CHROMOSOME CONNECTION
Worksheet: Appropriate Responses and Comments

CHECK QUESTIONS:

1. A If reply is B or C, respond: "Studies have shown that there is a much higher level of confidence. They MUST be related if there are identical or very similar chromosome patterns."
If reply is D, respond: "Read item "a" in Background info; with any identical banding patterns, the chances that this would be due to coincidence is virtually zero.

2. B If reply is A, respond: "One living species is generally not the ancestor of another living species, since they are both present now. Two living species can share a common ancestor, however.
If reply is C or D, respond: "Better re-read the background material again, more closely! You must have missed something crucial"

PART 1: Bullet B matches #3 scratch marks.
This indicates that B and #3 came from the same gun, their common source.

PART 2: Human chromosome #3 is **identical** to C3 (chimpanzee chromosome #3)
This indicates that both chromosomes came from a common source, a common ancestor to both chimps and humans.

PART 3: Human and chimp chromosomes #4 are identical, except for the pericentric inversion.
This indicates that this inversion must have happened in the ancestral #4 or #IV chromosome some time after the chimpanzee and human branches separated.
This is a "pericentric inversion" because the inversion occurred around the Centromere.

PART 4: When chimp chromosome 2p and 2q are aligned end-to-end with their centromeres close, it, it is nearly identical to human chromosome #2; The match is "B" (very similar)
This indicates that the two chromosomes found in chimps today must have **fused** sometime in early human ancestry after branching away from the chimp branch, confirming the only logical conclusion that chimps and humans share a common ancestor.

PART 5:
1. sets #3 and #11 (in these **two** sets the O chromosome is clearly different from the other 3)
2. set #14 (only in this **one** set is the G chromosome clearly different from the ot her 3)
3. in **none** of the sets are the H and C chromosomes clearly different

H chromosomes are Human, C chromosomes are Chimpanzee,
G chromosomes are Gorilla, and O chromosomes are Orangutan

CHECK QUESTIONS:

3. B If reply is A, C, D or E, respond: "Not quite...look more closely"

4. B (The most reasonable interpretation)
If reply is A, respond: "For this, the chromosomes would all have to be identical. Are they?"
If reply is C or D, respond: "This answer is not consistent with the results of studies. Review the background information again"

5. A (yes) You have made a tough choice, breaking with "tradition", but it is certainly the most logical choice, based on the evidence. Congratulations!
If reply is B (no), then respond: "Why not? What is your evidence? We have already established the logic, based on the striking similarities of the chromosomes of all 4 species, that they should all be in at least the same family."

Based on many recent studies, all confirming common ancestry for humans with apes (MILEs), **apes truly ARE our cousins**!