

This print-out should have 8 questions. Multiple-choice questions may continue on the next column or page – find all choices before answering.

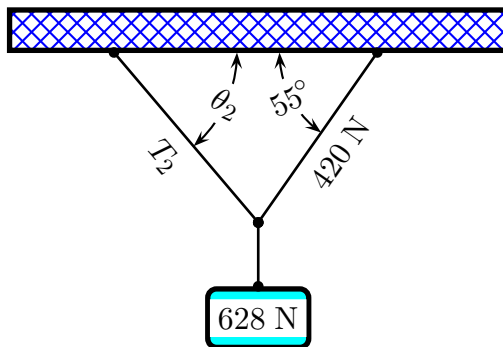
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### Hanging Weight 04

001 (part 1 of 2) 10.0 points

Consider the 628 N weight held by two cables shown below. The left-hand cable had tension  $T_2$  and makes an angle of  $\theta_2$  with the ceiling. The right-hand cable had tension 420 N and makes an angle of  $55^\circ$  with the ceiling.

The right-hand cable makes an angle of  $55^\circ$  with the ceiling and has a tension of 420 N.



a) What is the tension  $T_2$  in the left-hand cable slanted at an angle of  $\theta_2$  with respect to the wall?

Correct answer: 372.377 N.

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002 (part 2 of 2) 10.0 points

b) What is the angle  $\theta_2$  which the left-hand cable makes with respect to the ceiling?

Correct answer:  $49.6895^\circ$ .

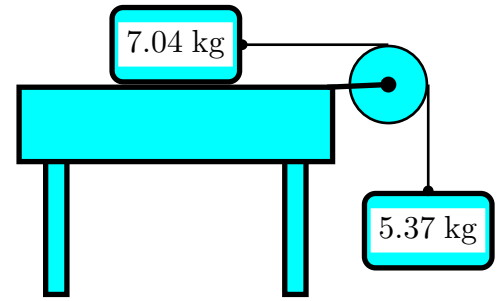
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### Accelerated System 01

003 (part 1 of 2) 10.0 points

A block of mass 7.04 kg lies on a frictionless horizontal surface. The block is connected by a cord passing over a pulley to another block of mass 5.37 kg which hangs in the air, as shown on the following picture. Assume the cord to be light (massless and weightless) and unstretchable and the pulley to have no friction and no rotational inertia.

The acceleration of gravity is  $9.8 \text{ m/s}^2$ .



Calculate the acceleration of the first block.

Correct answer:  $4.24061 \text{ m/s}^2$ .

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004 (part 2 of 2) 10.0 points

Calculate the tension in the cord.

Correct answer: 29.8539 N.

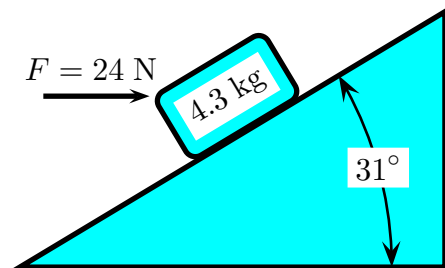
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### Pushed up a Plane

005 10.0 points

A block is pushed up a frictionless incline by an applied horizontal force as shown.

The acceleration of gravity is  $9.8 \text{ m/s}^2$ .



What is the magnitude of the resulting acceleration of the block?

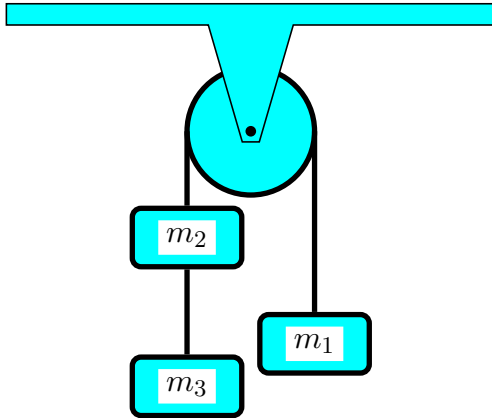
Correct answer:  $0.263186 \text{ m/s}^2$ .

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### Serway CP 04 62

006 (part 1 of 3) 10.0 points

Three masses are connected by light strings as shown in the figure.



The string connecting the  $m_1$  and the  $m_2$  passes over a light frictionless pulley.

Given  $m_1 = 4.82$  kg,  $m_2 = 6.56$  kg,  $m_3 = 4.83$  kg, and  $g = 9.8$  m/s<sup>2</sup>. The acceleration of gravity is 9.8 m/s<sup>2</sup>.

Find the downward acceleration of  $m_2$  mass.

Correct answer: 3.97199 m/s<sup>2</sup>.

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**007** (part 2 of 3) 10.0 points

Find the tension in the string connecting the  $m_1$  and the  $m_2$  masses.

Correct answer: 66.381 N.

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**008** (part 3 of 3) 10.0 points

Find the tension in the string connecting the  $m_2$  and the  $m_3$  masses.

Correct answer: 28.1493 N.