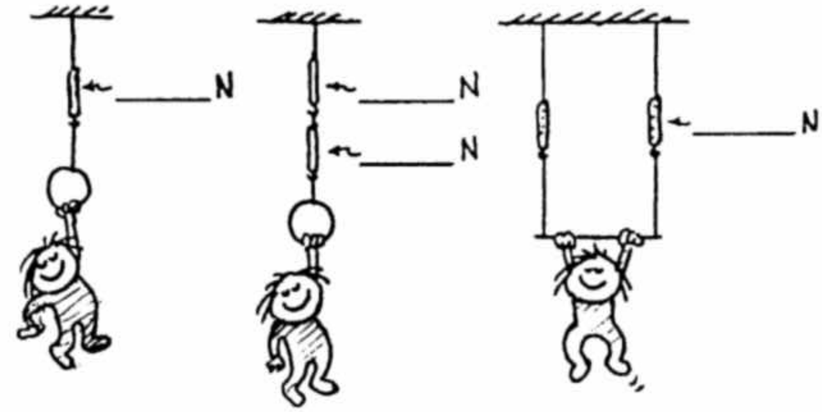
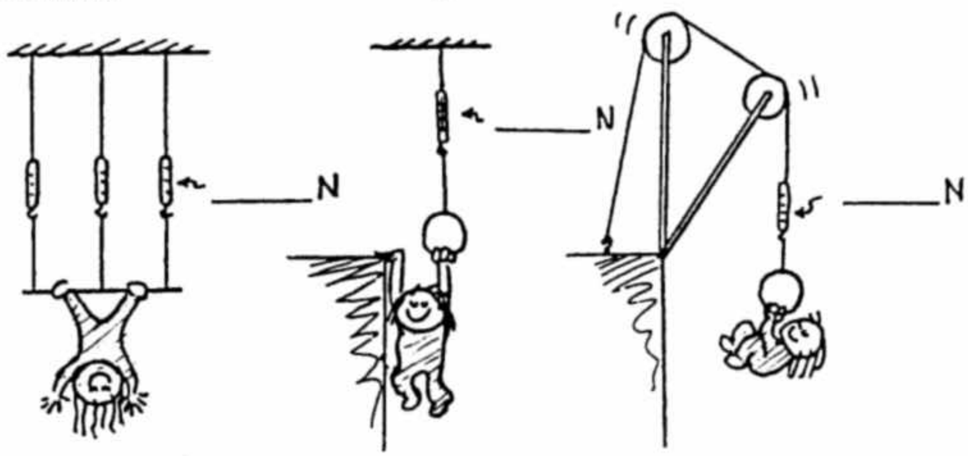
Name Period Date

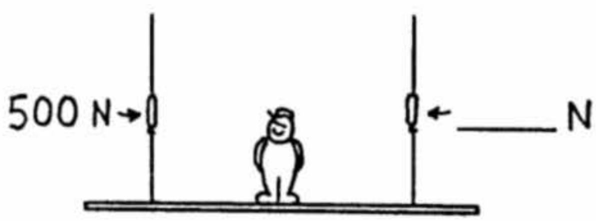
Concept-Development Practice Page 4-2

Statics

1. Little Nellie Newton wishes to be a gymnast and hangs from a variety of positions as shown. Since she is not accelerating, the net force on her is zero. This means the upward pull of the rope(s) equals the downward pull of gravity. She weighs 300 N. Show the scale reading for each case.

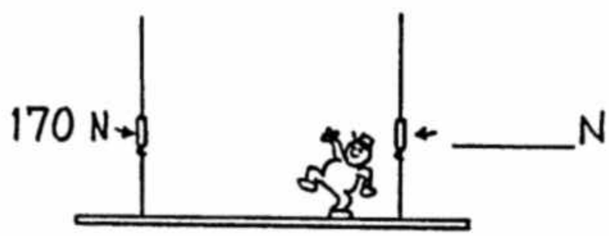




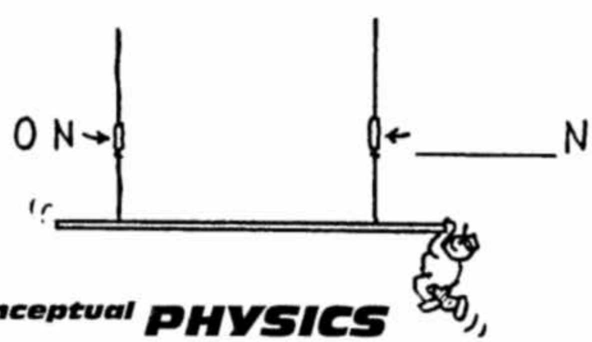


2. When Burl the painter stands in the exact middle of his staging, the left scale reads 500 N. Fill in the reading on the right scale. The total weight of Burl and staging must be

__________N.



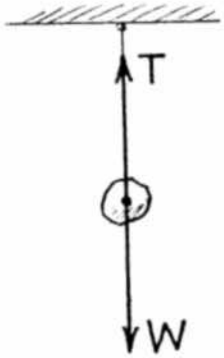
3. Burl stands farther from the left. Fill in the reading on the right scale.



4. In a silly mood, Burl dangles from the right end. Fill in the reading on the right scale.

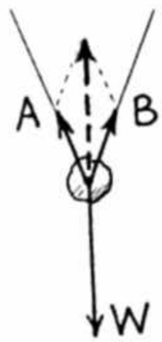
Conceptual **PHYSICS**

Vectors and Equilibrium



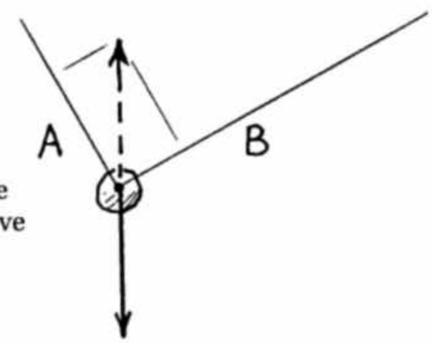
The rock hangs at rest from a single string. Only two forces act on it, the upward tension **T** of the string, and the downward pull of gravity **W**. The forces are equal in magnitude and opposite in direction.

Net force on the rock is (zero) (greater than zero).



Here the rock is suspended by 2 strings. Tension in each string acts in a direction along the string. We'll show tension of the left string by vector **A**, and tension of the right string by vector **B**. The resultant of **A** and **B** is found by the ***parallelogram rule***, and is shown by the dashed vector. Note it has the same magnitude as **W**, so the net force on the rock is

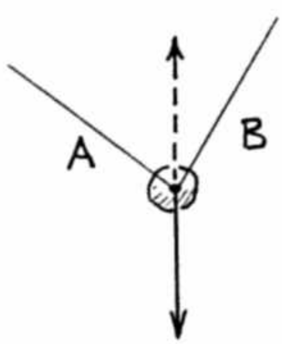
(zero) (greater than zero).



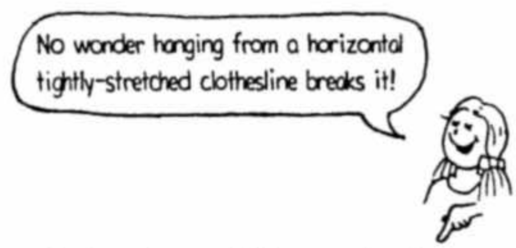
Consider strings at unequal angles. The resultant **A** + **B** is still equal and opposite to **W**, and is shown by the dashed vector. Construct the appropriate parallelogram to produce this resultant. Show the relative magnitudes of **A** and **B**.

Tension in **A** is (less than) (equal to) (greater than) tension in **B**.

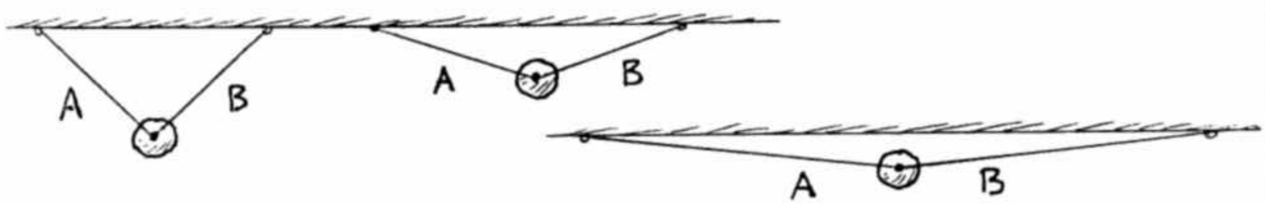
Repeat the procedure for the arrangement below.



Here tension is greater in ________.



Construct vectors **A** and **B** for the cases below. First draw a vector **W**, then the parallelogram that has equal and opposite vector **A** + **B** as the diagonal. Then find approximate magnitudes of **A** and **B**.



Conceptual PHYSICS