

HUMAN OR MACHINE? YOU DECIDE

by Kathleen Vincenz, a Squirrels at the Door Publication

Zoom! Jeremy sped past his mom and into his room hoping she hadn't seen him.



"Jeremy, clean your room!" she called.

"Aw, Mom, I'm not a machine. I just played soccer for like forever." Jeremy flopped on his bed into a pile of sweaty shirts and socks. "Pew!"

"You'll get bugs in there!"

"It's not that messy." Something buzzed near Jeremy's ear. He swatted it.

"Owzzzz!" a tiny voice cried.

"What's that?" Jeremy stared as a shiny bug landed on his dresser. He moved closer. The bug tsked and hissed trying to straighten her wing that now looked like a dog-eared page of a library book.

"Sorry about that, little bug." Jeremy reached out his finger and bent the edge of her wing back. "Are you wearing glasses? Don't bugs have, like, great vision?"

The little bug pushed her glasses up her nose. "They make me look scientific."



"Scientific? You're a bug."

"I'm Elvin. Here to help clean scientifically."

Elvin flew to a glass filled with milk on Jeremy's desk and picked it up with her tiny sticky feet.



"Watch out!" Jeremy caught the glass in mid-air as it slid from her grasp. The milk, which had curdled as thick as paste, didn't even splash. Jeremy set it back down. Elvin buzzed over and lifted Jeremy's sock to toss it—in the garbage!



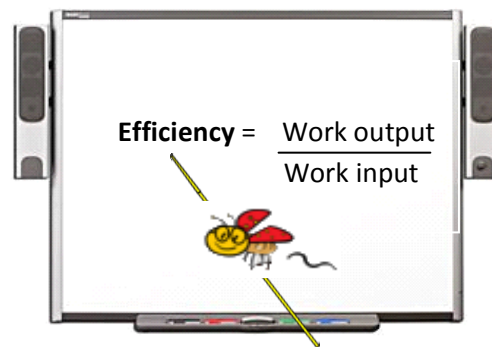
"Wait!" Jeremy dived for the sock before it landed in the overflowing bin. "Whew. If I have to clean my room, I want to do it without trying."

Elvin landed on Jeremy's desk. "Well, that makes you a machine. A machine wants to get work done *efficiently*."

"Machines can't think."

"No, but engineers who design machines can." A white board and marker popped out from behind Elvin's wing. "Other bugs carry disease—I carry a whiteboard. For emergencies like this."

She scribbled:



"I hate fractions." Jeremy aimed a gum wrapper into the garbage. "Rats, now I missed."

Elvin buzzed over, and picked it up. "Good thing you play soccer and not basketball."

"Hey, come on."

"Just a science nudge." Elvin winked. "As I was saying, a perfect machine is 100 percent efficient: the amount of work that makes the machine go is equal to the

amount of work the machine does. But no machine is perfect, and neither are you."

Jeremy slumped back on the bed and picked up a book. "I'm tired."



"Actually, all your exercise from soccer improves your efficiency. Your muscles work better."

Jeremy displayed his mighty biceps. "Well, I never saw a machine exercise."

"No, but engineers improve a machine by removing anything that wastes energy. They tighten parts to stop shaking (*vibration*), or add oil to reduce rubbing (*friction*)."

Jeremy rubbed his stomach. "Boy, I sure could use someone adding something to me."

An apple 🍏 appeared from behind Elvin's back.

Jeremy sunk his teeth into it and munched it into a skinny core in the blink of

Elvin's eye. He tossed it straight into the garbage—no missing now. "You're not going to tell me that machines need apples."

"No, but machines need fuel as fast as possible to turn into energy. Getting as much fuel into a machine is *volumetric efficiency*."

"Well, I'm volumetrically full. Cast your bug eye on me." Jeremy scurried about the room exploding with energy. "Pajamas—away. Laundry basket—filled. Dust—gone. Finished!"

Jeremy plunked back down on his bed but made sure to keep the sheets straight. "I'm sweating from all that work. I've never seen a machine sweat. Don't tell me that when a machine sweats it's *sweato efficiency*."

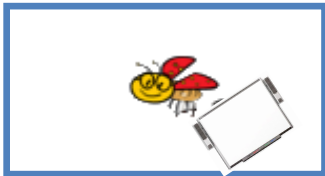
"But it is, just in fancy language: *thermodynamic efficiency*, or how much heat energy is lost."

"Jeremy!" Mom called from below. "Is that room clean?"

"Yes, Mom, I cleaned it efficiently:

- mechanically,
- volumetrically, and
- thermodynamically.

You might say someone bugged me to get it done." Jeremy waved as Elvin flew out the window, bumping her white board on the sill.



"Do you want to play more soccer?"

"No, I'm going to invent a machine to clean my room so I can just be human."



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