STEM Sims™

Airport Screener

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Do you need an idea for a scientific study?
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Start right now learning about the basics of airport screening technology and how various tools and techniques make flying safer for everyone. Take the following brief quiz to see how much you already know about the airport screening process. See the bottom of page 4 to check your answers.

1. On average, about how many people fly on commercial airplanes each day in the U.S.?
   a. 20,000
   b. 200,000
   c. 2,000,000
   d. 200,000,000

2. Every person who flies on a commercial airliner must receive a 'pat down" as part of the security screening process.
   a. true
   b. false

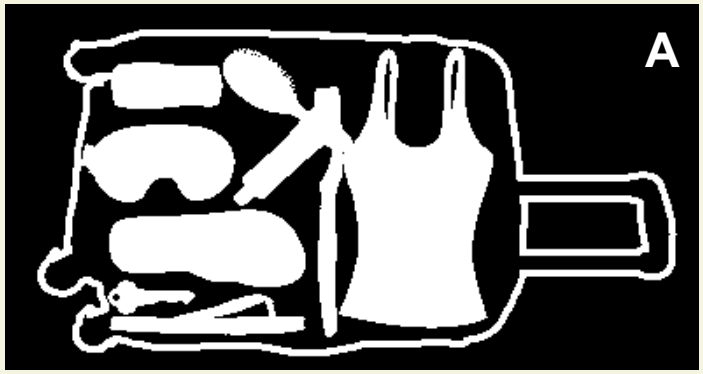
3. The most common advanced imaging technology used to screen airline passengers exposes the passengers to the same amount of radiation as:
   a. one dental x-ray.
   b. one x-ray for a broken leg.
   c. one radiation treatment for prostate cancer.
   d. the amount of natural radiation they receive in their daily lives in one hour.

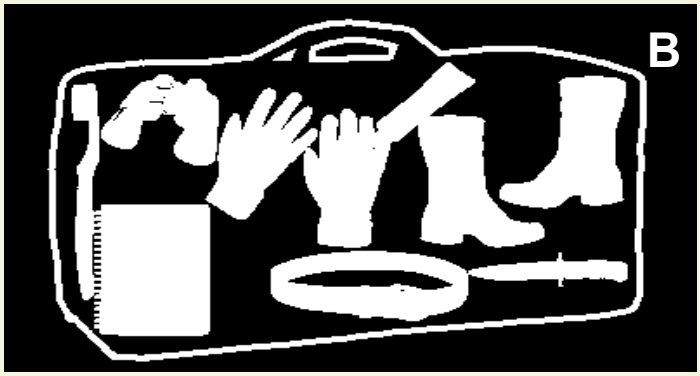
4. Most people do *not* think that full body scanners should be used to screen airline passengers.
   a. true
   b. false

5. The advanced imaging technology most commonly used to screen airline passengers *cannot* detect powered explosives.
   a. true
   b. false

A Burning Question

Imagine that you are a carry-on luggage screener at an airport. Carefully examine the advanced imaging technology scans of four pieces of luggage shown in the images below. Which luggage should be allowed to pass through the system with no additional screening and which pieces show indication of prohibited items?





Partial list of items prohibited in carry-on luggage on domestic U.S. airline flights

Box Cutters
BB Guns
Dynamite
Ice Axes/Ice Picks
Firearms
Fireworks
Knives
Flares
Hand Grenades
Meat Cleavers
Pellet Guns
Plastic Explosives
Swords
Starter Pistols
Fuels
Baseball Bats
Axes and Hatchets
Gasoline
Bows and Arrows
Cattle Prods
Gas Torches
Golf Clubs
Crowbars
Lighter Fluid
Hockey Sticks
Hammers
Chlorine for Pools and Spas
Pool Cues
Drills and drill bits
Fire extinguishers
Ski Poles
Saws
Liquid Bleach
Spear Guns
Blasting Caps
Spray Paint

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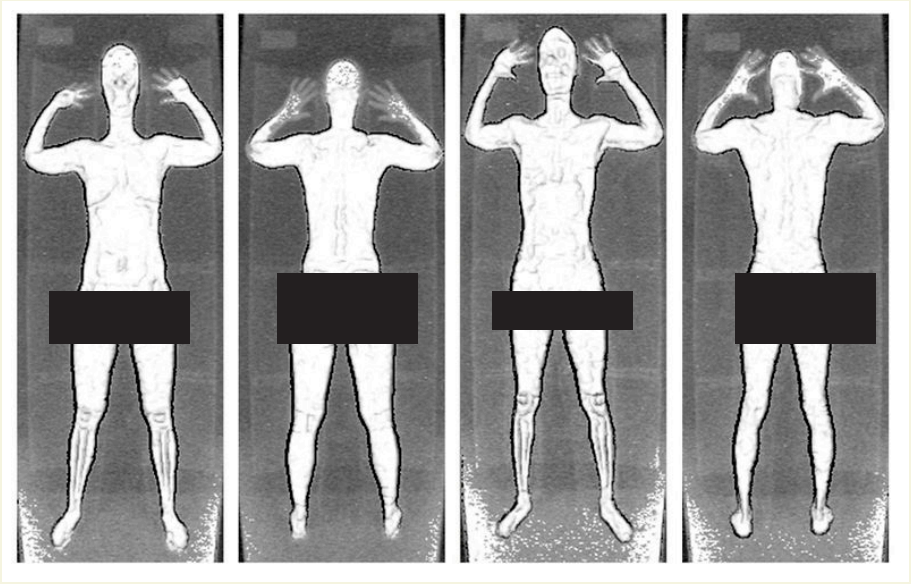
A Machine That Can See Through Your Clothes

Most travelers who fly in and out of major airports in the U.S. are virtually searched using one of two advanced imaging technologies; either back-scatter scanning or millimeter-wave machines. These tools have the ability to look through a person's clothing to check for prohibited items that cannot be taken on an airplane. Both machines expose a person to small doses of high-energy radiation to complete the scanning process. Trained screeners study the scans (similar to the ones shown below) and look for illegal items that might harm the plane or passengers.



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Answers: Page 2 Answers: 1) c, 2) b, 3) d, 4) b, in fact recent polls show that 4 out of 5 people agree that full body scanners should be used, 5) b. **Page 3 It's in the Bag Answers:** Luggage piece B has a large knife and luggage piece C has a hand grenade, both of which are prohibited items and should receive additional attention by security agents.

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