Grade 11

School-without-Walls Package 8 (10 May to 14 May 2021)

Homework_Day 1   (10 May 2021)

Subject	Click on the Youtube Links	Things to Note
English	Use Google to find the definition of the following words from your Readworks Comprehension "The Age of Exploration" and write them in your English notebook. - explore - navigate - efficient - device - unknown	Complete the sentence formation worksheet in the google form link provided. https://forms.gle/NQxV2E3vqQBJt3hG9
Mathematics	Answer to Exercise 3C Questions 10 – 14 10. (i) a pm $= 70 \times 10^{-12}$ m $\qquad = 7 \times 10^{-11}$ m (ii) b nm $= 0.074 \times 10^{-9}$ m $\qquad = 7.4 \times 10^{-1}$ m (iii) $a : b = 7.0 \times 10^{-11} : 7.4 \times 10^{-11}$ $\qquad = 35 : 37$ 11. c Mm $= 1500 \times 10^{6}$ m $\qquad = 1.5 \times 10^{9}$ m d Tm $= 5.91 \times 10^{12}$ m $\dfrac{d}{c} \times 100\% = \dfrac{5.91 \times 10^{12}}{1.5 \times 10^{9}} \times 100\%$ $\qquad = 394\,000\%$ $\qquad = 3.94 \times 10^{5}\ \%$	

12. **(i)** 300 000 000 m/s = 3×10^8 m/s

(ii) 778.5 million km = 778.5×10^6 km

$$= 778.5 \times 10^6 \times 10^3 \text{ m}$$
$$= 7.785 \times 10^{11} \text{ m}$$

Time taken = $\dfrac{\text{Distance}}{\text{Speed}}$

$$= \frac{7.785 \times 10^{11}}{3 \times 10^8}$$
$$= 2595 \text{ seconds}$$
$$= 43 \text{ minutes } 15 \text{ seconds}$$

13. **(i)** Distance travelled by rocket in 4 days = 4.8×10^5 km

Distance travelled by rocket in 12 days = $\dfrac{4.8 \times 10^5}{4} \times 12$

$$= 1.44 \times 10^6 \text{ km}$$

(ii) Speed = $\dfrac{\text{Distance}}{\text{Time}}$

$$= \frac{4.8 \times 10^5}{4}$$
$$= 1.2 \times 10^5 \text{ km/day}$$

Time taken = $\dfrac{4.8 \times 10^7}{1.2 \times 10^5}$

$$= 400 \text{ days}$$

14. **(i)** Increase in population = $5.45 \times 10^8 - 4.20 \times 10^8$

$$= 1.25 \times 10^8$$

(ii) $\dfrac{1.17 \times 10^9}{5.45 \times 10^8} = 2.15$ (to 3 s.f.)

(iii) $\dfrac{1.23 \times 10^9}{7.28 \times 10^8} = 1.69$ (to 3 s.f.)

Physics	Check your answers to the previous week assignment and do the corrections.

5B Section Review

1. Is a remote-controlled gas-powered model airplane technically a projectile? Explain your answer.

   The model airplane is not a projectile in the strict sense defined in this chapter. The plane is continuously powered and is subject to forces other than gravity and air resistance at all times during its flight. (§5.5)

2. What kinematic quantities are assumed to be constant when analyzing horizontal projections?

   It is assumed that horizontal velocity and vertical acceleration remain constant during a horizontal projection. (§§5.6–5.8)

3. At the same instant that a pebble is dropped from a tree house platform, another is kicked horizontally off the platform.

   a. Which pebble has the higher total velocity?

   The pebble kicked horizontally will have the higher total velocity because the horizontal component adds to the vertical component that both pebbles have. (§§5.6–5.8)

   b. Which one will hit the ground first?

   Both pebbles will hit the ground at the same instant. (§§5.6–5.8)

   Activate

4. Given a fixed initial projectile speed, v_1, what factors can be changed in order to maximize projectile range?

   The object could be launched at an angle of 45°, and the height of launch position could be increased. (§§5.10, 5.12)

✪5. A marble resting near the edge of a 0.90 m high table is given an initial horizontal speed of 1.24 m/s. What will be its horizontal range from the table's edge when it strikes the floor?

   Assume that the table top is at $y = 0$ m.

   $$y_2 = y_1 + v_{1y}\Delta t + \tfrac{1}{2}\bar{a}\Delta t^2$$

   $$\Delta t = \sqrt{\frac{2y_2}{\bar{a}}} = \sqrt{\frac{2(-0.90\text{ m})}{-9.81\text{ m/s}^2}}$$

   $$\Delta t \cong 0.4\underline{2}8\text{ s}$$

   $$R = v_x\Delta t = (1.24\text{ m/s})(0.4\underline{2}8\text{ s})$$

   $$R \cong 0.5\underline{3}0\text{ m } (\cong 0.53\text{ m})$$

   Data:

   $y_2 = -0.90$ m
   $y_1 = 0$ m
   $v_x = 1.24$ m/s
   $v_{1y} = 0$ m/s
   $\bar{a} = g = -9.81$ m/s^2

✪ 6. US Air Force C-17 Globemaster III aircraft were used to airdrop food to Afghan refugees in the early stages of the war against the Taliban in 2001. Calculate how far ahead of the drop zone a pilot would have needed to drop humanitarian aid packages if the delivery occurred at a speed of Mach 0.74 (263 m/s) and an altitude of 10 000 feet (3048 m) to avoid enemy fire. Assume the packages were released from their containers immediately and neglect air resistance.

   The horizontal distance in front of the drop zone that a pilot needs to drop the packages is the range, R, or the magnitude of the packages' horizontal displacement, $|d_x|$.

Solve for the fall time:

$$y_2 = y_1 + v_{1y}\Delta t + \tfrac{1}{2} g_y(\Delta t)^2 \Rightarrow y_2 = \tfrac{1}{2} g_y(\Delta t)^2$$

$$\Delta t = \sqrt{\frac{2y_2}{g_y}}$$

$$\Delta t = \sqrt{\frac{2(-3048 \text{ m})}{-9.81 \text{ m/s}^2}}$$

$$\Delta t \cong 24.\underline{9}2 \text{ s}$$

Solve for range:

$$R = |d_x| = |v_x\Delta t| = |(263 \text{ m/s})(24.\underline{9}2 \text{ s})|$$

$$R \cong 65\underline{5}3 \text{ m } (\cong 6550 \text{ m, or } 4.07 \text{ mi})$$

Data:

$y_2 = -3{,}048$ m
$y_1 = 0$ m
$v_x = 263$ m/s
$\bar{a}_y = g = -9.81$ m/s^2

| Portuguese | **Conteúdo:** SUPERLATIVO.
Objetivo: Estudantes pode ser:

• Determina qualidade grau elevado em alguém ou alguma coisa entre outros.

- Superlativo (parte 1) \| Português On-line.
https://www.youtube.com/watch?v=8QPHaxM96ag

- Exercícios de superlativo (parte 2) \| Português On-line.
https://www.youtube.com/watch?v=7Rr1vZonJHQ

- Click on Superlativo to read the worksheet.

(PDF) Aula online 8
- Superlativo.pdf | 1) Complete as frases de acordo com o grau superlativo pedido:

- O superlativo relativo de superioridade
a) Ela é a rapariga _____ que eu conheci.(bonita)
b) O hoje é o dia _____ da minha vida.(feliz)

- O superlativo relativo de inferioridade.
a) O meu carro é _____ rápido de todos.
b) O Rui é _____ simpático do grupo.

- O superlativo absoluto sintético
a) O exame foi muito difícil. De facto foi _____ .
b) Ele está muito gordo. De facto está _____ .

- O superlativo absoluto analítico
a) Eles são todos _____ altos.
b) Aprender o nadar é _____ fácil.

- Click the Link to answer the questions of Superlativo.
https://forms.gle/pSUZMH128hgzSHsn8 |

Subject	Click on the Youtube Links	Things to Note
English	a) Complete activity 4-7 in your Writing and Grammar book.	
Mathematics	Answers to Exercise 4A Q1 to Q9	

Exercise 4A

1. (a) Gradient $= \dfrac{1-0}{-2-0}$

   $= -0.5$

   (b) Gradient $= \dfrac{7-(-3)}{1-2}$

   $= \dfrac{10}{-1}$

   $= -10$

   (c) Gradient $= \dfrac{8-4}{-5-(-2)}$

   $= \dfrac{4}{-5+2}$

   $= -\dfrac{1}{3}$

   (d) Gradient $= \dfrac{-8-7}{1-(-4)}$

   $= \dfrac{-15}{5}$

   $= -3$

   (e) Gradient $= \dfrac{6-(-5)}{2-(-2)}$

   $= \dfrac{3}{4}$

   (f) Gradient $= \dfrac{9-9}{6-(-7)}$

   $= \dfrac{0}{13}$

   $= 0$

2. Gradient of $AB = \dfrac{1-1}{7-0}$

   $= \dfrac{0}{7}$

   $= 0$

   Gradient of $AE = \dfrac{4-1}{6-0}$

   $= \dfrac{3}{6}$

   $= \dfrac{1}{2}$

   Gradient of $DC = \dfrac{0-5}{6-0}$

   $= -\dfrac{5}{6}$

   Gradient of $DE = \dfrac{4-5}{6-0}$

   $= -\dfrac{1}{6}$

3. Gradient of line $= \dfrac{3}{5}$

   $\dfrac{p-(-7)}{4-(-3)} = \dfrac{3}{5}$

   $\dfrac{p+7}{7} = \dfrac{3}{5}$

   $5(p+7) = 21$

   $5p + 35 = 21$

   $5p = -14$

   $p = -2\dfrac{4}{5}$

4. Gradient of $AB = 3$

$$\frac{-3 - 8}{k - 3k} = 3$$

$$\frac{-11}{-2k} = 3$$

$$-11 = -6k$$

$$k = 1\frac{5}{6}$$

5. Gradient $= \frac{2}{a}$

$$\frac{1 - a}{2a - 9} = \frac{2}{a}$$

$$a(1 - a) = 2(2a - 9)$$

$$a - a^2 = 4a - 18$$

$$a^2 + 3a - 18 = 0$$

$$(a + 6)(a - 3) = 0$$

$$a + 6 = 0 \quad \text{or} \quad a - 3 = 0$$

$$\therefore a = -6 \quad \text{or} \quad a = 3$$

8. Gradient of $PQ = \dfrac{2 - (-1)}{0 - (-1)}$

$$= \frac{3}{1}$$

$$= 3$$

Gradient of $PR = \dfrac{11 - (-1)}{3 - (-1)}$

$$= \frac{12}{4}$$

$$= 3$$

Since gradient of PQ = gradient of PR and Q is the common point, the points P, Q and R are collinear, i.e. they lie on a straight line.

6. Gradient of PQ = Gradient of PR

$$\frac{-9 - (-11)}{k - 6} = \frac{-3 - (-11)}{2k - 6}$$

$$\frac{2}{k - 6} = \frac{8}{2k - 6}$$

$$2(2k - 6) = 8(k - 6)$$

$$4k - 12 = 8k - 48$$

$$4k = 36$$

$$k = 9$$

7. Since the points are collinear, i.e. they lie on a straight line,

Gradient of PQ = Gradient of PR

$$\frac{-2 - (-3)}{3 - 2} = \frac{z - (-3)}{8 - 2}$$

$$\frac{1}{1} = \frac{z + 3}{6}$$

$$6 = z + 3$$

$$z = 3$$

1. (i) Gradient of $AB = \dfrac{1-6}{2-0}$

$$= \dfrac{-5}{2}$$

$$= -2\dfrac{1}{2}$$

Gradient of $BC = \dfrac{3-1}{7-2}$

$$= \dfrac{2}{5}$$

Gradient of $CD = \dfrac{8-3}{5-7}$

$$= \dfrac{5}{-2}$$

$$= -2\dfrac{1}{2}$$

Gradient of $AD = \dfrac{8-6}{5-0}$

$$= \dfrac{2}{5}$$

(ii) Gradient of AB = Gradient of $CD = -\dfrac{5}{2}$

Gradient of BC = Gradient of $AD = \dfrac{2}{5}$

They are equal.

Physics	Check your answers to the previous week assignment and do the corrections.
	## Section 5B Review Answers
	✪7. The American bullfrog (*Rana catesbeiana*) can jump a distance of nearly 15 times its length! If a bullfrog starts on a horizontal log and leaps with a velocity of 4.40 m/s at an angle of 37.0° to the horizontal, what distance can it cover?

Data:
$v_1 = 4.40$ m/s at 37.0°
$a_y = g = -9.81$ m/s²

$v_{1y} = v_1 \sin\theta$

$y = y_1$, therefore $d_y = 0$

$d_y = v_{1y}\Delta t + \tfrac{1}{2}\bar{a}\Delta t^2$

Solve for Δt:

$$\Delta t = \frac{-2v_{1y}}{\bar{a}} = \frac{-2v_1 \sin\theta}{g} = \frac{-2(4.40 \text{ m/s})\sin 37°}{-9.81 \text{ m/s}^2}$$

$\Delta t \cong 0.53\underline{9}8$ s

Solve for range:

$R = v_{1x}\Delta t$

$R = (v_1 \cos\theta)\Delta t \cong (4.40 \text{ m/s})(\cos 37°)(0.53\underline{9}8 \text{ s})$

$R \cong 1.8\underline{9}6$ m $(\cong 1.90$ m$)$

✪8. During the 1990 Olympics, an all-time record shot put was made—23.12 m. If the athlete released the shot at a height of 2.25 m with a velocity of 14.3 m/s at an angle of 35.0° to the ground, what was its vector velocity when it impacted the ground at the end of its flight?

Data:
$d_x = 22.47$ m
$y_2 = -2.25$ m
$y_1 = 0$ m
$v_1 = 14.3$ m/s at 35.0°
$a_y = g = -9.81$ m/s²

Assume that the release point is at $x = y = 0$ m.

$v_{1y} = v_1 \sin\theta$; $v_{1x} = v_{2x} = v_x = v_1 \cos\theta$

Use the second equation of motion, solve for Δt.

$y_2 = y_1 + v_{1y}\Delta t + \tfrac{1}{2}g\Delta t^2$

$0 = \tfrac{1}{2}g\Delta t^2 + v_{1y}\Delta t + (y_1 - y_2)$

This equation is in the form of a quadratic equation and can be solved for Δt using the quadratic formula.

$$\Delta t = \frac{-v_{1y} \pm \sqrt{(v_{1y})^2 - 4(\tfrac{1}{2}g)(-y_2)}}{2(\tfrac{1}{2}g)}$$

$$\Delta t = \frac{-[(14.3 \text{ m/s})\sin 35°] \pm \sqrt{[(14.3 \text{ m/s})\sin 35°]^2 - 2(-9.81 \text{ m/s}^2)(2.25 \text{ m})}}{-9.81 \text{ m/s}^2}$$

$\Delta t \cong 1.9\underline{1}2$ s or -0.2399 s

Solve for the final velocity components at end of the throw.

$v_{2x} = v_{1x} = v_1 \cos 35° \cong 11.\underline{7}3$ m/s

$v_{2y} = v_{1y} + g\Delta t$

$v_{2y} = (14.3 \text{ m/s})\sin 35° + (-9.81 \text{ m/s}^2)(1.9\underline{1}2 \text{ s})$

$v_{2y} \cong -10.\underline{5}5$ m/s

$v_2 = \sqrt{v_{2x}^2 + v_{2y}^2} = \sqrt{(11.\underline{7}3 \text{ m/s})^2 + (-10.\underline{5}5 \text{ m/s})^2} \cong 15.\underline{7}7$ m/s

$\alpha_{v_2} = \tan^{-1}\left(\frac{|-10.\underline{5}5 \text{ m/s}|}{|11.\underline{7}3 \text{ m/s}|}\right) \cong 41.\underline{9}6° \Rightarrow \theta_{v_2} \cong -41.\underline{9}6°$

$v_2 \cong 15.\underline{7}7$ m/s at $-41.\underline{9}6°$ $(\cong 15.8$ m/s at $-42.0°)$

Portuguese	**Conteúdo:** ADVÉRBIO DE LUGAR. **Objetivo:** Estudantes pode ser: • Identificar as palavras de advérbio de lugar. - O quê são advérbios de lugar | Português on-line https://www.youtube.com/watch?v=a6hAiCjDrQM	- Click the Link to answer the questions of Advérbios de lugar. https://forms.gle/ScmZ1vaXTJhwNzxJ6
PE / Health	**Say No to Smoking or Alcohol** Dr Vivien shares with SPMS students about the harmful effects of smoking and alcohol, and gives good advice on how to say "No!" **https://www.youtube.com/watch?v=rfLlFbASloA**	What can you do when someone offers you a cigarette or alcohol? 1. Just say _____ 2. Change the _____ 3. Tell them something they do not _____ 4. Tell a _____ 5. Walk _____ 6. Return the _____ 7. Use an _____as an excuse 8. Avoid the _____ Write the answers in your English Exercise book.

Homework_Day 3   (12 May 2021)

Subject	Click on the Youtube Links	Things to Note
English	Watch the video on gerunds and gerund phrases https://youtu.be/BFfkDajOZMc	Complete activity 4-8 and 4-9 in your Writing and Grammar book.
Mathematics	Chapter 4 Coordinate Geometry 4.2 Length of a straight line Study Worked Example 4 (Page 131)	Exercise 4B Do Q2, Q3, and Q5
Physics	Chapter 5 Review Questions Do Questions 1 to Questions 6 in your Science Exercise Book.	
Portuguese	**Conteúdo:** ADVÉRBIO DE TEMPO. **Objetivo:** Estudantes pode ser: • Identificar as palavras de advérbio de tempo. - O quê são dvérbios de tempo | Português on-line https://www.youtube.com/watch?v=a6hAiCjDrQM	Escreve e subline (underline) os **Advérbio de tempo** no esse dialógo. **Situação: Marcando um encontro** – Quando podemos nos encontrar? Amanhã? – Infelizmente não posso amanhã, só no sábado. – De manhã ou de tarde? – De noite seria melhor para mim. – A que horas? – Às 18 horas seria perfeito. – Ótimo. Está combinado. No sábado, eu passo na sua casa às 18 horas. – Então até sábado. Tchau. – Tchau.

Homework_Day 4   (13 May 2021)

Subject	Click on the Youtube Links	Things to Note
English	Readworks Comprehension - Go to www.readworks.org - Click "Student Login" - Enter Class Code "FY3J5S" - **Click on your name** - Enter Password "1234" Complete comprehension assignment	
Mathematics	Chapter 4 Coordinate Geometry 4.2 Length of a straight line Study Worked Example 5 (Page 132)	Exercise 4B Do Q6, Q7, and Q8
Physics	Chapter 5 Review Questions Do Questions 7 to Questions 12 in your Science Exercise Book.	
Portuguese	**Conteúdo:** ADVÉRBIO DE MODO **Objetivo:** Estudantes pode ser: • Identificar as palavras de advérbio de modo. - O que são advérbios de modo | Português On-line https://www.youtube.com/watch?v=sjLMd7LaKoQ	- Click the Link to answer the questions of Advérbios de modo https://forms.gle/Gze2YhSRa2Zs9iiz7
Devotion **Music**	**Hope Beyond the Pandemic** https://www.youtube.com/watch?v=7i0zvM3HYFw HOPE Beyond The PANDEMIC! Other than PEACE above the Pandemic, hope is so important as well... to help us to see beyond our present circumstances that we are in. May you all be blessed from this short little message from ~ Emma, Caleb and Samuel! My Hope is in the Lord (Cave Quest VBS Music Video) https://www.youtube.com/watch?v=tJePCzTaQo4	Write down the Bible verses mentioned in the video. 1. Romans 8:_____ 2. Romans 15: _____ 3. Luke _____:13 4. Psalms 130:_____ Write the bible verses in your English exercise book

Homework_Day 5 (14 May 2021)

Subject	Click on the Youtube Links	Things to Note
English	a) Word Attack 3A W3	Click to complete the work https://forms.gle/Cug5CjgwuFNsoLDU8
Mathematics	Chapter 4 Coordinate Geometry 4.2 Length of a straight line Study Worked Example 6 (Page 133)	Exercise 4B Do Q9, Q10, and Q11
Physics	Complete the True/False questions in the google form link below and submit. https://forms.gle/BZ53QQHPfvLEUF9eA *(Chapter 5 Review Questions. Do Questions 14 to Questions 23)*	
Portuguese	**Conteúdo:** 100 FRASES EM PORTUGUÊS E INGLÊS **Objetivo:** Estudantes pode ser: • Traduzir as frases em Português e Inglês. - 100 frases basicas de conversação em Inglês e Português. https://www.youtube.com/watch?v=GIWc-EXEQaw	- Click the link to answer the questions. https://forms.gle/MxdJXKfdtLZL4zHP6