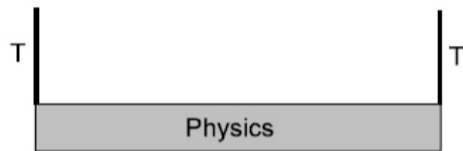


# Physics 3204

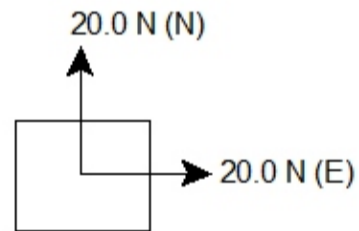
## Static Equilibrium Worksheet 1: Transitional Equilibrium

1. In which situation will an object be in static equilibrium?
  - (A) colliding
  - (B) falling
  - (C) motionless
  - (D) rotating
  
2. What is a single point at which the entire mass of a body is considered to be located?
  - (A) center of mass
  - (B) center of rotation
  - (C) mass point
  - (D) moment of force

3. What is the tension in each wire that supports the 10.0 kg sign shown?
  - (A) 5.00 N
  - (B) 10.0 N
  - (C) 49.0 N
  - (D) 98.0 N



4. Which additional force is necessary for the object shown to be in static equilibrium?
  - (A) 20.0 N [NE]
  - (B) 20.0 N [SW]
  - (C) 28.3 N [NE]
  - (D) 28.3 N [SW]

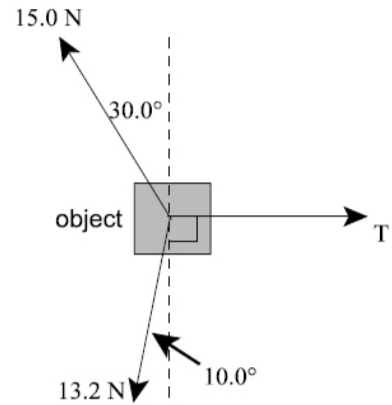


5. or which free body diagram is  $F_{\text{net}} \neq 0$ ?

<p>(A)</p>	<p>(B)</p>	<p>(C)</p>	<p>(D)</p>
------------	------------	------------	------------

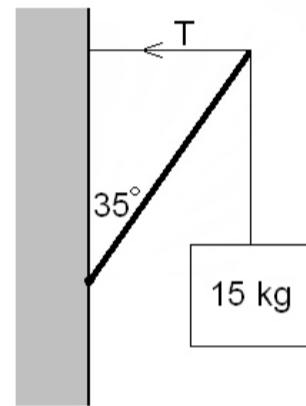
6. In the diagram below, three forces are acting on an object. If the object is at rest, what is the value of the tension,  $T$ ?

- (A) 1.80 N  
 (B) 5.21 N  
 (C) 9.79 N  
 (D) 26.0 N



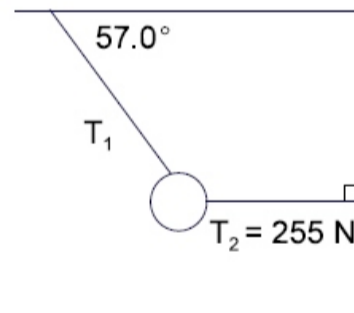
7. A 15.0 kg sign is hung from a 3.0 m long beam of negligible mass and supported by a cable as shown. What tension is required in the cable to support the sign?

- (A)  $1.0 \times 10^2$  N  
 (B)  $1.5 \times 10^2$  N  
 (C)  $1.8 \times 10^2$  N  
 (D)  $2.1 \times 10^2$  N



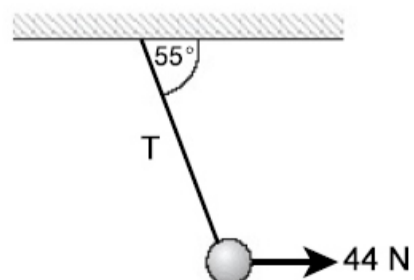
8. An object is suspended by two ropes from a ceiling and a wall as shown. What is the tension,  $T_1$ , in the rope connected to the ceiling?

- (A) 139 N  
 (B) 214 N  
 (C) 304 N  
 (D) 468 N



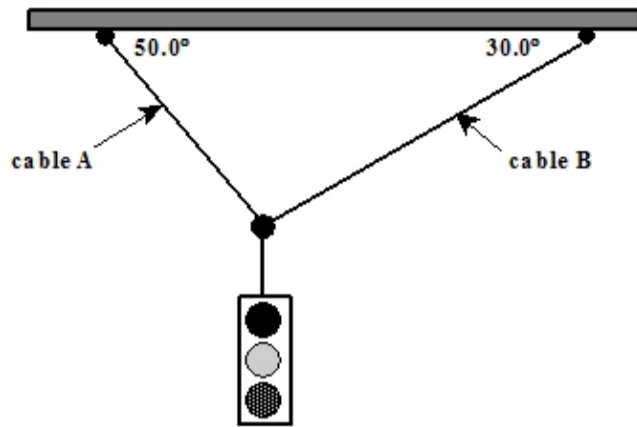
9. A mass suspended by a rope is held stationary by a horizontal force of 44 N as shown. What is the magnitude of the tension,  $T$ , in the rope?

- (A) 25 N  
 (B) 36 N  
 (C) 54 N  
 (D) 77 N



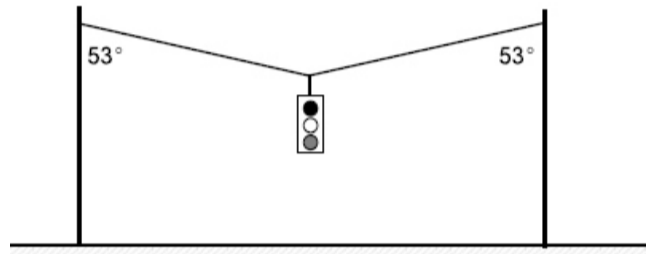
10. In the diagram below, the tension in cable A is  $3.20 \times 10^2 \text{ N}$  and the tension in cable B is  $2.40 \times 10^2 \text{ N}$ . What is the mass of the traffic light?

- (A) 33.3 kg  
 (B) 37.3 kg  
 (C) 42.1 kg  
 (D) 46.2 kg



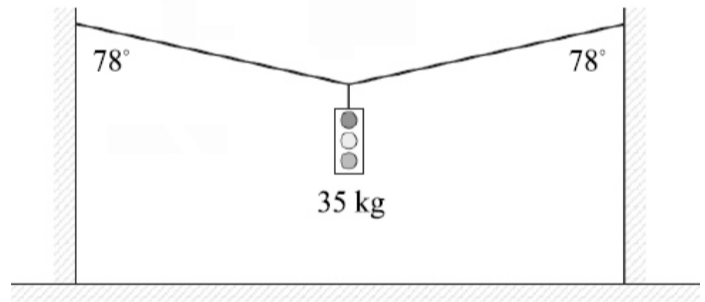
11. A traffic light is held stationary by two wires as shown below. What is the mass of the traffic light if the tension in each wire is 235 N?

- (A) 14 kg  
 (B) 19 kg  
 (C) 29 kg  
 (D) 38 kg



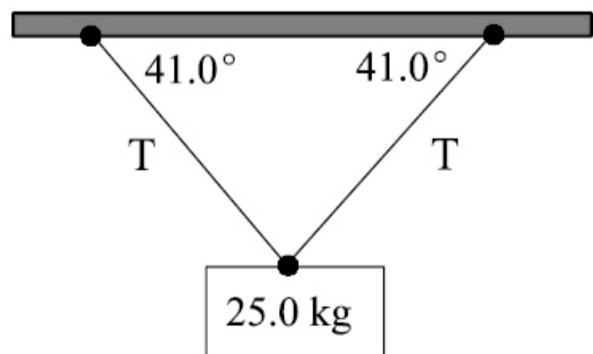
12. If a traffic light is suspended by two wires as shown below, what is the tension in each wire?

- (A) 180 N  
 (B) 340 N  
 (C) 820 N  
 (D) 1 600 N



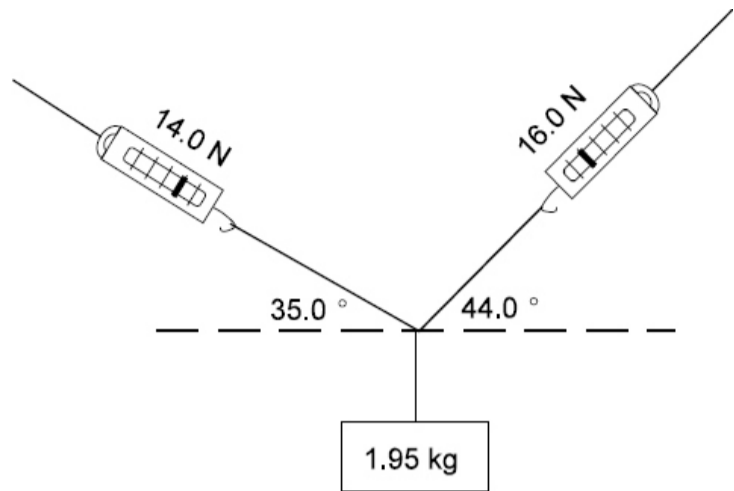
13. For the suspended mass shown below, what is the magnitude of the tension,  $T$ , in each cable?

- (A) 123 N  
 (B) 162 N  
 (C) 187 N  
 (D) 373 N



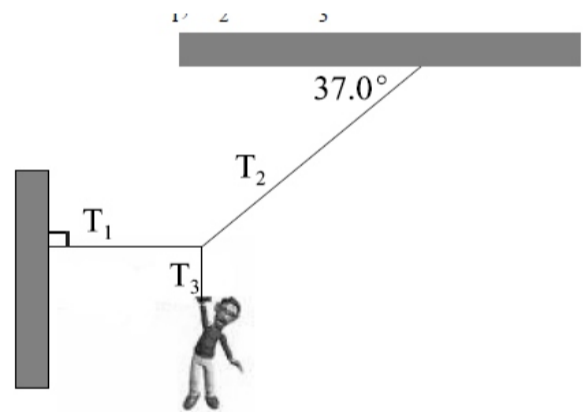
1. In the diagram below, spring scales are used to measure the tension in each string supporting the 1.95 kg mass. Calculate whether the system is in static equilibrium  
**JUNE 2008**

[4]

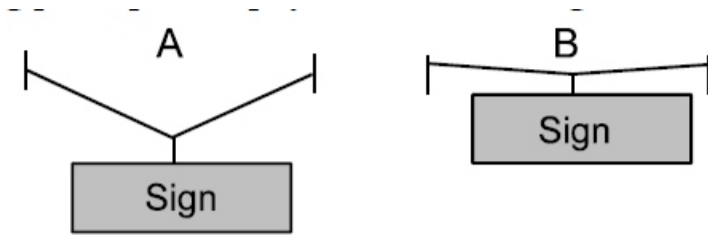


2. A 56.0 kg person suspended by cables hangs motionless as shown. Calculate the magnitude of the tension  $T_1$ ,  $T_2$  and  $T_3$  in each cable. **JUNE 2007**

[5]



3. Explain, using principles of physics, which design below would best hold a sign?  
**AUGUST 2006** [3]




---



---



---



---



---



---

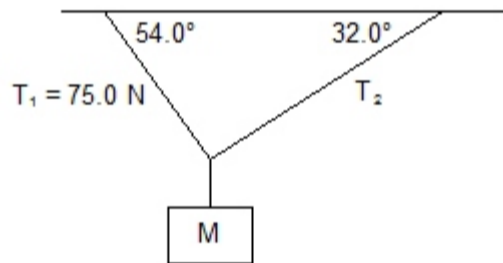


---

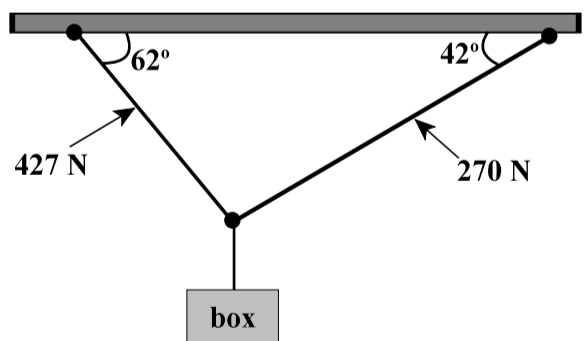


---

4. A sign of mass  $M$  hangs from two cables as shown below. Calculate the mass of the sign if it is in static equilibrium. **JUNE 2009**



5. What is the mass of the box supported by the two wires in the diagram below?  
**JUNE 2005**



6. The object below is suspended from a ceiling by two wires. Calculate the mass of the object from the information given in the diagram. **AUGUST 2005**

