NEWTON'S SECOND LAW PROBLEMS: MULTIPLE OBJECTS
brief answers

Step-by-step solutions to the problems are available in the Step-by-Step Solutions document, and in the YouTube videos.
Brief solutions are available in the Brief Solutions document.
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)
The magnitude of the tension is 10 N.
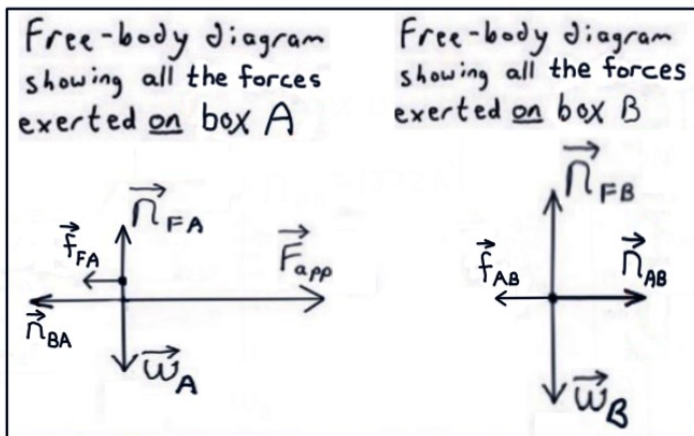Mass 1 has acceleration of 4.8 m/s^2, down the incline.
Mass 2 has acceleration of 4.8 m/s^2, straight down.

Video (2)
The difference in height at time $t = 1.5$ s will be 5.5 m.
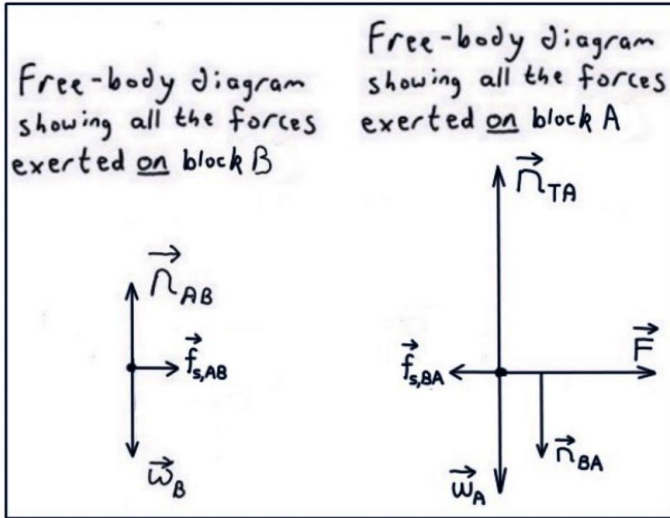
Video (3)
(a)

(b) The boxes both have acceleration 2.3 m/s^2, to the right.
Box A exerts a force of 455 N, to the right, on Box B.
Box B exerts a force of 455 N, to the left, on Box A.

Video (4)

(a)

Free-body diagram showing all the forces exerted on block B

Free-body diagram showing all the forces exerted on block A

(b) A horizontal force with maximum magnitude $F = 63$ N can be exerted without the 4 kg block sliding off the 12 kg block.