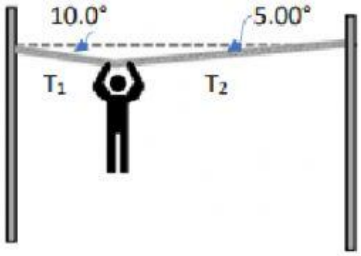
Name: _____ Score: _____

Program, Year & Section: _____ Date: _____

Worksheet 7c
Static Equilibrium

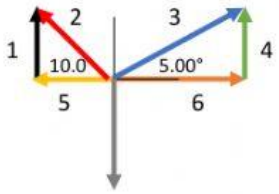
1. A 90.0-N circus performer hangs from a rope tied between two poles as shown. Find the tensions T_1 and T_2 in the two parts of the rope.



Given:

W = _____ N θ_1 = _____ ° θ_2 = _____ °

Find: (a) **T_1** and **T_2**



For the following questions, write the letter of your answer.

_____ Which of the following is the force T_1?
a. 1 b. 2 c. 3 d. 4

_____ Which of the following is the force T_2?
a. 1 b. 2 c. 3 d. 4

_____ Which of the following is the x-component of T_1?
a. 1 b. 4 c. 5 d. 6

_____ Which of the following is the y-component of T_1?
a. 1 b. 4 c. 5 d. 6

_____ Which of the following is the x-component of T_2?
a. 1 b. 4 c. 5 d. 6

_____ Which of the following is the y-component of T_2?

a. 1 b. 4 c. 5 d. 6

_____ Which of the following will give the value of the x-component of T_1?

a. $T_1 \sin 5.00°$
b. $T_1 \cos 5.00°$
c. $T_1 \cos 10.0°$
d. $T_1 \sin 10.0°$

_____ Which of the following will give the value of the y-component of T_1?

a. $T_1 \sin 5.00°$
b. $T_1 \cos 5.00°$
c. $T_1 \cos 10.0°$
d. $T_1 \sin 10.0°$

_____ Which of the following will give the value of the x-component of T_2?

a. $T_2 \sin 5.00°$
b. $T_2 \cos 5.00°$
c. $T_2 \cos 10.0°$
d. $T_2 \sin 10.0°$

_____ Which of the following will give the value of the y-component of T_2?

a. $T_2 \sin 5.00°$
b. $T_2 \cos 5.00°$
c. $T_2 \cos 10.0°$
d. $T_2 \sin 10.0°$

_____ Which of the following will give the equation for Σ_X?

a. $T_{1X} + T_{2X} = 0$
b. $T_{1X} - T_{2X} = 0$
c. $T_{2X} - T_{1X} = 0$
d. $-T_{1X} - T_{2X} = 0$

_____ Which of the following will give the equation for Σ_Y?

a. $T_{1Y} + T_{2Y} = 0$
b. $T_{1Y} - T_{2Y} = 0$
c. $T_{2Y} - T_{1Y} = 0$
d. $-T_{1Y} - T_{2Y} = 0$

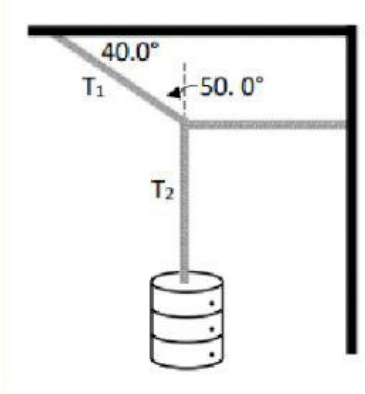
_____ What is the value of T_1?

a. 90 N b. 342 N c. 346 N d. 688 N

_____ Which is the value of T_2?

a. 90 N b. 342 N c. 346 N d. 688 N

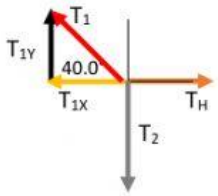
2. Find the weight of the object if the tension in the horizontal cord is 30.0 N.



Given:

T_H = _____ N θ_1 = _____ °

Find: (a) **T_2** or **W**



For the following questions, write the letter of your answer.

_____ Which of the following will give the value of the x-component of T_1?

a. $T_1 \sin 40.0°$
b. $T_1 \cos 40.0°$
c. T_H
d. T_2

_____ Which of the following will give the value of the y-component of T_1?

a. $T_1 \sin 40.0°$
b. $T_1 \cos 40.0°$
c. T_H
d. T_2

_____ Which of the following will give the value of the x-component of T_2?

a. $T_2 \sin 50.0°$
b. $T_2 \cos 50.0°$
c. $T_2 \cos 90.0°$
d. $T_2 \sin 90.0°$

_____ Which of the following will give the value of the y-component of T_2?

a. $T_2 \sin 50.0°$
b. $T_2 \cos 50.0°$
c. $T_2 \cos 90.0°$
d. $T_2 \sin 90.0°$

_____ Which of the following will give the equation for Σ_X?

a. $T_{1X} + T_H = 0$
c. $T_H - T_{1X} = 0$
b. $T_{1X} - T_H = 0$
d. $-T_H - T_{1X} = 0$

_____ Which of the following will give the equation for Σ_Y?

a. $T_{1Y} + T_2 = 0$
c. $T_2 - T_{1Y} = 0$
b. $T_{1Y} - T_2 = 0$
d. $-T_{1Y} - T_2 = 0$

_____ What is the value of T_1?

a. 25.2 N b. 30.0 N c. 39.2 N d. 64.4 N

_____ Which is the value of T_2?

a. 25.2 N b. 30.0 N c. 39.2 N d. 64.4 N