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PUBLISHING

BrightRED Revision Cards

HIGHER
PHYSICS



BRIGHT RED REVISION CARDS

These revision cards are packed full of great Higher Physics questions, diagrams, illustrations, answers and tips to help you to actively test your knowledge and ramp up your revision.

Each card covers a course topic which offers a mixture of multiple-choice and exam-style questions. Answers and explanations with key pointers are on the reverse.

27 UNIT 2: PARTICLES AND WAVES

QUESTIONS

1 Which of the following is **not** a force-mediated particle?

- a Electron
- b W boson
- c Gluon
- d Photon

2 Which force-carrying particle is associated with the electromagnetic force?

- a Quark
- b W boson
- c Gluon
- d Photon

3 a Name the particle associated with the strong force.
b Name the particles associated with the weak force.

27 UNIT 2: PARTICLES AND WAVES

ANSWERS

1 **d**
REMEMBER! An electron is a matter particle.

2 **d**
REMEMBER! The electromagnetic spectrum is composed of photons of different wavelengths.

3 **a** Gluon is the force-carrying particle associated with the strong force.
REMEMBER! This is a tiny piece of knowledge which is essential (RAT) plus is a (long answer).
b W boson and Z boson are the force-carrying particles associated with the weak force.

- All key course topics covered in order
- Multiple-choice questions to get things going
- Exam-style questions to follow up
- Answers with short explanations
- **REMEMBER!** tips to shine a light on any harder concepts or questions

HOW TO USE

You can test yourself alone or with friends and should do so at spaced intervals when you feel confident about the topics you have studied. You can use the cards in any order to vary your approach and can shuffle the pack to mix things up a little bit!

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QUESTIONS

- 1** A golf ball is hit off the tee with a speed V and an angle of θ to the horizontal.

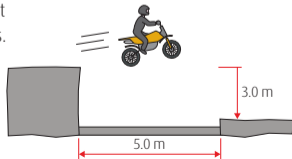
At the ball's maximum height, which row in the table shows the correct information.

- 2** A javelin is thrown at 60° to the horizontal with a speed of 20 ms^{-1} . The javelin is in flight for 3.5 s. Air resistance is negligible.



- a** Calculate the maximum height reached by the javelin.
- b** Calculate the time taken to reach the maximum height
- c** Calculate the horizontal distance travelled after it lands.
- 3** A stuntman on a motorcycle jumps a river which is 5.0 m wide. He lands on the edge of the far bank, which is 3.0 m lower than the bank from which he takes off. Calculate the minimum horizontal speed at take-off to successfully clear the river.

	Vertical acceleration	Vertical velocity	Horizontal velocity
A	g	0	$V \sin \theta$
B	0	$V \cos \theta$	$V \sin \theta$
C	0	0	$V \cos \theta$
D	0	$V \cos \theta$	0
E	g	0	$V \cos \theta$



ANSWERS

1 E g is always 9.8 ms^{-2}

2 $V \cos 60 = 20 \cos 60 = 10 \text{ ms}^{-1}$ $V \sin 60 = 20 \sin 60 = 17.3 \text{ ms}^{-1}$

a $v^2 = u^2 + 2as$

$$0 = 17.3^2 + 2(-9.8) s$$

$$s = 15.3 \text{ m}$$

b time to reach maximum height = $\frac{3.5}{2} = 1.75 \text{ s}$

c horizontal distance = $v_H \times t = 10 \times 3.5 = 35 \text{ m}$

3 Calculate the time to fall 3m vertically.

$$s = ut + \frac{1}{2}at^2 = 0 + \frac{1}{2}(9.8)t^2 \quad t = 0.78 \text{ s}$$

Rider must travel 5 m horizontally in 0.78 s or less.

$$\text{minimum speed} = \frac{d}{t} = \frac{5}{0.78} = 6.4 \text{ ms}^{-1}$$