JRA Tutors
Free level-check quiz

GCSE Physics Quiz: Higher

20 questions · about 35 minutes · calculator allowed

How to use this quiz

1. Try it on your own, without help. You can use a calculator, and the equations are given. Each question is worth 1 mark.

2. Mark yourself using the answer page at the end. Don't peek until you've finished.

3. Send us your score (instructions on the answer page) and we'll tell you what to work on next.

Name: _____ Date: _____ Score: _____ / 20

Equations you can use

$F = m \times a$ | $KE = \frac{1}{2} \times m \times v^2$ | $GPE = m \times g \times h$ ($g = 9.8$ N/kg) | $p = m \times v$ | $\Delta E = m \times c \times \Delta\theta$ | $E = P \times t$ | $P = I^2 \times R$ | $Q = I \times t$ | $v^2 - u^2 = 2 \times a \times s$ | moment = force × distance | pressure = force ÷ area | wave speed = f × wavelength | efficiency = useful output ÷ total input

1. A car of mass 1200 kg accelerates at 2.5 m/s^2. Work out the resultant force.

Answer: _____

2. A ball of mass 0.5 kg moves at 12 m/s. Work out its kinetic energy.

Answer: _____

3. A car of mass 800 kg travels at 15 m/s. Work out its momentum.

Answer: _____

4. Work out the energy needed to heat 2 kg of water by 15 °C. (Specific heat capacity of water = 4200 J/kg °C)

Answer: _____

5. A kettle has a power of 2.4 kW. Work out the energy it transfers in 3 minutes.

Answer: _____

6. A current of 3 A flows through a 4 Ω resistor. Work out the power.

Answer: _____

7. A current of 0.8 A flows for 2 minutes. Work out the charge that flows.

Answer: _____

8. A car speeds up from 8 m/s to 20 m/s over a distance of 84 m. Work out its acceleration.

Answer: _____

9. A force of 30 N acts at a perpendicular distance of 0.4 m from a pivot. Work out the moment.

Answer: _____

10. A force of 600 N acts on an area of 0.03 m^2. Work out the pressure.

Answer: _____

11. Give one reason why electricity is transmitted through the National Grid at a high voltage.

Answer: _____

12. A sound wave travels at 340 m/s and has a wavelength of 0.85 m. Work out its frequency.

Answer: _____

13. A sample has an activity of 640 Bq. After 12 hours it is 80 Bq. Work out the half-life.

Answer: _____

14. A nucleus of uranium-238 (atomic number 92) emits an alpha particle. What is the mass number of the new nucleus?

Answer: _____

15. What is the resultant force on a skydiver falling at terminal velocity?

Answer: _____

16. The gravitational field strength on the Moon is 1.6 N/kg. Work out the weight of a 3 kg object there.

Answer: _____

17. A 0.2 kg ball is dropped from a height of 5 m. Ignoring air resistance, work out its speed just before it hits the ground. Give your answer to 1 decimal place.

Answer: _____

18. A motor takes in 800 J of energy, and 160 J is wasted. Work out its efficiency as a percentage.

Answer: _____

19. Which has the highest frequency?

A Radio waves
B Microwaves
C X-rays
D Gamma rays

20. Give one way to increase the force on a current-carrying wire in a magnetic field.

Answer: _____

Answers and score guide

Mark your quiz with a tick or a cross. Each correct answer is 1 mark.

1	3000 N	**11**	Lower current, so less energy lost as heat
2	36 J	**12**	400 Hz
3	12 000 kg m/s	**13**	4 hours
4	126 000 J	**14**	234
5	432 000 J	**15**	Zero
6	36 W	**16**	4.8 N
7	96 C	**17**	9.9 m/s
8	2 m/s^2	**18**	80%
9	12 N m	**19**	D Gamma rays
10	20 000 Pa	**20**	Increase the current OR use a stronger magnet

Question 11: any answer that mentions lower current or less energy wasted as heat. Question 20: either way is correct.

What your score suggests

0–7 — **Revisit the core**
Several Higher ideas need work, and some Foundation skills may too. Try the Foundation quiz alongside this one to find the gaps.

8–13 — **Developing**
A good base for grades 5 and 6. Practise rearranging equations and multi-step calculations.

14–17 — **Strong**
Secure for grades 6 and 7. Targeted work on forces, energy and electricity will push towards 8 and 9.

18–20 — **Excellent**
Working towards grades 8 and 9. The focus now is accuracy, unit conversions and extended explanations.

Send us your score

Go to **jratutors.co.uk**, tap **Sign up**, choose **GCSE Physics — Higher** and type your score in the message box (for example: "Scored 14/20"). If you remember which questions you missed, add those too. We'll reply within 24 hours with what to work on next.

This quiz was written by JRA Tutors for practice. It is a guide to your level, not an official assessment. A free 15-minute diagnostic call gives a fuller picture.