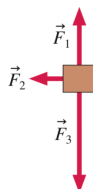


## WEEK 5: Newton's 3rd Law

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COURSE: Physics 40A (Winter 2019), Prof. Ellison  
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### 1 Warm-up

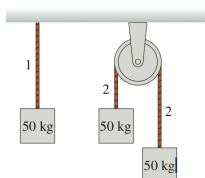
- (a) What in what direction does the block to the right accelerate?



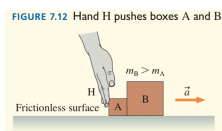
- (b) What does Newton's 3rd Law say?

### 2 Action-Reaction Pairs

1. All three 50 kg blocks are at rest. Is the tension in rope 2 greater than, less than, or equal to the tension in rope 1?



2. The hand in the figure below pushed boxes A and B to the right across a frictionless table. The mass of B is larger than the mass of A.
- (a) Draw free-body diagrams of A, B, and hand H, showing only the horizontal forces.
- (b) Rank in order, from largest to smallest, the horizontal forces shown on your free-body diagrams.



### 3 Recoil Speed

Bob, who has a mass of 75 kg, can throw a 500g rock with a speed of 30 m/s. The distance through which his hand moves as he accelerates the rock from rest until he releases it is 1.0 m.

- (a) What constant force must Bob exert on the rock to throw it with this speed?
- (b) If bob is standing on frictionless ice, what is his recoil speed after releasing the rock?