**Translational (Y only) and Torsional Equilibrium from 9.3**

All beams and objects are uniform.

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| 1. The beam is 6.10 m long, and the person is standing 1.10 m from the right side. Find the tensions in the cables.  (T1 = 402 N up, T2 = 854 N up) | 2. The beam is 11.0 m long, and the person is standing 4.00 m from the left side. Find the forces exerted by the supports.  (F1 = 482 N up, F2 = 313 N up) |
| 3. The beam is 8.20 m long, and F2 is 3.00 m from the left side, and the person is 0.500 m from the right side. Find the forces exerted by the supports.  (F1 = 1030 N down, F2 = 1830 N up) | 4. The beam is 9.00 m long, and F2 is 3.00 m from the right side, and the person is 3.00 m from the left side. Find the forces exerted by the supports.  (F1 = 258 N up, F2 = 331 N up) |
| 5. The beam is 12.0 m long, the second cable is attached 7.00 m from the left side, and the person is standing 4.00 m from the right side. Find the tensions in the cables.  (F1 = 56.1 N up, F2 = 1750 N up) | 6. The 56.0 kg beam is 12.0 m long, the 16.0 kg box is 5.00 m long. The 45.0 kg box is 3.20 m wide. Find F1 and F2.  (F1 = 458 N up, F2 = 690. N up)  56.0 kg  16.0 kg  F2 = ?  45.0 kg  F1 = ? |

**Translational and Torsional Equilibrium**

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| 7. The cable is connected 6.00 m from the left side of, and makes an angle of 39.0o with the 10.0 m long beam. Find the tension in the cable, and the horizontal and vertical components of the force exerted by the wall. Be sure to give the direction of the components.  (T = 351 N, Wx = 273 N right, Wy = 34.3 N down) | 8. The cable makes an angle of 25.0o with the 16.0 m long beam. The sign hangs 5.20 m from the left side of the beam. Find the tension in the cable, and the horizontal and vertical components of the force exerted by the wall. Be sure to give the direction of the components.  (T = 346 N, Wx = 314 N right, Wy = 177 N up) |
| 9. The horizontal cable is connected 4.70 m from the hinge, and makes an angle of 54.0o with the 5.00 m long, 5.30 kg beam. The sign hangs 3.00 m from the hinge. Find the tension in the cable, and the horizontal and vertical components of the force exerted by the wall. Be sure to give the direction of the components.  (T = 38.3 N, Wx = 38.3 N right, Wy = 91.2 N up) | 10. The cable is connected 10.0 m from the hinge, and makes an angle of 60.0o with the 12.0 m long, 8.00 kg beam. The sign hangs 3.10 m from the hinge. Find the tension in the vertical cable, and the horizontal and vertical components of the force exerted by the wall. Be sure to give the direction of the components.  (T = 62.3 N, Wx = 0, Wy = 65.2 N up) |
| 11. The cable is connected 1.50 m from the left side, and makes an angle of 48.0o with the 2.00 m long beam. Find the tension in the cable, and the horizontal and vertical components of the force exerted by the wall. Be sure to give the direction of the components.  (T = 114 N, Wx = 76.6 N left, Wy = 13.1N up) | 12. The rod is connected 3.20 m from the left side of, and makes an angle of 38.0o with the 4.00 m long beam. The box is centered 1.20 m from the left side. Find the force along the rod, and the horizontal and vertical components of the force exerted by the wall. Be sure to give the direction of the components.  (F = 57.8 N, Wx = 45.5 N left, Wy = 33.1 N up) |