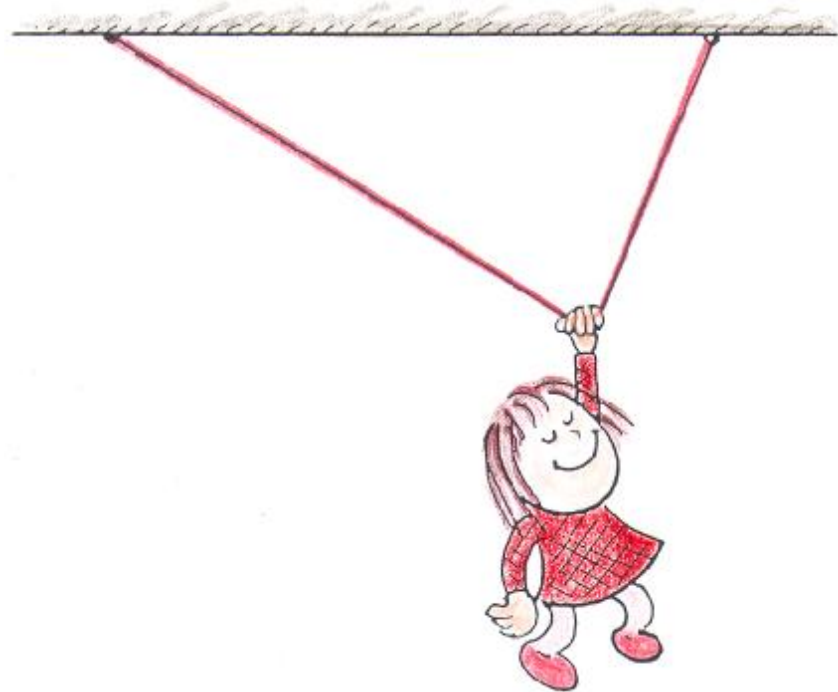


NEXT-TIME QUESTION

Nellie Newton hangs motionless by one hand from a clothesline as shown—which is on the verge of breaking. Which side of the line is most likely to break?



- a) Left side.
- b) Right side.
- c) 50/50 chance of either side breaking.

NEXT-TIME QUESTION

Nellie Newton hangs motionless by one hand from a clothesline as shown—which is on the verge of breaking. Which side of the line is most likely to break?

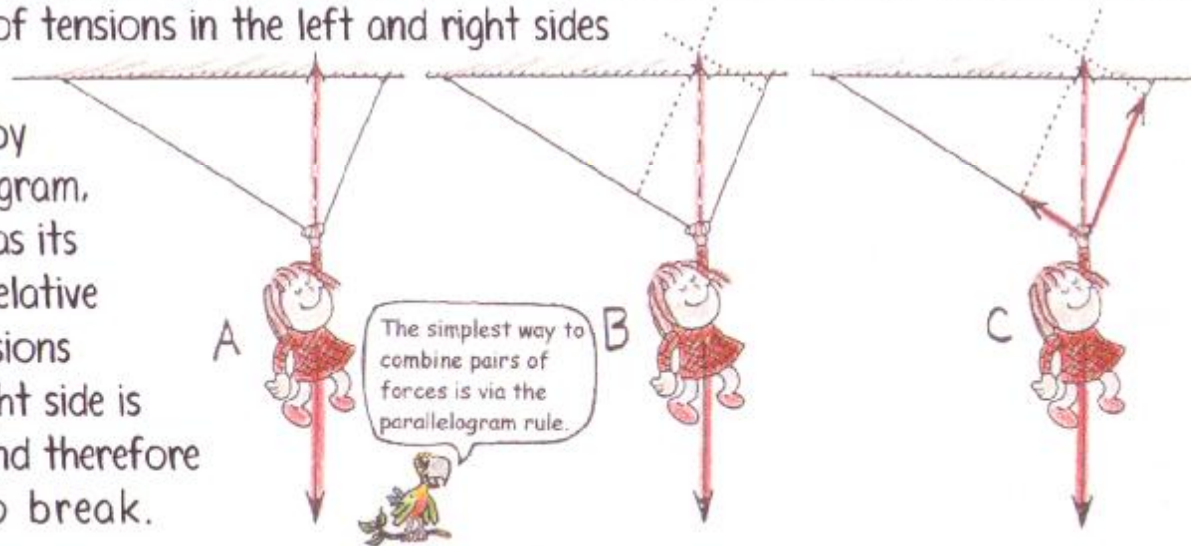
- a) Left side.
- b) Right side.
- c) 50/50 chance of either side breaking.



Answer: b

Nellie hangs motionless, which means all the forces acting on her equal zero; $\Sigma F = 0$. The force due to gravity acting downward, her weight, is shown by the bold vector in A. Equilibrium dictates an equal force upward, supplied by the ropes, indicated by the dashed vector. This dashed vector has to be the resultant of tensions in the left and right sides

of the rope. Their relative sizes are found by constructing a parallelogram, with the dashed vector as its diagonal (B). Aha, the relative magnitudes of these tensions are shown in C. The right side is under greater tension, and therefore is the most likely to break.



Hewitt
Drewit!

