**1.**

**[2/2 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.1.P.001.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

How much work does a supermarket checkout attendant do on a can of soup he pushes 0.860 m horizontally with a force of 4.20 N? Express your answer in joules and kilocalories. (For each answer, enter a number.)

work in joules3.61  J

work in kilocalories0.000863  kcal

†

**2.**

**[1/1 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.1.P.006.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

How much work (in J) is done by the boy pulling his sister 36 m in a wagon as shown in the figure below?

A picture containing diagram

Description automatically generated

A boy pulling a wagon with a child sitting in the cart along a horizontal surface. The boy is shown pulling the handle of the wagon at an angle of 30° above the horizontal. Along the length of the handle, a diagonal arrow labeled **F** extends from the wagon to the boy. A horizontal arrow labeled *d* extends from the wagon to the boy.

Assume no friction acts on the wagon. (Assume *d* = 36 m and *F* = 53 N. Enter a number.)

*W* =1652.38  J

†

**3.**

**[2/2 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.1.P.004.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

Suppose a car travels 108 km at a speed of 35.0 m/s, and uses 1.80 gallons of gasoline. Only 30% of the gasoline goes into useful work by the force that keeps the car moving at constant speed despite friction. (The energy content of gasoline is 1.30 **✕** 108 J per gallon.)

(a)

What is the force (in N) exerted to keep the car moving at constant speed? (Enter a number.)  
650  N

(b)

If the required force is directly proportional to speed, how many gallons will be used to drive 108 km at a speed of 28.0 m/s? (Enter a number.)  
1.44  gallons

†

**4.**

**[1/1 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.2.P.015.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

Using energy considerations, calculate the average force (in N) a 67.0 kg sprinter exerts backward on the track to accelerate from 2.00 to 7.00 m/s in a distance of 25.0 m, if he encounters a headwind that exerts an average force of 30.0 N against him. (Enter a number.)  
90.3  N

†

**5.**

**[1/1 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.2.P.013.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

A car's bumper is designed to withstand a 6.12 km/h (1.7 m/s) collision with an immovable object without damage to the body of the car. The bumper cushions the shock by absorbing the force over a distance. Calculate the magnitude of the average force (in N) on a bumper that collapses 0.285 m while bringing a 890 kg car to rest from an initial speed of 1.7 m/s. (Enter a number.)  
4512.46  N

†

**6.**

**[2/2 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.3.P.017.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

(a)

How much gravitational potential energy (in J) (relative to the ground on which it is built) is stored in an Egyptian pyramid, given its mass is about 8 **✕** 109 kg and its center of mass is 35.0 m above the surrounding ground? (Enter a number.)  
2740000000000  J

(b)

What is the ratio of this energy to the daily food intake of a person (1.2 **✕** 107 J)? (Enter your answer as a ratio to the number 1. Enter a number.)  
228666.67  :1

†

**7.**

**[2/2 Points]**DETAILSPREVIOUS ANSWERS**OSCOLPHYS2016ACC 7.3.P.016.**

MY NOTES

ASK YOUR TEACHER

PRACTICE ANOTHER

**question**

A hydroelectric power facility converts the gravitational potential energy of water behind a dam to electric energy. (For each answer, enter a number.)

(a)

What is the gravitational potential energy (in J) relative to the generators of a lake of volume 52.0 km3 (mass = 5.20 **✕** 1013 kg), given that the lake has an average height of 39.0 m above the generators?  
19900000000000000  J

(b)

Compare this with the energy stored in a 9-megaton fusion bomb.

*E*lake/*E*bomb = 0.52