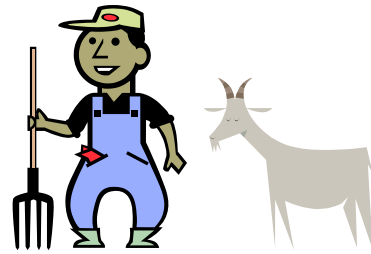
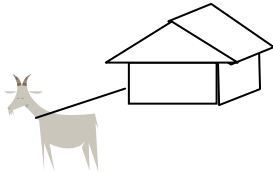


Goat on a Rope

Jacob Luke keeps his goat on a rope that is 3 meters long.



1. If the goat is tied to a metal stake in the center of the yard, what is the area of the grass that the goat can reach to eat? Sketch a picture and show your work.
2. Sometimes Jacob ties the goat to the corner of a shed that is 5 meters by 4 meters. The 3-meter rope is attached to the base of the wall at ground level. What is the area of grass that the goat can reach? Show and explain your work.



3. Suppose the goat was tied at ground level to the center of the 4-meter shed wall. Would the amount of grass the goat can reach be greater than what he could reach when tied to the corner of the shed? Justify your answer.

4. Jacob bought a new shed with dimensions doubled to 10 meters by 8 meters, and the goat is tied to the corner of the shed on a rope that is 3 meters long.
- What do you predict will be the area of grass that the goat will eat?
 - Find the actual area.
 - How does the area in part (b) differ from the area of the grass the goat can eat when tied to the shed that measures 5 meters by 4 meters?
5. If the dimensions of the shed are 5 meters by 4 meters, but the length of the rope is doubled, what would be the amount of grass the goat can reach? Sketch a picture and show your work.
6. Suppose the goat is tied to a brand new clothesline pulled tight in a yard with no other barriers. The clothesline is 4 meters high and 16 meters long. The goat's chain is 5 meters long. What is the amount of grass the goat can reach? Show and explain your work.

