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#1166

Name: _____ Date: _____ Score: ☆ ☆ ☆ ☆ ☆

How a Lever Lifts a Box

READ & MARK

- ☐ **FIND** Underline the sentence that names the load and the effort.
- ☐ **THINK** Star the words that show why Kavya needed less effort.



When a school display needed a heavy wooden box lifted onto a low platform, Kavya's teacher brought out a **sturdy** bar and a small block of wood. She slid one end of the bar under the box, then placed the block beneath the bar. The block became the **pivot**, also called the fulcrum.

Kavya pushed down on the bar's other end. The bar turned on the block, and its short end rose beneath the box. This simple arrangement is a lever. The box is the load, and Kavya's push is the **effort**. Since she pushed far from the **pivot** while the box rested close to it, she needed less effort than she would have needed to lift the box directly. The bar did not make the box lighter; it changed how the force was applied.

The position of the **pivot** matters. If the block is moved closer to the box, the **effort** arm—the part from the pivot to Kavya's hands—becomes longer compared with the part under the load. Then less effort may be needed, but the hand end must travel farther. A lever can also change the direction of a push: Kavya pressed down, and the box moved up.

They raised the box only a little at a time, keeping hands and feet clear of the bar's moving ends. A lever is useful for lifting or shifting a heavy object, but the bar and **pivot** must be strong and **steady**. With the box safely on the platform, Kavya noticed that the small block had done an important job: it gave the bar a firm point to turn around.

WORD WATCH

sturdy *(adjective)* strong and not easily broken
"The sturdy shelf held all the heavy books."

effort *(noun)* the energy used to do something
"It took effort to carry the basket upstairs."

pivot *(noun)* a point that something turns around
"The gate turned on a pivot near its post."

steady *(adjective)* firm and not likely to move
"Keep the ladder steady while I climb."

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A Passage Comprehension

Look back at the passage to help you.

1. QUICK RECALL What did the teacher place beneath the bar?

- ○ **A.** A small block of wood
- ○ **B.** A second wooden box
- ○ **C.** A long metal rod
- ○ **D.** A low platform

2. DEEP THINKING Why did Kavya need less effort than if she lifted the box directly?

3. CAUSE AND EFFECT Why did the box move up when Kavya pushed down on the bar?

B Vocabulary & Sentence Craft

Use the Word Watch card on Part A.

4. VOCABULARY IN CONTEXT In the passage, the word **sturdy** means:

- ○ **A.** Strong and not easily broken
- ○ **B.** Small and easy to carry
- ○ **C.** Smooth and nice to touch
- ○ **D.** Light and easy to lift

5. SENTENCE BUILDER Pick one word below. Write your own sentence that shows what it means.

sturdy · pivot · effort · steady

C Personal Reflection

6. YOUR TURN Name a heavy object you might need to move. How could a lever help?

#1164 Ravi's Video Call

TECH-03-05-02

FIND "He checked that the camera and microphone were allowed for the calling app."

THINK "a picture froze or a voice became unclear"

1 **A** His model of a rainwater tank

2 So she could see the side of the model.

3 His cousin may be unable to hear him.

4 **A** Not easy to see or understand *(unclear)*

5 **Any** Word Watch word in an original sentence. Ex: "We keep extra blankets in storage."

6 Sample: I might show my friend a new book so we can look at its pictures together. *Accept: Names something to show and gives a clear reason.*

#1165 How a Nutcracker Works

TECH-04-01-01

FIND "The hinge was the pivot, the point around which the arms turn."

THINK "Because the walnut was near the pivot and her hands were farther away, a gentle squeeze produced a much stronger pressure on the shell."

1 **B** Between the rounded ends, close to the hinge

2 The walnut was close to the pivot, while Meera's hands were farther away on the long handles.

3 It can become easier to crack the load, though the handles may need to move farther.

4 **A** The object being moved or squeezed *(load)*

5 **Any** Word Watch word in an original sentence. Ex: "The crane lifted its load onto the truck."

6 Sample: A bottle opener helps lift a bottle cap. *Accept: Names a tool and clearly says what job it helps with.*

#1166 How a Lever Lifts a Box

TECH-04-01-02

FIND "The box is the load, and Kavya's push is the effort."

THINK "Since she pushed far from the pivot while the box rested close to it, she needed less effort than she would have needed to lift the box directly."

1 **A** A small block of wood

2 She pushed far from the pivot while the box was close to it.

3 The bar turned on the block, causing its short end to rise beneath the box.

4 **A** Strong and not easily broken *(sturdy)*

5 **Any** Word Watch word in an original sentence. Ex: "A sturdy bridge can hold many people safely."

6 Sample: A large planter might be hard to shift. A bar and a firm block could help me lift one edge. *Accept: Names an object and gives a sensible way a lever could help move or lift it.*