Textbook Activity Guide (TAG)

What is Energy?: pages 124-130

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Complete the following TAG activity with your group or learning partner using the following strategy codes below:

**P=** Discuss with a partner/group **WR**= Write a written response on your own

**PP=** Predict with a partner **Map=** Complete a visual aid to represent the information

**Skim=** Read quickly for a stated purpose, discuss with your partner \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Skim , WR** Find the 10 mentioned types of energy in the section and write them below.

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\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (And one more listed on page 133)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**P**, **WR** Pretend a pirate wants to give their cannonball the most energy possible, to sink another ship. What 2 things can the pirate do to achieve this?

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**P**, **WR** Pretend a monkey wants to drop a rock on top of a coconut to break it open. What two things can the monkey do to create the most Potential Energy possible?

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**Map** Create an idea web that shows the relationships between Mechanical energy, Potential energy, Kinetic Energy, thermal energy, electrical energy, Chemical energy, sound energy, light energy, and nuclear energy

**PP** Imagine that a baseball of 1 kg mass is travelling at 15 m/s. It’s total energy would be 112.5 J. Predict what the new energy would be if the ball only had half the mass.

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Now Calculate the energy and see if you’re right.

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**PP** Imagine that a baseball of 1 kg mass is travelling at 20 m/s. It’s total energy would be 200 J. Predict what the new energy would be if the ball only had half the velocity.

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Now Calculate the energy and see if you’re right.

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**PP** Imagine that a bird drops a 1 kg fish from 20 m. It’s total energy would be 200 J. Predict what the new gravitational potential energy would be if the fish only had half the mass. (\*Recall that GPE=Weight x height, but Fweight=mass x g . “g” is acceleration from gravity, and it’s always 10 m/s2 ).

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Now Calculate the energy and see if you’re right.

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**PP** Imagine that a bird drops a 1 kg fish from 20 m. It’s total energy would be 200 J. Predict what the new gravitational potential energy would be if the fish was dropped from double the height. (\*Recall that GPE=Weight x height, but Fweight=mass x g . “g” is acceleration from gravity, and it’s always 10 m/s2 ).

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Now Calculate the energy and see if you’re right.

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PP, WR Pretend that you are on a roller coaster. What type of energy do you have at:

1. the top of the first big hill
2. the bottom of the first big hill

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Textbook Activity Guide (TAG)

Energy Conversions ­ and Conservation of Energy 132-141

Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Complete the following TAG activity with your group or learning partner using the following strategy codes below:

**P=** Discuss with a partner/group **WR**= Write a written response on your own

**PP=** Predict with a partner **Map=** Complete a visual aid to represent the information

**Skim=** Read quickly for a stated purpose, discuss with your partner \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Skim** Skim the section on page 139 entitled “Law of conservation of energy”. Write it below.

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**Skim** page 138. Where does all the energy go?

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**Skim, Map** Read the section on page 138 called “Where does the energy go?” along with its diagram below. Create the bar chart for parts B and C in the diagram (A is already done for you). In each bar chart, show the amount of Kinetic Energy, Potential energy, and friction. Remember: if there are 7 blocks total in Graph A, there should be 7 in B, and 7 in C.

Position A Position B Position C

PE KE Friction

PE KE Friction

PE KE Friction

**Skim, P, WR** Read over 138-141. If you had a roller coaster that converted its potential energy from the 1st hill perfectly, and didn’t lose any energy to thermal energy, how high would the second hill be?

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**Skim, WR** Skim over pages 132-137. Choose one of the energy conversions from this section and

explain/summarize it below.

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**Skim, WR** Why are energy conversions important? (What would happen if we couldn’t change energy forms at

all?)

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Skim, P When an earthquake occurs, the crust bends because it is slightly elastic. When enough energy builds up, the crust springs back to its normal shape, causing lots of shaking. What kind of energy conversion is this?

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Skim, P What is the original source of all energy that you have in your body if you go back far enough?

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Map Draw a picture of a car that would be more efficient and one that is less efficient. Label them please.