

Blackline Master 10.3d
Acceleration: Exercise

During spring break, Kirsten and Brad ride their bikes on a bike path that runs from Kirsten's neighbourhood to the university.

- The bike path passes over a small bridge designed to carry cyclists over a busy street. At the bottom of the ramp leading up to the bridge, Kirsten is riding at 5.6 m/s. When she reaches the top of the ramp, she is travelling at 1.8 m/s. If it takes her 28 s to ride up the ramp, what is her acceleration?

$$v_i = 5.6 \quad v_f = 1.8 \quad a = \frac{v_f - v_i}{t}$$

$$= \frac{1.8 - 5.6}{28} = -0.14 \frac{m}{s^2}$$
- Brad starts down the ramp on the other side of the bridge, travelling at a speed of 1.8 m/s, and then accelerates at 0.25 m/s^2 for 18 s. What is his speed at the bottom of the ramp?
- At the bottom of the ramp, Brad hits a patch of loose gravel and wipes out. Kirsten applies her brakes quickly to avoid hitting him. She is travelling at 5.5 m/s when she applies the brakes and she accelerates at -2.6 m/s^2 . How long (time) does it take her to stop?
- Kirsten and Brad coast down a long hill that leads into the river valley. They accelerate at 0.12 m/s^2 for 85 s and are travelling at 12.5 m/s at the bottom of the hill. What was their initial speed?

Mar 11-2:13 PM