

Energy on the Ramp

Identify forms of energy and plan a fair motion test.

3.8 "Force, motion, and energy. The student knows that energy is everywhere and can be observed in cycles, patterns, and systems. The student is expected to: identify everyday examples of energy, including light, sound, thermal, and mechanical..."

NAME _____

DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline each example of light, sound, thermal, or mechanical energy. Circle the sentence that tells the pattern Maya found about starting height and speed.

Maya Tests a Toy Car

- ① Energy is all around a school playground. Sunlight on the slide is light energy. A ringing recess bell makes sound energy. Warm pavement holds thermal energy from the Sun. When Maya pushes a swing, the moving swing has mechanical energy. Mechanical energy is energy an object has because it moves or because of its position.
- ② Maya and her partner plan a safe test with a toy car on a smooth ramp. They choose the same car and the same ramp each time. First, they release the car from a low spot and watch its speed. Next, they release it from a higher spot. The higher car starts with more mechanical energy because of its position. It rolls faster at the bottom.
- ③ To make the test fair, Maya changes only the release height. She does not push the car, switch cars, or change the ramp. She repeats each release three times because a single trial can be unusual. Her results show a pattern: cars released from higher spots move faster. The car's greater starting mechanical energy is related to its greater speed. This investigation shows one way to observe energy in motion.

2 ANSWER WITH EVIDENCE _____ Use the passage

1 Name the four everyday energy examples in the passage. Tell the type of energy for each one.

2 Which car starts with more mechanical energy, the car released from the low spot or the higher spot? Why?

3 What are two things Maya keeps the same to make her test fair?

4 What pattern do Maya's results show about release height and speed?

3 YOUR TURN _____ Your own words

Plan your own fair toy-car ramp test. Fill both rows with different release heights, what you will keep the same, how many trials you will do, and a prediction about mechanical energy and speed.

RELEASE HEIGHT	KEEP THE SAME	NUMBER OF TRIALS	MECHANICAL ENERGY AND SPEED PREDICTION

PART 1 • READ AND MARK

Underline each example of light, sound, thermal, or mechanical energy. Circle the sentence that tells the pattern Maya found about starting height and speed. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	Name the four everyday energy examples in the passage. Tell the type of energy for each one.	Sunlight on the slide, light energy; ringing recess bell, sound energy; warm pavement, thermal energy; moving swing, mechanical energy.
2	Which car starts with more mechanical energy, the car released from the low spot or the higher spot? Why?	The car released from the higher spot. It has more mechanical energy because of its higher position.
3	What are two things Maya keeps the same to make her test fair?	She keeps the same toy car and the same ramp.
4	What pattern do Maya's results show about release height and speed?	Cars released from higher spots move faster.

PART 3 • YOUR TURN (SAMPLE ANSWER)

RELEASE HEIGHT	KEEP THE SAME	NUMBER OF TRIALS	MECHANICAL ENERGY AND SPEED PREDICTION
10 cm	Same toy car, ramp, and no push	3	The car will have less starting mechanical energy and go slower than the 30 cm car.
30 cm	Same toy car, ramp, and no push	3	The car will have more starting mechanical energy and go faster than the 10 cm car.

Accept other accurate everyday examples and energy types if they match the passage. For the investigation plan, accept any two different heights, one changed variable, controlled conditions, repeated trials, and a prediction that the higher release has more starting mechanical energy and greater speed.