

NEWTON'S SECOND LAW PROBLEMS: MULTIPLE OBJECTS
brief answers

Full solutions to the problems are available in the Solutions document, and in the YouTube videos.

You can find links to these resources at my website:

www.freelance-teacher.com

Links to the documents are also in the video description boxes for the YouTube videos.

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Video (1)

(a) After the block is released, the tension has magnitude 20 N.

(b) In the 2 s after release, block B falls 3.2 m.

Video (2)

The difference in height at time $t = 1.5$ s will be 5.5 m.

Video (3)

The magnitude of the tension is 10 N.

Mass 1 has acceleration of 4.8 m/s^2 , down the incline.

Mass 2 has acceleration of 4.8 m/s^2 , straight down.

Video (4)

$$\mu_s = \frac{-Mg \sin \theta + Mg}{Mg \cos \theta}$$

$$\mu_s = \frac{Mg(-\sin \theta + 1)}{Mg \cos \theta}$$

$$\mu_s = \frac{-\sin \theta + 1}{\cos \theta}$$

$$\mu_s = \frac{1 + (-\sin \theta)}{\cos \theta}$$

$$\mu_s = \frac{1 - \sin \theta}{\cos \theta}$$

Most professors would accept any of these expressions as the answer to the problem.

The smallest coefficient that will prevent the blocks from moving is $\mu_s = \frac{1 - \sin \theta}{\cos \theta}$.

(Most professors would probably accept any of the expressions for μ_s listed above as the answer to the problem.)

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