1. A long line of men stand at attention, spaced exactly 1 meter apart. The left end of the line is at **x = 0 meters**. At time **t = 0**, each man raises his left hand.
2. The man standing at the left end of the line, at **x = 0**, has a bad cold. At time **t = 5 meters**, he coughs. At time **t = 10 meters**, he sneezes.
3. A cute little doggie runs across the field at a speed of **0.2c** to the left. At time **t = 0**, the doggie is at **x = 8 meters**. The doggie barks at time **t = 5 meters** and **t = 10 meters**.
4. A bird flies just above the ground, looking for insects. It moves at speed **0.9c** to the right. At time **t = 0,** when the bird is at **x = -3 meters**, it chirps: "TWEET!"
5. *(optional) The man with a cold flashes a laser to the right at time **t = 8 meters.** It strikes a flower 3 seconds later.*

   (Your diagram should cover at least the region **x = -4** to **x = +11** meters and **t = -1** to **t = 16** meters)

Now, Jane and her team are also making careful measurements of these same events as they fly past at **v = 0.3c** to the LEFT. Use the Galilean transformations to figure out the locations and times of these events in Jane's frame of reference.

Make a (new) space-time diagram which shows all these events, as measured by Jane and her team.

A. The long line of men raising their hands lies along the x-axis in Fred's space-time diagram. Do those events also lie along the x-axis in Jane's diagram?

B. The man with a bad cold lies along the y-axis in Fred's diagram. Does he also lie along the y-axis in Jane's diagram?

C. Consider the cough and the sneeze. What is the time interval between these two events according to Fred? According to Jane?

D. Consider these two events: the bird chirps the bird meets the dog What is the time interval between the events according to each observer? What is the space interval between the events according to each observer?

E. How fast is the bird flying, according to Jane?

F. *(optional) Where is the laser beam at time t=11 seconds*