PHYSICS · CALIFORNIA

Physics
Practice Test

Unit 2: Work, Energy, and Momentum

25 Questions

Original practice test based on the California 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 40 N force pushes a wooden crate 5 m in the direction of the force. The work done is

A) 200 J

B) 8 J

C) 35 J

D) 45 J

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Question 2

A 2 kg object moves at 6 m/s. Its kinetic energy is

A) 72 J

B) 36 J

C) 18 J

D) 12 J

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Question 3

Use $g = 10\ \text{m/s}^2$. A 5 kg object at height 8 m has gravitational potential energy

A) 40 J

B) 13 J

C) 200 J

D) 400 J

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Question 4

A machine does 300 J of work in 10 s. Its power is

A) 3000 W

B) 310 W

C) 30 W

D) 3 W

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Question 5

A 4 kg red rubber ball moves at 3 m/s. Its momentum is

A) 7 kg m/s

B) 12 kg m/s

C) 1.33 kg m/s

D) 36 kg m/s

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Question 6

A force of 50 N acts for 4 s. The impulse is

A) 12.5 N s

B) 46 N s

C) 54 N s

D) 200 N s

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Question 7

A spring with $k = 100$ N/m is stretched 0.2 m. Its elastic potential energy is

A) 0.2 J

B) 20 J

C) 2 J

D) 10 J

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Question 8

In an isolated collision, total momentum is

A) zero

B) always lost

C) conserved

D) always doubled

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Question 9

A 2 kg cart at 4 m/s hits a stationary 2 kg cart and they stick together. Their speed is

A) 2 m/s

B) 4 m/s

C) 1 m/s

D) 8 m/s

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Question 10

Work done by a force perpendicular to motion is

A) negative

B) zero

C) maximum

D) equal to the force

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Question 11

An object drops from height 20 m. Use $g = 10\ \text{m/s}^2$. Its speed just before hitting the ground is

A) 20 m/s

B) 200 m/s

C) 10 m/s

D) 40 m/s

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Question 12

A 60 kg person climbs 5 m. Use $g = 10\ \text{m/s}^2$. The work against gravity is

A) 3000 J

B) 65 J

C) 300 J

D) 12 J

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Question 13

Doubling speed changes kinetic energy by a factor of

A) 1

B) 8

C) 2

D) 4

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Question 14

An engine does 600 J in 20 s. Its power is

A) 12000 W

B) 620 W

C) 30 W

D) 3 W

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Question 15

A 10 kg red wagon cart moves at 2 m/s and has momentum 20 kg m/s. If it slows to rest, the impulse needed is

A) 20 N s

B) 10 N s

C) 2 N s

D) 40 N s

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Question 16

In an elastic collision, both momentum and kinetic energy are

A) doubled

B) lost

C) conserved

D) zero

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Question 17

A 3 kg object moving east at 4 m/s collides with a 3 kg object moving west at 4 m/s. Total momentum is

A) 12 kg m/s

B) 0 kg m/s

C) 6 kg m/s

D) 24 kg m/s

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Question 18

A force of 25 N moves an object 8 m. The work, in joules, is ____

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Question 19

A 5 kg bowling ball moves at 4 m/s. Its kinetic energy, in joules, is ____

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Question 20

A 2 kg object at height 10 m has potential energy, using $g = 10\ \text{m/s}^2$, in joules, of ____

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Question 21

A motor does 500 J in 25 s. Its power, in watts, is ____

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Question 22

A 6 kg object moves at 5 m/s. Its momentum, in kilogram meters per second, is ____

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Question 23

A 30 N force acts for 6 s. The impulse, in newton seconds, is ____

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Question 24

Increasing the time of an impact while keeping impulse fixed decreases the average

A) mass

B) energy

C) force

D) speed change

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Question 25

The work energy theorem says net work equals the change in

A) momentum

B) power

C) kinetic energy

D) potential energy only

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ANSWER KEY

1. A
2. B
3. D
4. C
5. B
6. D
7. C
8. C
9. A
10. B
11. A
12. A
13. D
14. C
15. A
16. C
17. B
18. 200
19. 40
20. 200
21. 20
22. 30
23. 180
24. C
25. C

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