

Note: Answer statistics on this page are updated periodically. Statistics were last updated October 9, 2021 at 3:28 am.

Description: A rock is released from rest at the surface of a pond 1.8 m deep. As the rock falls, a constant upward force of F is exerted on it by water resistance. Let $y = 0$ be at the bottom of the pond. (a) Calculate the nonconservative work, W_{nc} , done by...

A 1.9 kg rock is released from rest at the surface of a pond 1.8 m deep. As the rock falls, a constant upward force of 4.2 N is exerted on it by water resistance. Let $y = 0$ be at the bottom of the pond.

Part A

Grant Full Credit

Calculate the nonconservative work, W_{nc} , done by water resistance on the rock when the depth of the rock below the water's surface is 0 m.

Express your answers using two significant figures.

ANSWER:

$$W_{nc} = -Fd$$

d : PROFONDEUR MESURÉE DEPUIS LA SURFACE DE L'EAU

$$W_{nc} = 0 \text{ J}$$

$$\text{CAL } d = 0 \text{ m}$$

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	2099	88.9%	2.4%	8.7%	1
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part B

Grant Full Credit

Calculate the gravitational potential energy of the system, U , when the depth of the rock below the water's surface is 0 m.

Express your answers using two significant figures.

ANSWER:

$$U_g = mgy$$

y : HAUTEUR DE L'OBJET MESURÉE DEPUIS LE FOND DE L'ÉTANG.

$$U = m \cdot 9.81 \cdot 1.8 = 34 \text{ J}$$

$$y = 1.8 \text{ m}$$

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	2062	91.3%	1.1%	7.6%	0.5
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part C

Grant Full Credit

Calculate the kinetic energy of the rock, K , when the depth of the rock below the water's surface is 0 m.

Express your answers using two significant figures.

ANSWER:

$$\Delta E = K_f + U_f - (K_i + U_i) = W_{nc} \text{ DONNE}$$

$$K_f = W_{nc} + K_i - (U_f - U_i)$$

$$K = 0 \text{ J}$$

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	2072	92.4%	1%	6.6%	0.3
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part D

Grant Full Credit

Calculate the total mechanical energy of the system, E , when the depth of the rock below the water's surface is 0 m.

Express your answers using two significant figures.

ANSWER:

$$E = K + U_g$$

(PAS DE W_{nc} , QUI N'APPARTIEN PAS
DANS $\Delta E = W_{nc}$, UTILISÉE EN C)

$$E = m \cdot 9.81 \cdot 1.8 = 34 \text{ J}$$

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	2031	92.4%	0.5%	7.1%	0.2
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part E

Grant Full Credit

Calculate the nonconservative work, W_{nc} , done by water resistance on the rock when the depth of the rock below the water's surface is 0.50 m.

Express your answers using two significant figures.

ANSWER:

$$W_{nc} = -F \cdot 0.50 = -2.1 \text{ J}$$

comme A

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	2003	87.3%	2.7%	10%	1
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part F

Grant Full Credit

Calculate the gravitational potential energy of the system, U , when the depth of the rock below the water's surface is 0.50 m.

Express your answers using two significant figures.

ANSWER:

$$U = m \cdot 9.81 \cdot 1.3 = 24.2 \text{ J}$$

comme B

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1985	89.1%	1.4%	9.5%	0.6
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part G

Grant Full Credit

Calculate the kinetic energy of the rock, K , when the depth of the rock below the water's surface is 0.50 m.

Express your answers using two significant figures.

ANSWER:

$$K = m \cdot 9.81 \cdot 1.8 - F \cdot 0.50 - m \cdot 9.81 \cdot 1.3 = 7.2 \text{ J}$$

comme C

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1883	69.5%	8.8%	21.7%	1.9

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
This Course (demontigny40085)		(no data)			

[Wrong Answers for This Course \(demontigny40085\)](#)

% Wrong	Answer	Response
(no data)		

Part H

Grant Full Credit

Calculate the total mechanical energy of the system, E , when the depth of the rock below the water's surface is 0.50 m.

Express your answers using two significant figures.

ANSWER:

$$E = m \cdot 9.81 \cdot 1.8 - F \cdot 0.50 = 31 \text{ J}$$

COMME D

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1875	82.5%	2.6%	14.9%	0.9
This Course (demontigny40085)		(no data)			

[Wrong Answers for This Course \(demontigny40085\)](#)

% Wrong	Answer	Response
(no data)		

Part I

Grant Full Credit

Calculate the nonconservative work, W_{nc} , done by water resistance on the rock when the depth of the rock below the water's surface is 1.0 m.

Express your answers using two significant figures.

ANSWER:

$$W_{nc} = -F \cdot 1.0 = -4.2 \text{ J}$$

voix A

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1909	86.4%	1.3%	12.3%	0.6
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part J

Grant Full Credit

Calculate the gravitational potential energy of the system, U , when the depth of the rock below the water's surface is 1.0 m.

Express your answers using two significant figures.

ANSWER:

$$U = m \cdot 9.81 \cdot 0.8 = 15 \text{ J}$$

voix B

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1889	87.1%	1.1%	11.8%	0.4
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part K

Grant Full Credit

Calculate the kinetic energy of the rock, K , when the depth of the rock below the water's surface is 1.0 m.

Express your answers using two significant figures.

ANSWER:

$$K = m \cdot 9.81 \cdot 1.8 - F \cdot 1.0 - m \cdot 9.81 \cdot 0.8 = 14 \text{ J}$$

Voilà C

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1835	75.6%	4.3%	20.2%	1.1
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		

Part L

Grant Full Credit

Calculate the total mechanical energy of the system, E , when the depth of the rock below the water's surface is 1.0 m.

Express your answers using two significant figures.

ANSWER:

$$E = m \cdot 9.81 \cdot 1.8 - F \cdot 1.0 = 29 \text{ J}$$

Voilà D

Answer Stats:	Students	% Correct	% Unfinished	% Req'd Solution	Wrong/stude
System Average	1832	82%	2.5%	15.6%	0.7
This Course (demontigny40085)	(no data)				

Wrong Answers for This Course (demontigny40085)

% Wrong	Answer	Response
(no data)		