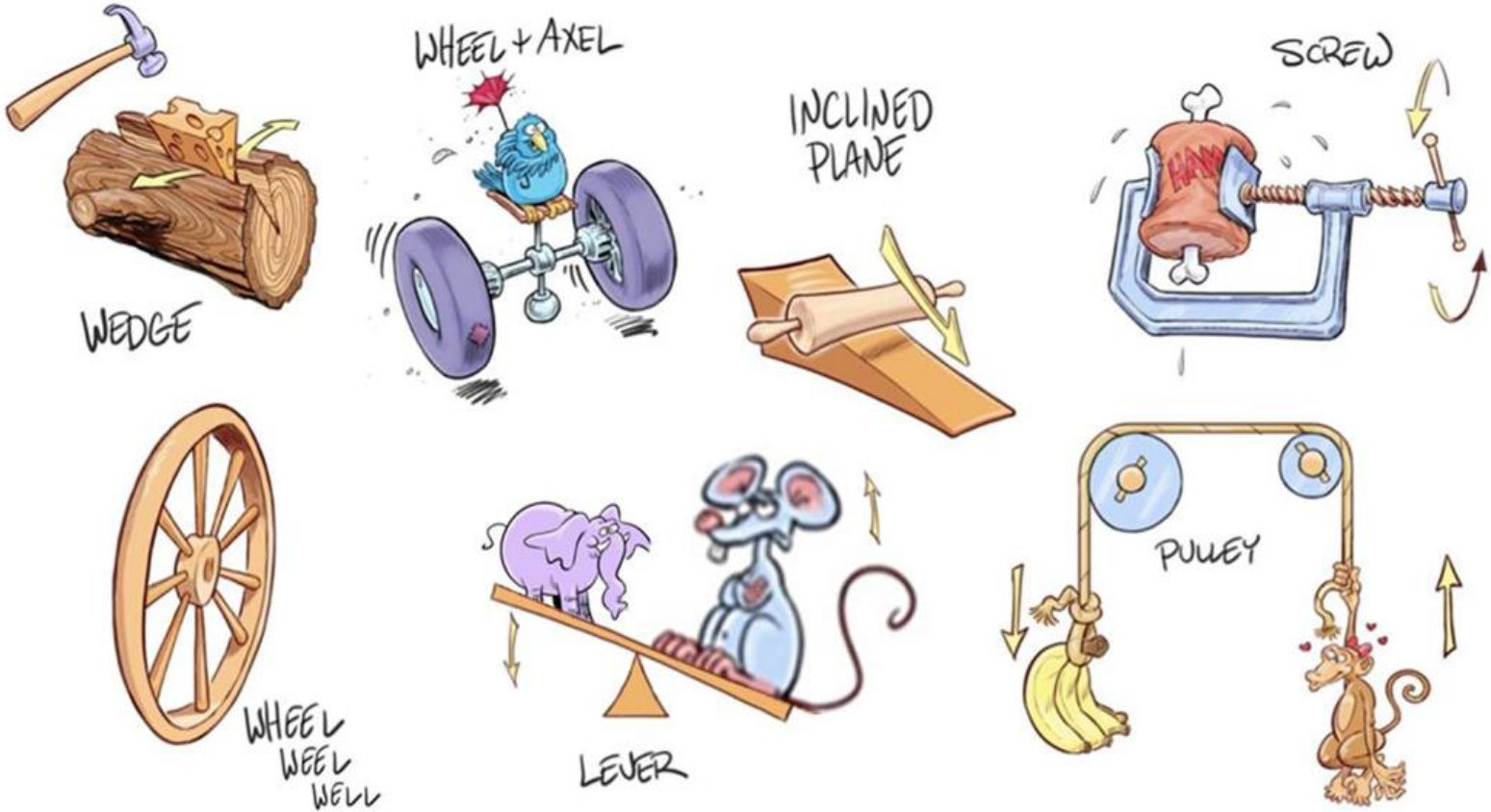
YIP
RUBE GOLDBERG MACHINES

Lesson 3: Designing a Rube Goldberg Machine

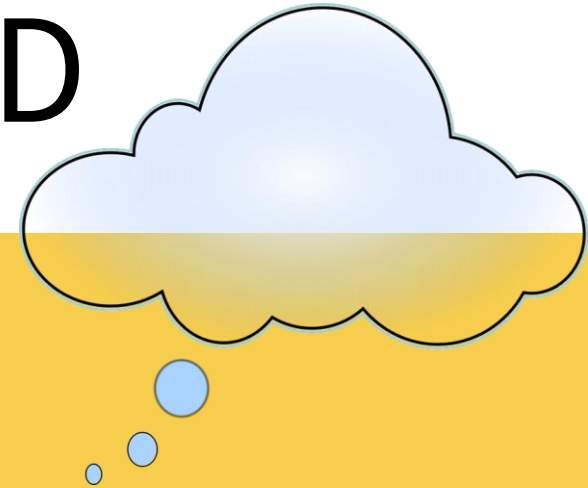
SIMPLE MACHINE SCAVENGER HUNT

Find examples of these machines



Audri’s Rube Goldberg Monster Trap

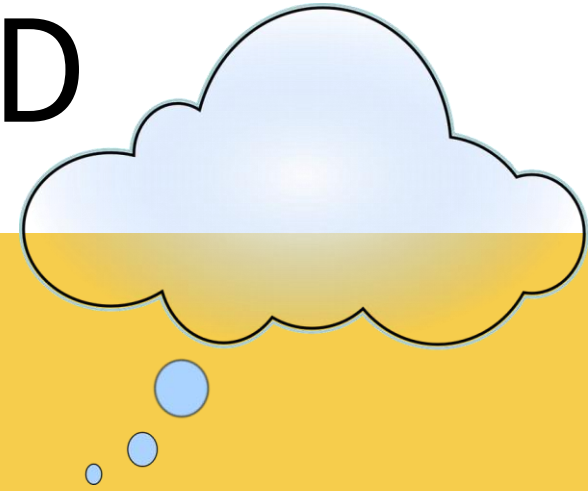
THINK ALOUD



1. How did Audri **explain** how the machine was going to work?
2. What **simple machines** did you see?
3. What **forces** might be used?
4. What are some of the **cause and effect relationships** in the machine?

Watch Again

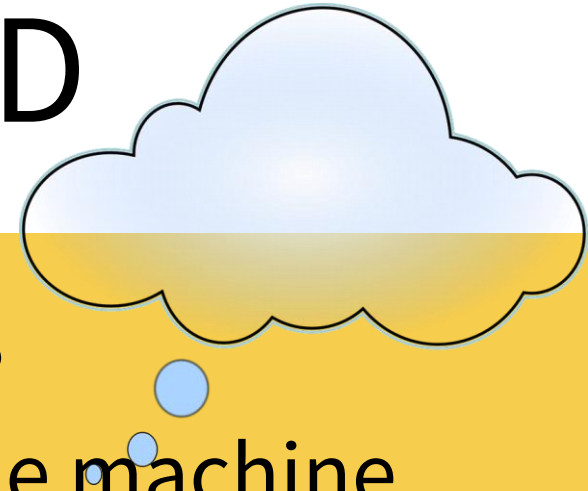
THINK ALOUD



1. Why did the machine stall?
2. Why didn’t the ball push the tube to make the glass fall?
3. How could this be fixed?

One more time!

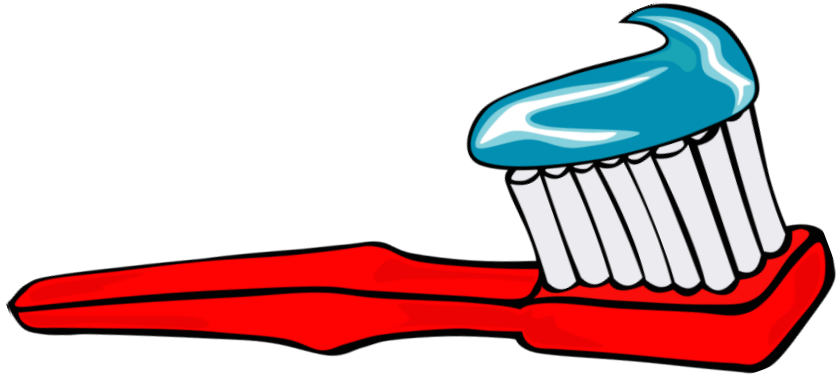
THINK ALOUD



1. What did you **observe** this time?
2. **Compare** what you saw when the machine worked and with when it did not.
3. How does looking at the **entire system** help you understand why the machine worked in some places but not as a whole?

CREATE A DESIGN PLAN

PUT TOOTHPASTE ONTO A TOOTHBRUSH

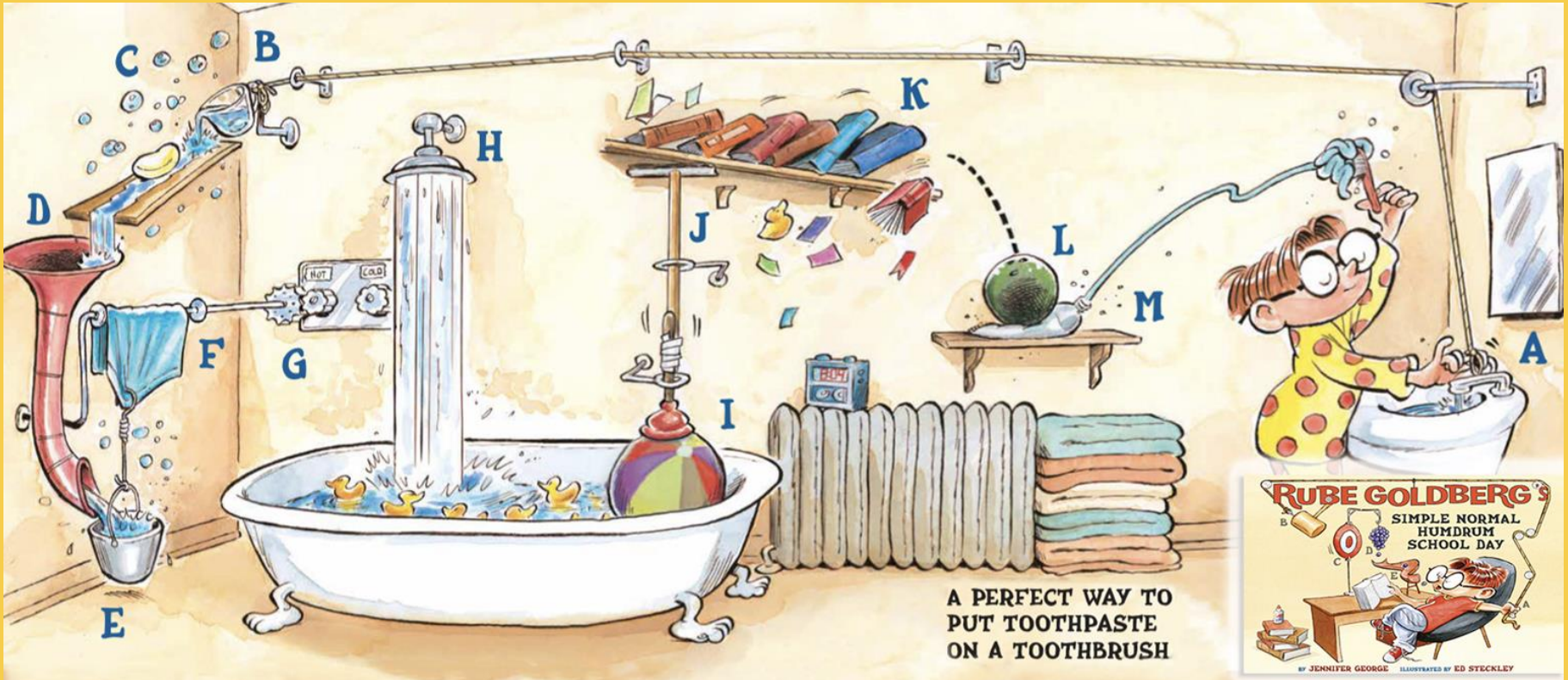


THE TASK

REQUIREMENTS

	Apprentice Level: Grades K - 5	**Division I: Grades 6 - 8**	**Division II: Grades 9 -12**
Maximum Physical Size	6ft (W) x 6ft (L) x 6ft (H)	8ft (W) x 8ft (L) x 8ft (H)	10ft (W) x 10ft (L) x 10ft (H)
Minimum Number of Steps (Transfers of Energy)	10 Steps	15 Steps	20 Steps
Number of Different Simple Machines Incorporated	Four (4) Different Simple Machines (lever, incline plane, wheel & axle screw, wedge, and pulley)		

A PERFECT WAY TO PUT TOOTHPASTE ON A TOOTHBRUSH



RUBE LIFTS FAUCET HANDLE (A), LOOSENING STRING, WHICH TIPS MEASURING CUP (B). WATER SPILLS OUT OF CUP ONTO DRY BAR OF SOAP (C), MAKING IT SLIPPERY ENOUGH TO SLIDE DOWN ANGLED SHELF AND INTO FUNNEL (D), THEN INTO BUCKET (E). WEIGHT OF SOAP MAKES THE BUCKET DROP, PULLING DOWN ON TOWEL, WHICH ROTATES ROD (F) AND MOVES GEARS (G) TO TURN ON SHOWER (H), FILLING BATHTUB. AS WATER RISES, BEACH BALL (I) FLOATS UPWARD, PUSHING SQUEEGEE (J), LIFTING SHELF. THIS CAUSES BOOKS (K) TO FALL OVER, KNOCKING BOWLING BALL (L) OFF SHELF AND INTO TOOTHPASTE TUBE (M), WHICH SQUIRTS A PERFECT DOLLOP OF PASTE ONTO RUBE'S TOOTHBRUSH.