Grade 12

School-without-Walls Package 11 (7 June to 11 June 2021)

Homework_Day 1 (7 June 2021)

Subject	Click on the Youtube Links	Things to Note
English	Refer to the notes on Unit 7: Focus on Writing and Speaking Skills (Given to you) Complete Section C Skills - Questions 1 and 2 in the worksheet given. **C Skills** **1 There is a programme on television called *Dirty Jobs*.** **a** What do you think the programme is about? _____ **b** List **three** dirty jobs that you would not like to do. _____ _____ _____ **2 Skim the text *Dirty Jobs* and find words that have similar meanings to the words and phrases below.** **a** presenter (paragraph 1) _____ **b** a result of (4) _____ **c** jobs (1) _____ **d** very visual (4) _____ **e** with (1) _____ **f** received large numbers of (4) _____ **g** test (1) _____ **h** paid for (4) _____ **i** combination (2) _____ **j** idea (4) _____ **k** humour (2) _____ **l** credit (4) _____ **m** dangers (3) _____	
Mathematics	Solving Cubic Equations	Do the following questions within 45 minutes Exercise 1E # 3a, 3b, 4a, 4b,
Chemistry	13.12 Calculating Entropy Changes View Calculation entropy changes https://youtu.be/XMtnseGcnVc	**Copy page 4 of the notes**

Physics	Check your answers to Chapter 11 Review Questions 1 to 9 and do your corrections in your science exercise book.

1. What is linear momentum? How does it differ from any other kind of momentum?

   The linear momentum of a system is the product of the system's mass and linear velocity. It differs from angular momentum, a characteristic of a rotating system that depends on its mass distribution relative to the rotational axis and its rotational speed. (§11.2)

2. How do you determine the direction of the linear momentum vector?

   The direction of the linear momentum vector is the same as its linear velocity. (§11.2)

3. What is the momentum of a 10 000 kg truck at rest?

   The momentum of any system at rest within its reference frame is zero. (§11.2)

4. Define *impulse*. For a constant net external force on a system, what determines the magnitude of the force's impulse?

   Impulse is the product of an unbalanced external force on a system and the time interval in which the force acts. The magnitude of the impulse of a constant force is determined by the total time that the force is applied. (§11.4)

5. How does a gymnast reduce or eliminate the injury from a fall by using the principle of impulse?

   A gymnast will try to lessen the impact of a dismount or fall by extending the length of time over which a collision force occurs. He lands by flexing his legs or arms, or by converting downward motion into a rolling motion. (§11.4)

6. At the instant it is struck, a baseball has the following forces acting on it: the bat's impact, the earth's gravitational force, the sun's gravitational force, atmospheric drag, and the pseudo-force due to the Coriolis effect. Which of these forces could be considered an impulsive force?

   The impulsive force at the moment that the ball is struck is the force of the bat. Later in the flight of the ball, other forces become significant. (§11.4)

7. State the law of conservation of momentum.

   The momentum of a system consisting of one or more objects is constant unless acted upon by an external net force. (§11.5)

8. What basic condition must exist for a system's momentum to remain unchanged?

   For a system's momentum to remain unchanged, no external forces may act on it. (§11.5)

9. Why is momentum *not* conserved when a rock is dropped?

   A rock falls because it has an unbalanced external force (gravity) acting upon it. Therefore, its momentum increases. (§11.5)

Portuguese	**Conteúdo:** VOZ PASSIVA DE ESTADO **Objetivo:** Estudantes pode ser: Formar o verbo estar e particípio passado para falar o resultado da acção. - Voz passiva de estado | Português On-line. https://youtu.be/jKdd4VI_NvE - Click on **Voz passivo de estado** to read the worksheet.  SWW Package 11 - Port - Voz passiva de	Prova - Clique (click) no link abaixo e responda as perguntas. Não se esqueça de enviar! https://forms.gle/dBX7WEAiWpgSxLKh8 Não esqueça! Copia de exercício PDF no seu caderno Português!

Homework_Day 2 (8 June 2021)

Subject	Click on the Youtube Links	Things to Note
English	**Readworks.org** **Click → www.readworks.org/student** 1. **E**nter class code **55QG3L** 2. Click on YOUR NAME. 3. The default password is **1234.** Read the story "**Time for Jazz**". Build up your vocabulary, answer the questions and submit. If you score less than 3 out of 5, you will have to redo the questions. Write down the meaning of the following words found in the passage in your English Exercise book • Rhythm • Uplifting • Improvise / Improvising	
Physics	Check your answers to Chapter 11 Review Questions 10 to 14 and do your corrections in your science exercise book. 10. A wad of soft clay is thrown against a wall and sticks in place. Is the clay's momentum conserved? Explain your answer. **Assuming that the wad of clay is the system, momentum is not conserved because an external force (exerted by the wall) acted on it to stop its motion. (§11.5)**	

	11. For a given rocket engine at a fixed throttle setting, the force exerted by the engine is constant. Which rocket will achieve the higher final velocity with the same thrust setting—a rocket with a large propellant-to-payload ratio or one with a small ratio? A rocket with a higher propellant-to-payload ratio will have a higher final velocity because it will be able to exert thrust over a longer period of time (larger impulse) than it could with a smaller propellant-to-payload ratio. (§11.6) 12. Which of the following are elastic collisions? a. A piece of clay collides with a baseball and sticks to it. b. A golf ball strikes an identical resting golf ball, which moves away with the original ball's speed while the original ball stops. c. A polystyrene block strikes a table edge and bounces off, squashed. d. A bullet strikes and lodges in a ballistic pendulum. e. A steel ball bearing dropped on a steel plate rebounds with the same speed it had before the impact. Choices b and e (§11.9) 13. Which of the following is *not* conserved in an inelastic collision? a. kinetic energy c. mass b. momentum d. total mechanical energy Choices a (kinetic energy) and d (total mechanical energy) (§11.10) 14. Under which situation will a moving object (m_1) completely transfer its mechanical energy to a stationary object (m_2) during a one-dimensional collision? a. $m_1 << m_2$ c. $m_1 >> m_2$ b. $m_1 = m_2$ d. m_1 sticks to m_2 Choice b, ($m_1 = m_2$) (§11.9)	
Portuguese	10 expressões com verbo DAR (to give) https://www.youtube.com/watch?v=Tg-De5Ik8pA	Copia 5 expressões com verbo dar (to give) em português e Inglês no seu caderno Português.
Special	**Primers Zoom Session #1 with 60th BB Company Primers In Singapore** **Time: 4pm to 5.30pm**	

Homework_Day 3 (9 June 2021)

Subject	Click on the Youtube Links	Things to Note
English	**Zoom Lesson (2pm to 4pm)** Get your Unit 7: Focus on Writing and Speaking Skills worksheet ready for the lesson.	
Mathematics	**Zoom Lesson from 2pm to 4pm** Going through a. Solving Cubic Equations (Ex 1E)	
Chemistry	**Zoom Lesson from 2pm to 4pm** Review Homework	
Physics	**Zoom Lesson (2pm to 4pm)**	
Portuguese	20 palavras em português para a vida cotidiana - Vocabulário básico. https://www.youtube.com/watch?v=TxTrCW6xc34	Copia 10 palavras com 10 frases em português e Inglês no seu caderno Português!

Homework_Day 4 (10 June 2021)

Subject	Click on the Youtube Links	Things to Note
English	**Article-a-Day Week → Korean Art** **How to get to your Article for Day 4** **Click →** www.readworks.org/student 1. **E**nter class code **55QG3L** 2. Click on YOUR NAME. 3. The default password is **1234.** 4. Look for **Korean Art.** 5. Click on one article to read and complete your book of knowledge. **Read an article a day to find out more about Korean Art. After reading each article, type in the BOOK of KNOWLEDGE (minimum of 50 words) what new knowledge you have gained from the reading the article.** In your English exercise book, write the meaning of the words in blue found in the article (If any)	
Mathematics	Solving Cubic Equations	Do the following questions within 45 minutes Exercise 1E # 3c, 3d, 4c, 4d,
Chemistry	13.13 Free-Energy Change View Gibbs Energy https://youtu.be/huKBuShAa1w	**Copy page 5 of the notes**
Physics	20. A motorcyclist collides with a bumble bee (*Bombus griseocollis*) squarely in the middle of his helmet visor while driving 113 km/h (around 70 mi/h). Assuming the collision is elastic (*not* a good assumption), which receives the larger impulse? a. the motorcyclist b. the bumble bee c. neither—the impulses are equal **Choice c. According to Newton's third law, both the motorcyclist and the bee experience the same magnitude of force for the same amount of time, so both receive the same impulse. Their momenta after the collision will be significantly different, however. (§11.4)**	

22. For a given speed of rotation, which property of the rotating system is more significant to its angular momentum: the mass of the system or the way the mass is distributed around the rotating axis? Explain.

The way the system's mass is arranged around the rotational axis (and specifically, the distance of the mass from the axis) is the most influential property that contributes to angular momentum. Angular momentum is proportional to the square of the distance of a revolving particle's center of mass from the axis, while it is only directly proportional to its mass. (§11.15)

True or False (23–32)

23. The object with the greatest velocity always has the greatest momentum.

False. (§11.2) Momentum is proportional to both velocity and mass. A massive object moving slowly can have more momentum than a low-mass object moving quickly.

24. Under normal circumstances, the momentum of an object changes because its velocity changes.

True. (§11.2)

25. Any unbalanced external force changes an object's momentum.

True. (§11.3)

26. A car that maintains a constant speed around a corner has constant momentum.

False. (§11.3) Any change in the velocity vector's magnitude or direction will also change the momentum vector.

27. Gravity cannot be an impulse because it does not act suddenly like an explosive force or a baseball bat striking a ball.

False (§11.4). Gravity has an impulse on falling objects because it is a significant unbalanced external force. However, gravity does not exert an impulse on an object at rest on a surface because the external forces (the gravitational and normal forces) are balanced.

28. An inelastic collision is a collision in which momentum is not conserved.

False. (§§11.8, 11.10) Momentum is conserved even in inelastic collisions. However, kinetic energy is not conserved.

29. Most collisions are partially elastic as long as no external forces act on the system of colliding objects.

True. (§11.8)

30. Ideally, the motion of the center of mass of an object is not affected if the object explodes.

True. (§11.14)

31. Object 1 collides elastically with stationary object 2. Both move off in the same direction. From this scenario, you can conclude that object 1 had more mass than object 2.

True. (§11.9)

32. The angular momentum vector points in the same direction as the motion of the rotating object.

False. (§11.15) The angular momentum vector is perpendicular to the plane of rotation, and its direction is found using the right-hand rule for circular motion.

✪33. What is the momentum of a 0.50 kg kitten running with a velocity of 1.00 m/s to the left?

$p_{kitten} = mv$

$p_{kitten_x} = mv_x = (0.50\text{ kg})(-1.00\text{ m/s})$

$p_{kitten_x} = -0.50\text{ kg·m/s}$

$\mathbf{p_{kitten} = 0.50\text{ kg·m/s to the left}}$

Data:
$m = 0.50$ kg
$v = 1.00$ m/s left

✪34. Compare the momentum of a 1500. kg car traveling at 20. km/h north with the momentum of a 900. kg car traveling at 40. km/h north.

$$p_1 = \frac{1500.\text{ kg} \mid 20.\ \cancel{\text{km}} \mid 1000\text{ m} \mid 1\ \cancel{\text{h}}}{\cancel{\text{h}} \mid 1\ \cancel{\text{km}} \mid 3600\text{ s}}$$

$p_1 \cong 8330\text{ kg·m/s}$

$\mathbf{p_1 \cong 8330\text{ kg·m/s} (\cong 8300\text{ kg·m/s}) \text{ north}}$

$$p_2 = \frac{900.\text{ kg} \mid 40.\ \cancel{\text{km}} \mid 1000\text{ m} \mid 1\ \cancel{\text{h}}}{\cancel{\text{h}} \mid 1\ \cancel{\text{km}} \mid 3600\text{ s}}$$

$\mathbf{p_2 = 1.0 \times 10^4\text{ kg·m/s north.}}$

The lighter, faster car has about 20% more momentum than the slower, heavier car.

Data:
$m_1 = 1500.$ kg
$v_1 = 20.$ km/h north
$m_2 = 900.$ kg
$v_2 = 40.$ km/h north

Portuguese	Qiuz sobre capitais de Países https://www.youtube.com/watch?v=E2sKyeGLZTM	Quiz - Clique (click) no link abaixo e responda as perguntas. Não se esqueça de enviar! https://forms.gle/xLJQwVCV4rQsnqQL8

Homework_Day 5 (11 June 2021)

Subject	Click on the Youtube Links	Things to Note
Special	**Primers Zoom Session #2 with 60th BB Company Primers In Singapore** **Time: 9.30am to 11am**	
Portuguese	Learn portuguese vocabulary Vol 1 https://www.youtube.com/watch?v=WSdEhOEJ9Oc	Copia 10 palavras com 10 frases em português e Inglês no seu caderno Português!