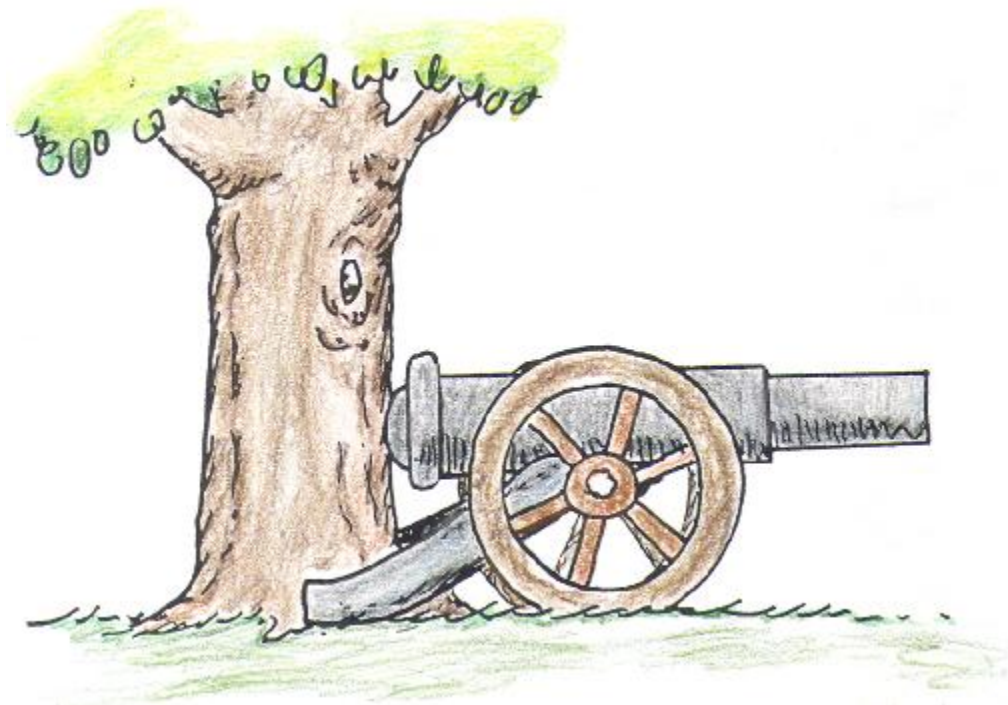


NEXT-TIME QUESTION

Suppose a cannon is propped against a massive tree to reduce recoil when it fires. Then the range of the cannonball will be

- a) increased.
- b) decreased.
- c) unchanged.



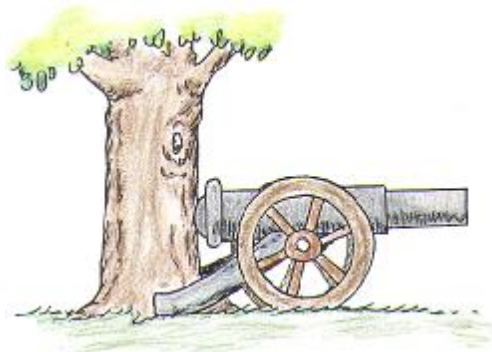
thnx to David Vasquez

Hewitt
Drewit!

NEXT-TIME QUESTION

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Answer: a

Its range is increased. To understand why, think *energy conservation*. Most of the potential energy of the gunpowder is converted into kinetic energy when the gunpowder fires. That's both kinetic energy of the *cannonball* and kinetic energy of the *recoiling cannon*. Because the tree reduces recoil, the cannonball gets a greater share of kinetic energy—hence its increased range.



Think of this another way. Suppose the velocity of recoil was quite great. Then the cannon would have greater kinetic energy. What does this say about the cannonball's kinetic energy?

Going further, can you see that a very massive cannon has less recoil, resulting in a greater range for the cannonball?

