

4.4 Discovery

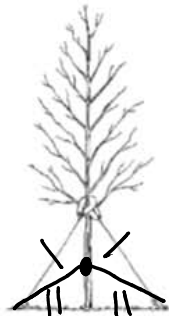
Thursday, October 20, 2016 8:42 AM

What's a Perpendicular Bisector?



1. What must be true about the suspension lines on a parachute in order to keep the sky diver centered under the parachute?

The top lines need to be equal length and the bottom lines need to be equal length.



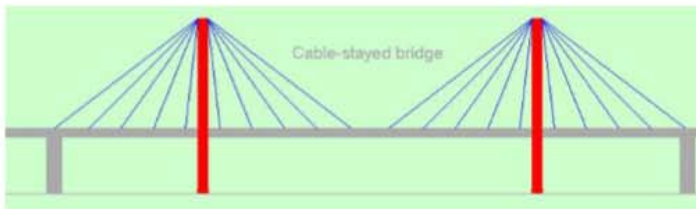
<http://www.plantretreivers.com/treestakes.html>

2. a. What must be true about the position of the stakes and the cords holding the tree in the ground in order for the tree to stand upright?

The stakes need to be the same distance away and the cords need to be the same length.

- b. Draw in another pair of cords to keep the tree standing upright. Why did you draw them there?

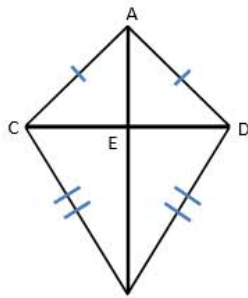
Equal length from the tree.



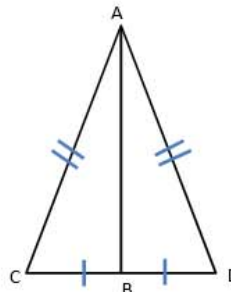
<http://structures-art.pbworks.com/w/page/11233762/Bridges>

3. What would happen to the middle part of the cable-stayed bridge if the left cables were pulled out 500 feet farther than the right cables?

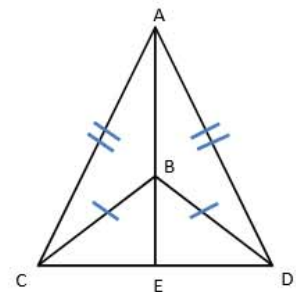
The pde would be pulled to the left.



parachute



tree



tree

4. Which of the real life situations compare to each diagram in our proofs?

5. What do you see in common from the givens in each of these diagrams?

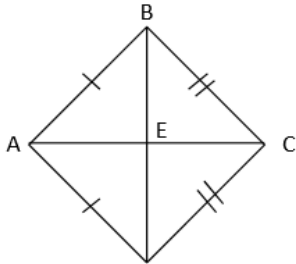
Two pairs of \cong sides.

6. Make a conjecture about how to prove a line is a perpendicular bisector WITHOUT needing a long detour proof. *If 2 points are equidistant from the endpoints of a segment, then they form the \perp bis of the segment.*

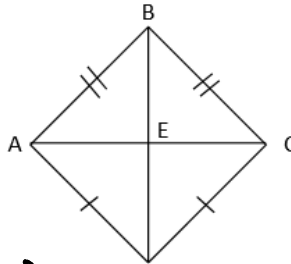
7. If you placed a point anywhere on the perpendicular bisector, what do you think you can conclude about that point? *If a point lies on the \perp bis, then it is equidistant from the endpoints of the segment.*

Practice:

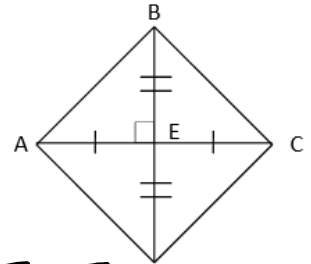
8. In the following cases, determine which segment is the perpendicular bisector. Describe why.



$\overleftrightarrow{AC} \perp$ bis \overline{BD}



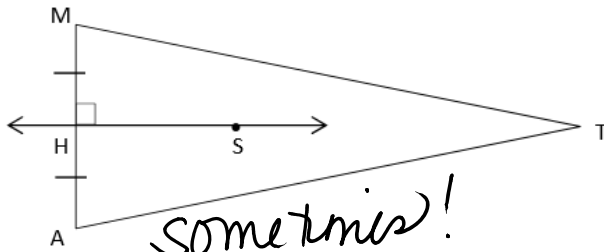
$\overleftrightarrow{BD} \perp$ bis \overline{AC}



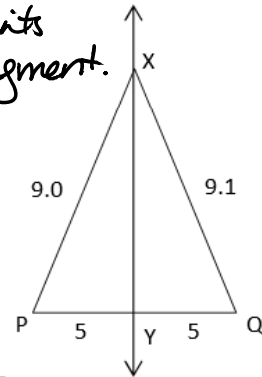
$\overline{AC}, \overline{BD} \perp$ bis of each other

★ If 2 points are equidistant from the endpoints of a segment, then they form the \perp bis of the segment.

9. \overline{HS} passes through point T always, sometimes, or never? 10.



sometimes!

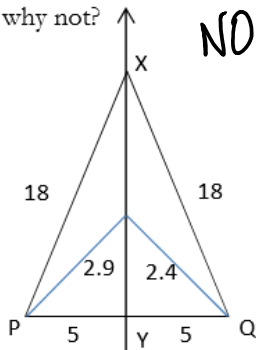


a. Is \overline{XY} the perpendicular bisector of \overline{PQ} ? **NO!**

b. If yes, why? If not, which way does \overline{XY} lean?



11. Are the given lengths on the diagram possible? Why or why not?



NO!

★ If a point lies on the \perp bis, then it is equidistant from the endpoints of the segment.