PHYSICS · HAWAII

Physics
Practice Test

Unit 2: Work, Energy, and Momentum

25 Questions

Original practice test based on the Hawaii curriculum. Work through each question, then check your answers at the end.

This practice test was made by AI and there may be mistakes. If a question or answer looks wrong, use the Flag a mistake button to let Brett know so he can fix it.

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Question 1

A force of 20 N pushes a crate 5 m in the direction of the force. The work done is

A) 4 J

B) 100 J

C) 25 J

D) 0.25 J

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Question 2

A 4 kg object moves at 3 m/s. Its kinetic energy is

A) 36 J

B) 12 J

C) 6 J

D) 18 J

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Question 3

Use $g = 10\ \text{m/s}^2$. A 2 kg object is 6 m above the ground. Its gravitational potential energy is

A) 12 J

B) 120 J

C) 30 J

D) 60 J

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Question 4

A spring with spring constant 50 N/m is stretched 0.4 m. Its elastic potential energy is

A) 20 J

B) 10 J

C) 4 J

D) 8 J

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Question 5

A small electric motor does 200 J of work in 10 s. Its power is

A) 20 W

B) 2000 W

C) 0.05 W

D) 210 W

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Question 6

A 5 kg object moves at 4 m/s. Its momentum is

A) 9 kg m/s

B) 1.25 kg m/s

C) 80 kg m/s

D) 20 kg m/s

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Question 7

A force of 30 N acts for 2 s. The impulse delivered is

A) 15 N s

B) 32 N s

C) 0.067 N s

D) 60 N s

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Question 8

In a closed system with no outside forces, the total momentum before a collision compared with after is

A) always larger

B) always smaller

C) the same

D) zero

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Question 9

Work is zero when the force is applied

A) in the direction of motion

B) opposite the motion

C) perpendicular to the motion

D) for a long time

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Question 10

If the speed of a race car doubles, its kinetic energy

A) doubles

B) quadruples

C) halves

D) stays the same

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Question 11

A 3 kg object moving at 4 m/s collides and sticks to a stationary 3 kg object. Their common speed is

A) 4 m/s

B) 8 m/s

C) 2 m/s

D) 12 m/s

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Question 12

A force of 10 N moves an object 8 m. The work done, in joules, is ____

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Question 13

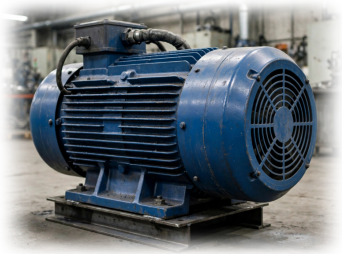
A 2 kg object moves at 5 m/s. Its kinetic energy, in joules, is ____

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Question 14

Use $g = 10\ \text{m/s}^2$. A 5 kg object is 4 m above the ground. Its gravitational potential energy, in joules, is ____

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Question 15

A large industrial electric motor does 600 J of work in 20 s. Its power, in watts, is ____

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Question 16

An object of mass 6 kg moves at 3 m/s. Its momentum, in kilogram meters per second, is ____

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Question 17

The work energy theorem says the net work on an object equals its change in

A) potential energy

B) momentum

C) kinetic energy

D) power

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Question 18

In an elastic collision, both momentum and total

A) mass are conserved

B) kinetic energy are conserved

C) velocity are conserved

D) force are conserved

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Question 19

Use $g = 10\ \text{m/s}^2$. An object dropped from 20 m reaches the ground with speed

A) 10 m/s

B) 20 m/s

C) 40 m/s

D) 200 m/s

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Question 20

A metal coil spring with spring constant 100 N/m is compressed 0.2 m. The spring force is

A) 500 N

B) 20 N

C) 0.002 N

D) 50 N

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Question 21

An impulse changes an object

A) mass

B) weight

C) momentum

D) volume

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Question 22

Two objects of equal mass m move toward each other at 3 m/s and 3 m/s. The total momentum is

A) $6m$

B) 0

C) $3m$

D) $9m$

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Question 23

If friction does negative work on a sliding object, its kinetic energy

A) increases

B) decreases

C) stays the same

D) becomes zero at once

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Question 24

A 4 kg object at rest is pushed by a 12 N force for 3 s. Its final momentum, in kilogram meters per second, is ____

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Question 25

A red rubber ball of mass 0.5 kg moves at 8 m/s. Its kinetic energy, in joules, is ____

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ANSWER KEY

1. B
2. D
3. B
4. C
5. A
6. D
7. D
8. C
9. C
10. B
11. C
12. 80
13. 25
14. 200
15. 30
16. 18
17. C
18. B
19. B
20. B
21. C
22. B
23. B
24. 36
25. 16

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