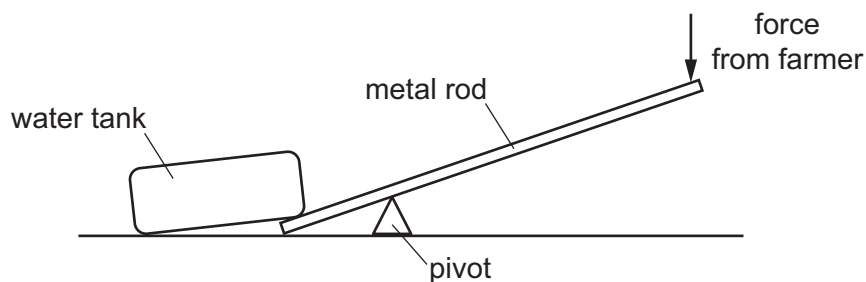


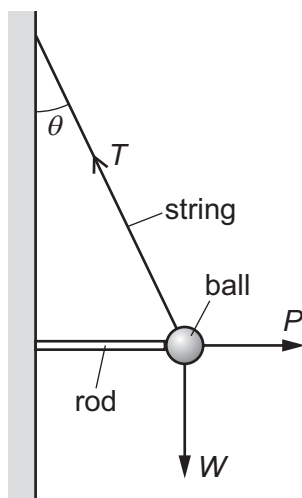
- 12 A farmer is trying to lift the corner of a large water tank. She uses a metal rod as a lever.



The vertical force from the farmer is constant and is always applied to the end of the rod.

Which change **must** increase the upward force on the water tank?

- A using a longer rod and moving the pivot closer to the tank
  - B using a longer rod and moving the pivot further away from the tank
  - C using a shorter rod and moving the pivot closer to the tank
  - D using a shorter rod and moving the pivot further away from the tank
- 13 The diagram shows a ball of weight  $W$  hanging in equilibrium from a string.



The string is at an angle  $\theta$  to the vertical. The tension in the string is  $T$ . The ball is held away from the wall by a horizontal force  $P$  from a metal rod.

Which relationship between the magnitudes of  $T$ ,  $P$  and  $W$  is correct?

- A  $P = T \cos \theta$  and  $W = T \sin \theta$
- B  $T = P + W$
- C  $T^2 = P^2 + W^2$
- D  $W = P \tan \theta$  and  $W = T \cos \theta$