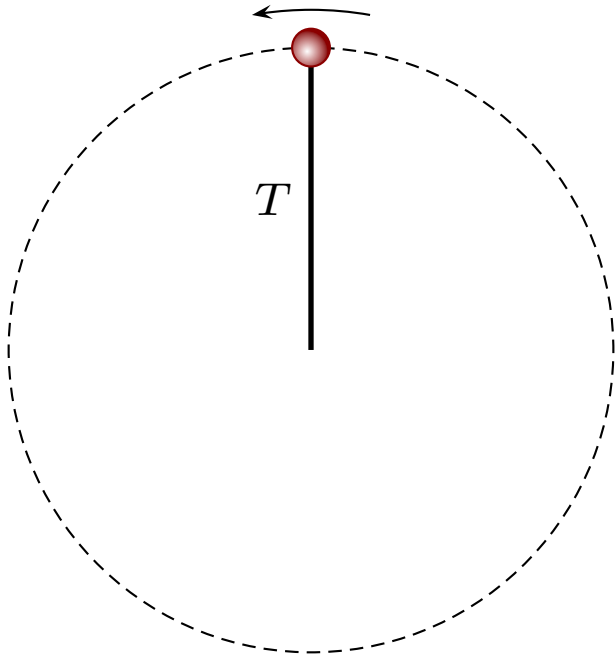


# Question 1

A ball swings in a vertical circle with a constant speed. Earth's gravity acts on the ball throughout.

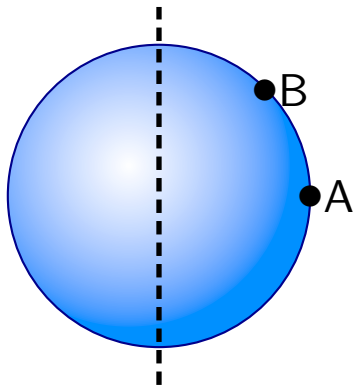


How does the tension in string when the ball is at the high point compare to that when it is at the low point?

1. Same.
2. Larger  $T$  at high point than low point.
3. Smaller  $T$  at high point than low point.

## Question 2

Earth rotates at a constant rate about an axis which is oriented vertically.

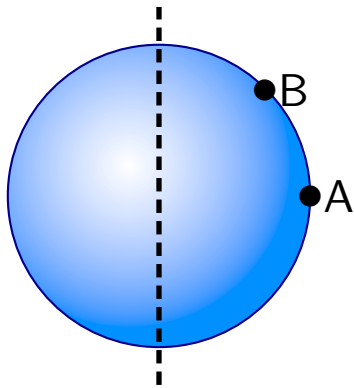


Objects of equal masses are placed at the indicated locations on Earth. They stay at those locations as the Earth rotates. Which of the following is true regarding the net forces acting on the objects?

1. For both A and B,  $\vec{F}_{\text{net}}$  is  $\leftarrow$  .
2. For both A and B,  $\vec{F}_{\text{net}}$  is  $\swarrow$  .
3. For A,  $\vec{F}_{\text{net}}$  is  $\swarrow$  . For B,  $\vec{F}_{\text{net}}$  is  $\leftarrow$  .
4. For A,  $\vec{F}_{\text{net}}$  is  $\leftarrow$  . For B,  $\vec{F}_{\text{net}}$  is  $\swarrow$  .

## Question 3

Earth rotates at a constant rate about an axis which is oriented vertically.



Objects of equal masses are placed at the indicated locations on Earth. They stay at those locations as the Earth rotates. Which of the following is true regarding the net forces acting on the objects?

1.  $F_{\text{net}} = 0$  for both.
2. Same net force for both but not zero.
3. Larger net force for A.
4. Smaller net force for A.