Grade 11

School-without-Walls Package 15 (5 July to 9 July 2021)

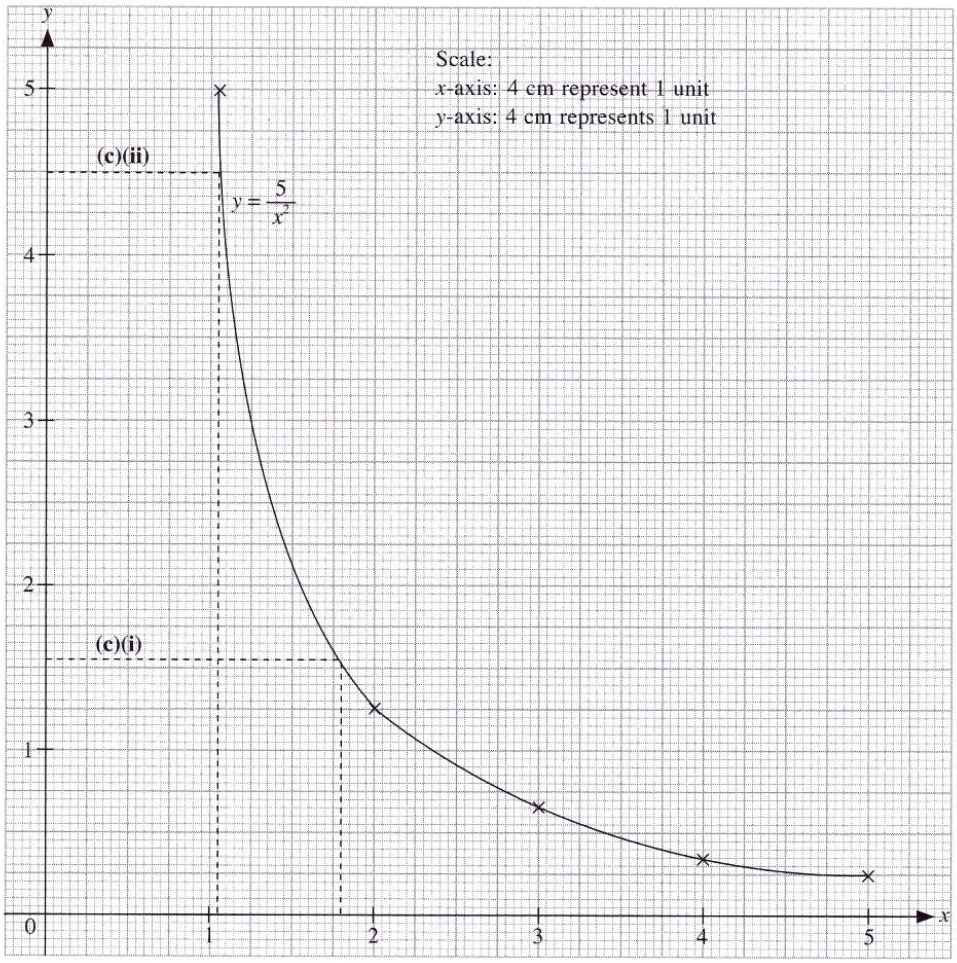
Homework_Day 1 (5 July 2021)

Subject	Click on the Youtube Links	Things to Note
English	Word Attack 3A W7	https://forms.gle/4isnnsQdKSLCL86K8
Mathematics	Answers to Exercise 5A Q4 and 5B Q 1 & Q2	

4. **(a)** $a = \frac{5}{3^2} = 0.56$ (to 2 d.p.)

$b = \frac{5}{5^2} = 0.2$

(b)



(c) **(i)** From the graph, when $x = 1.8$, $y = 1.55$.

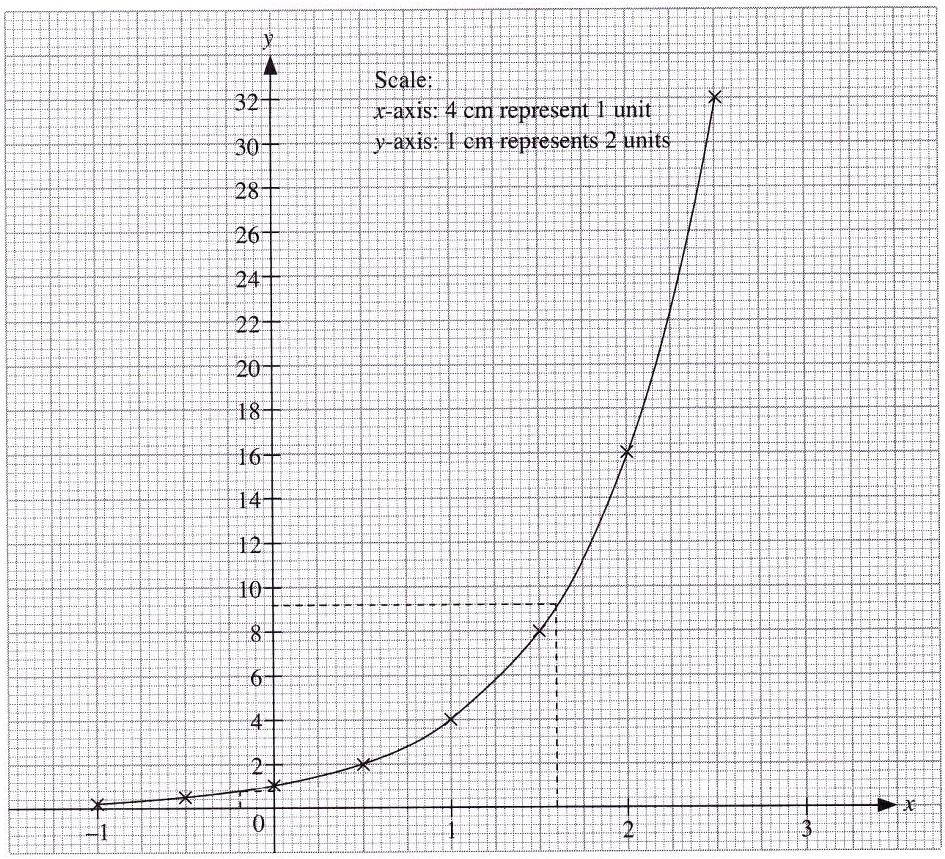
(ii) From the graph, when $y = 4.5$, $x = 1.05$.

Exercise 5B

1. **(a)** $y = 4^x$

x	–1	–0.5	0	0.5	1	1.5	2	2.5
y	0.25	0.5	1	2	4	8	16	32

(b)



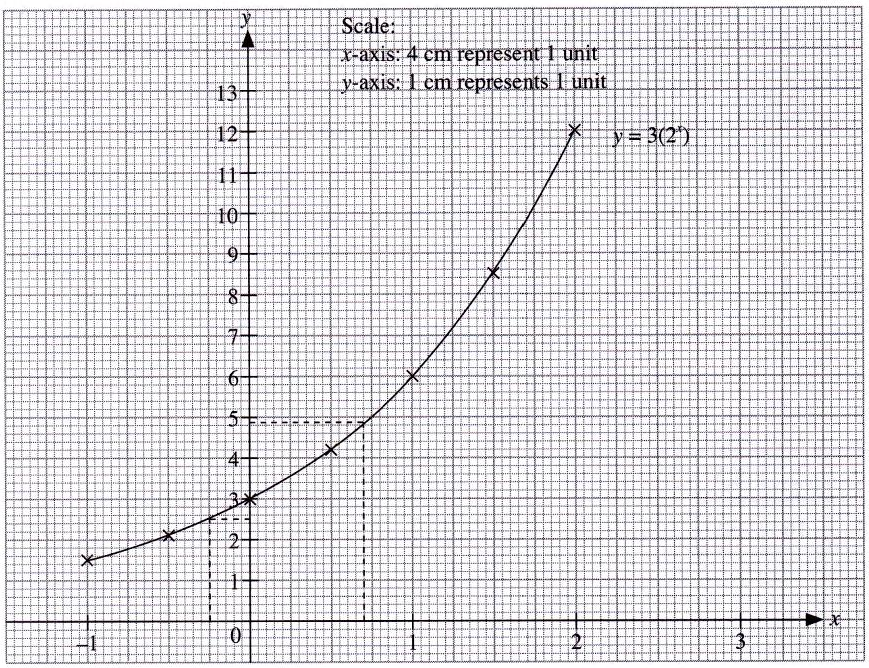
(c) **(i)** From the graph, when $x = 1.6$, $y = 9.2$.

(ii) From the graph, when $y = 0.8$, $x = -0.15$.

2. **(a)** $y = 3(2^x)$

x	–1	–0.5	0	0.5	1	1.5	2
y	1.5	2.1	3	4.2	6	8.5	12

(b)

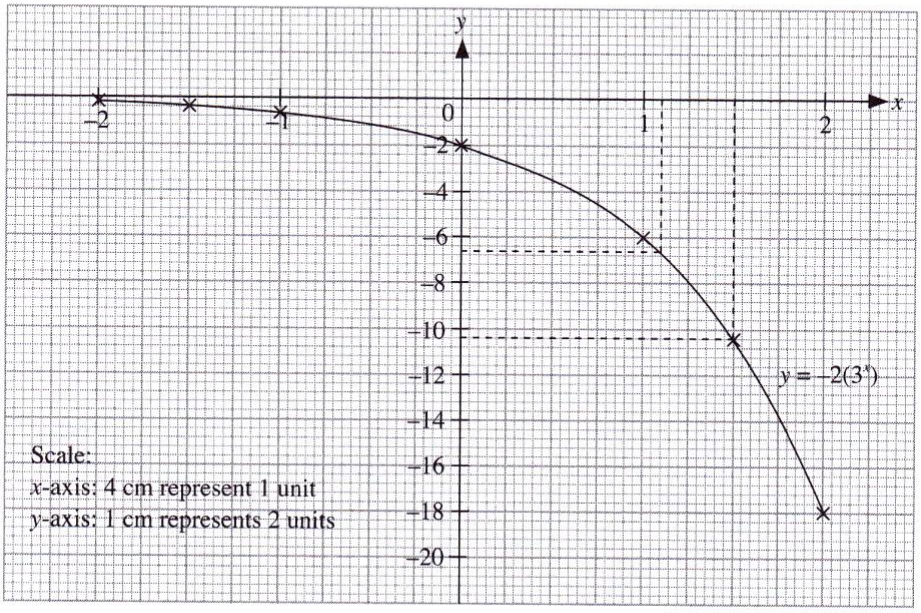


(c) **(i)** From the graph, when $x = 0.7$, $y = 4.9$.

(ii) From the graph, when $y = 2.5$, $x = -0.25$.

3. $y = -2(3^x)$

x	-2	-1.5	-1	0	1	1.5	2
y	-0.2	-0.4	-0.7	-2	-6	-10.4	-18



(i) From the graph, when $x = 1.5$, $y = -10.4$.

(ii) From the graph, when $y = -6.7$, $x = 1.1$.

Physics	Answers to Review Questions Chapter 6 **True or False (19–28)** 19. Sir Isaac Newton originated the concept of inertia. **False. (§6.3)** Galileo was the first to articulate the concept of inertia. 20. Forces are really only pulls applied by one system on another. **False. (§6.5)** Forces may be described as either pushes or pulls between different systems. 21. All forces on an object cause a change in the object's motion. **False. (§§6.6, 6.12)** Some forces may be balanced exactly by other forces so they do not cause a change of motion. 22. Every fundamental force is at work in a flower vase sitting on a shelf. **True. (§6.8)** 23. It is possible for a scientific law to *not* hold true in every case where it is tested. **True. (§6.11)** 24. All three laws of motion apply in every instance where a force is exerted on a system. **True. (§§6.12–6.14)** 25. A heavier object has a larger gravitational force acting on it than a lighter object does. Therefore, according to Newton's second law, it will experience a greater acceleration toward the ground than the lighter. **False. (§§6.13–6.14)** If the object is free to fall, its greater inertia will prevent it from accelerating faster than a lighter object. 26. The "action" force never acts on the same system as the "reaction" force. **True. (§6.14)** 27. The value of g on the moon is smaller than on the earth because objects have smaller masses on the moon than on the earth. **False. (§6.16)** Mass is an intrinsic property of an object that cannot change with location. 28. Astronauts in the International Space Station can use a standard laboratory balance when finding the mass of an object. **False. (6.16)** A standard laboratory balance depends on comparing the weights of known and unknown masses. Since there is no weight in orbit (no normal force—see Chapter 8), a standard balance will not work.	
Portuguese	Quiz – Língua Portuguesa | Coletivos https://www.youtube.com/watch?v=NKdxg5V2gV8	Quiz - Clique (click) no link abaixo e responda as perguntas. Não se esqueça de enviar! https://forms.gle/x6NhH5g5VZFQCrLg9

Homework_Day 2 (6 July 2021)

Subject	Click on the Youtube Links	Things to Note
English	Zoom Class https://us02web.zoom.us/j/85627245486?pwd=alVkVlNDVUJBTmt0WlRCbWRGNVdtZz09 Meeting ID: 856 2724 5486 Passcode: 2021G11	
Mathematics	**Class Zoom Lesson (10.30am to 12.30am)**	
Physics	**Class Zoom Lesson (10.30am to 12.30am)** Download Physics Notes on **(Similar to Package 13):** • Chapter 5 – Motion in a Plane • Chapter 6 - Dynamics	
Portuguese	Quiz – Língua Portuguesa | Sinônimo https://www.youtube.com/watch?v=1RseRc7AbIA	Quiz - Clique (click) no link abaixo e responda as perguntas. Não se esqueça de enviar! https://forms.gle/zh8jfEBaiueaJedD6

Homework_Day 3 (7 July 2021)

Subject	Click on the Youtube Links	Things to Note
English	Complete Activity 5.8 in your Writing and Grammar book	
Mathematics	Turn to Page 169 Thinking Time Match the Graphs 1 to 6 with the Scenarios A to F.	
Physics	Copy the answers to Chapter 6 Review Questions Q29, 30, and 32	

✪29. Three cattlemen are handling an unruly calf (*Bos taurus*). All three have ropes around the calf's neck. One man is directly in front of the calf, exerting a force of 120. N. A second man is at a right angle to the calf on its right, pulling with a force of 110. N. The third man is on the calf's left and ahead of it at a 30.0° angle from the rope of the first man, pulling with a force of 116 N. If the calf does not move, what forces is it exerting?

$\Sigma F = 0$ N, since all forces are in equilibrium.

$F_1 + F_2 + F_3 + F_{calf} = 0$

$F_{calf} = -(F_1 + F_2 + F_3)$

Determine force components:

$F_{1x} = 0$ N $\quad F_{1y} = +120.$ N

$F_{2x} = +110.$ N $\quad F_{2y} = 0$ N

$F_{3x} = (116\text{ N})(\cos 60.0°) \cong -58.0$ N $\quad F_{3y} = (116\text{ N})(\sin 60.0°) \cong +100.4$ N

$F_{1x} + F_{2x} + F_{3x} \cong +52.0$ N $\quad F_{1y} + F_{2y} + F_{3y} = +220.4$ N

$F_{calf\,x} = -52.0$ N $\quad F_{calf\,y} = -220.4$ N

$$F_{calf} = \sqrt{(-52.0\text{ N})^2 + (-220.4\text{ N})^2} \cong 226.4\text{ N}$$

$$\alpha_{F_{calf}} = \tan^{-1}\left(\frac{|-220.4\text{ N}|}{|-52.0\text{ N}|}\right) = 76.72°$$

Since F_{calf} is in Quadrant III:

$\theta_{F_{calf}} = 180° + \alpha_{F_{calf}} = 180° + 76.72° \cong 256.72°$

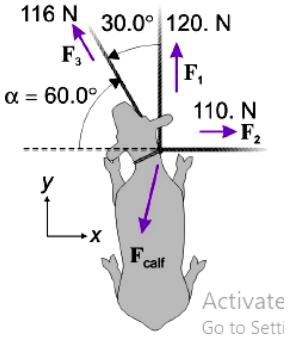
$F_{calf} \cong 226.4$ N at $256.72°$ ($\cong 226$ N at $256.7°$)

Data:

$F_1 = 120.$ N at 90°

$F_2 = 110.$ N at 0°

$F_3 = 116$ N at 120°



✪30. A 6.67×10^{-2} kg leopard frog (*Rana pipiens*) jumps into the air with an acceleration of 0.300 m/s^2 straight up. What is the net force on the frog as it jumps?

$\Sigma F_{frog} = ma$

$\Sigma F_{frog} = (6.67 \times 10^{-2}\text{ kg})(+0.300\text{ m/s}^2)$

$\Sigma F_{frog} \cong 0.020\,01$ N up ($\cong 2.00 \times 10^{-2}$ N up)

Data:

$m = 6.67 \times 10^{-2}$ kg

$a_y = +0.300$ m/s^2 (up)

	✪32. A 25.0 kg bicycle is traveling at a speed of 10.0 m/s. a. If the bike comes to rest in 2.0 s, what is the magnitude of its acceleration? $v_{fx} = v_{ix} + \bar{a}_x \Delta t$ $\bar{a}_x = \frac{v_{ix} - v_{0x}}{\Delta t} = \frac{0.0\ \text{m/s} - 10.0\ \text{m/s}}{2.0\ \text{s}} = -5.0\ \text{m/s}^2$ $\bar{a} = 5.0\ \text{m/s}^2$ b. What net force is needed to provide this acceleration? $\Sigma F = ma$ $\Sigma F = (25.0\ \text{kg})(5.0\ \text{m/s}^2)$ $\Sigma F \cong 125\ \text{N}\ (\cong 130\ \text{N})$ Data: $m = 25.0\ \text{kg}$ $v_i = 10.0\ \text{m/s}$ $v_f = 0\ \text{m/s}$ $\Delta t = 2.0\ \text{s}$ c. How far will the bike travel in the 2.0 s? $d_x = \frac{v_{fx}^2 - v_{ix}^2}{2a_x} = \frac{0 - (10.0\text{m/s})^2}{2(-5.0\ \text{m/s}^2)} \cong -10.0\ \text{m}$ $d \cong 10.0\ \text{m}\ (\cong 10.\ \text{m})$	
Portuguese	Quiz – Língua Portuguesa | Antônimo https://www.youtube.com/watch?v=9fwMaVOAsUQ	Quiz - Clique (click) no link abaixo e responda as perguntas. Não se esqueça de enviar! https://forms.gle/95xyHboEDVxHZgMfA

Homework_Day 4 (8 July 2021)

Subject	Click on the Youtube Links	Things to Note
English	Complete Activity 5.9 in your Writing and Grammar book	
Mathematics	Study Worked Example 6 Do Exercise 5C Q3	
Physics	Copy the answers to Chapter 6 Review Questions Q35,36, 37 and 38 ✪35. The earth exerts a force of 1.00 N on an object in free fall. What is the object's mass? $F_w = \lvert mg \rvert$ $m = \dfrac{1.00\ \text{N}}{\lvert -9.81\ \text{m/s}^2 \rvert}$ $m \cong 0.10\underline{1}9\ \text{kg}\ (\cong 0.102\ \text{kg})$ Data: $F_w = 1.00\ \text{N}$ ✪36. What is the weight of a 5 g mass in newtons? (Assume that the mass is at rest at the surface of the earth.) $F_w = \lvert mg \rvert$ $F_w = \lvert (0.005\ \text{kg})(-9.81\ \text{m/s}^2) \rvert$ $F_w \cong 0.0\underline{4}9\ \text{N}\ (\cong 0.05\ \text{N})$ Data: $m = 5\ \text{g} = 0.005\ \text{kg}$ ✪37. A mass m_1 has an acceleration a_1 when it is acted upon by a net force of magnitude F. If a second mass, $m_2 = 3m_1$, is acted upon by the same force F, what is its acceleration compared to a_1? $\Sigma F = F_1 = F_2 = F$ $F = m_1 a_1 = m_2 a_2$ $\cancel{m_1} a_1 = 3 \cancel{m_1} a_2$ $a_2 = a_1 / 3$ Data: $m_2 = 3m_1$ ✪38. A mass of 2.50 kg hangs from a string. a. What force does the mass exert on the string? $\mathbf{F}_w = m\mathbf{g}$ $F_{wy} = (2.50\ \text{kg})(-9.81\ \text{m/s}^2) \cong -24.\underline{5}2\ \text{N}$ $\mathbf{F}_w \cong 24.\underline{5}2\ \text{N}\ (\cong 24.5\ \text{N})$ down b. What force does the string exert on the mass? $\mathbf{F}_s = -\mathbf{F}_w$ $\mathbf{F}_s \cong 24.\underline{5}2\ \text{N}\ (\cong 24.5\ \text{N})$ up	
Portuguese	Quiz – Língua Portuguesa | Quiz de Português https://www.youtube.com/watch?v=QXUuDA8UNjo	Quiz - Clique (click) no link abaixo e responda as perguntas. Não se esqueça de enviar! https://forms.gle/fkRVfHr16MkcuF2p9

Homework_Day 5 (9 July 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	Study Page 172 Thinking Time and Worked Example 7 ((Pg 173) Do Exercise 5C Q4, 5, 10 and 11.	
Physics	Study and copy the answers to the following questions in Chapter 6 Review in your Science exercise book. ✪39. A hunting bow imparts an acceleration of 5300. m/s^2 to a 29.3 g arrow at an angle of 15.0° to the horizontal. What is the horizontal component of the force exerted by the bow on the arrow? $F = ma$ $F = (0.0293\ \text{kg})(5300.\ \text{m/s}^2) \cong 155.2\ \text{N}$ $F_x = (155.2\ \text{N})\cos 15.0°$ $F_x \cong 149.9\ \text{N}\ (\cong 150.\ \text{N})$ Data: $a = 5300.\ \text{m/s}^2$ at 15.0° $m = 29.3\ \text{g} = 0.0293\ \text{kg}$ ✪41. You are test driving a brand new 1350 kg BMW sports car. You find that the car accelerates from 0 to 96.0 km/h in 5.8 s along a level stretch of interstate (speed limit 60 mi/h). Assuming that the acceleration is constant, solve the following problems. a. Calculate the magnitude of the net force that produces the acceleration. $a = \frac{v_2 - v_1}{\Delta t} = \frac{26.66\ \text{m/s}}{5.8\ \text{s}}$ $a = 4.59\ \text{m/s}^2$ $\Sigma F = ma = (1350.\ \text{kg})(4.59\ \text{m/s}^2)$ $\Sigma F \cong 6190\ \text{N}\ (\cong 6200\ \text{N})$ Data: $v_1 = 0\ \text{km/hr}$ $v_2 = 96.0\ \text{km/hr}$ $= 26.66\ \text{m/s}$ $\Delta t = 5.8\ \text{s}$ b. Calculate the distance the car covers during the period of acceleration. $d = \frac{v_2^2 - v_1^2}{2a} = \frac{(26.66\ \text{m/s})^2 - 0}{2(4.59\ \text{m/s}^2)}$ $d \cong 77.4\ \text{m}\ (\cong 77\ \text{m})$	

	✪42. A 1.50×10^3 kg car is pulling a 600. kg trailer. Leaving a traffic stop, the car accelerates at $0.200\ m/s^2$. a. What is the magnitude of the total force on the trailer? $\Sigma F_{tr} = m_{tr}a$ $\Sigma F_{tr} = (600\ kg)(0.200\ m/s^2)$ $\Sigma F_{tr} = 120.\ N$ Data: $m_c = 1.50 \times 10^3$ kg $m_{tr} = 600.$ kg $\bar{a} = 0.200\ m/s^2$ b. What is the magnitude of the total force on the car? $\Sigma F_c = m_c a$ $\Sigma F_c = (1.50 \times 10^3\ kg)(0.200\ m/s^2)$ $\Sigma F_c = 300.\ N$ c. What is the magnitude of the total force on the system consisting of both car and trailer? $\Sigma F_{total} = m_{Total}a$ $\Sigma F_{total} = (2.10 \times 10^3)(0.200\ m/s^2)$ $\Sigma F_{total} = 420.\ N$ Activat	
Portuguese	10 palavras de uso comuns em conversações https://www.youtube.com/watch?v=oItYzaxS3vU	Copia 5 palavra e faça com frases no seu caderno Português!