only at the hip.
- [ ] Valid alternatives such as mirroring or proportional limb changes are accepted if angles stay in range.

Reflection: What did you check, what did you change, and what will you try next?