

**1. THE POLE AND THE BARN**

(Problem 5-4 on p. 166 of Taylor & Wheeler; Example 12.3 on pp. 491–492 of Griffiths)

A 20 foot pole is moving towards a 10 foot barn fast enough that the pole appears to be only 10 feet long. As soon as both ends of the pole are in the barn, slam the doors. How can a 20 foot pole fit into a 10 foot barn? From the point of view of the pole, how long is the barn? What does the pole see?

**2. SPACE WAR**

(Problem 3-7 on pp. 79–80 of Taylor & Wheeler)

Two rockets of equal rest length pass each other. Rocket A fires a gun mounted in its tail at Rocket B when the tip of Rocket A reaches the tail of Rocket B. Does the bullet hit or miss Rocket B?

**3. THE RISING MANHOLE**

(Problem L-11 on p. 116 of Taylor & Wheeler)

A manhole cover, moving in the  $x$ -direction, approaches a manhole, moving in the  $y$  direction. (There is no gravity.) Does the small cover easily fit through the hole, or is the small hole too small for the manhole?

**4. THE FALLING MANHOLE**

(essentially Problem L-12 on p. 116 of Taylor & Wheeler)

A manhole cover, moving in the  $x$ -direction, approaches a manhole. Does the small cover fall (due to gravity) through the hole, or does the manhole cover pass over the small hole?

**5. THE DETONATOR**

(Problem 6-5 on pp. 185–186 of Taylor & Wheeler)

A U-shaped structure contains the detonator for a bomb. A T-shaped structure, slightly shorter than the U-shaped structure, flies towards the detonator. Does the short T fail to trigger the bomb, or does the T easily reach the detonator contained in the short U?

**6. THE FLICKERING BULB**

(Problem 6-7 on pp. 186–187 of Taylor & Wheeler)

An H-shaped slider connects 2 wires, completing the circuit through each arm, thus turning on a light. If there is a gap in one wire, does the light flicker because the short slider must cross the gap, or does the light stay on because the gap is short?