THE PIQUE LAB LEARNING CENTRE

Primary School Science Programme

P6 CCI™ SCIENCE COURSE

Answers to Question Booklet (2026)

Name: _____

Class: _____

TOPICS COVERED

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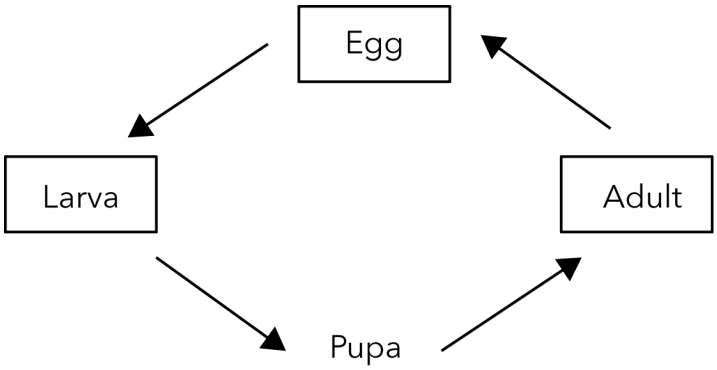
TOPIC: ANIMAL CYCLES

Qn	Answer
Q1 (a)	*[Hint: Refer to page 1 of P5 CCI notes Volume 1]* Butterfly: B Toad: A Cockroach: D
Q1 (b)	*[Hint: Refer to page 2 of P5 CCI notes Volume 1]* Both have an egg stage / adult stage.
Q1 (c)	**Lay many eggs:** *[Try by yourself: Refer to page 9 , A3 of P5 CCI notes Volume 1]* This increases the chances that some eggs will not be eaten by predators, can hatch to form young and develop into adults to reproduce, ensuring the continuity of its own kind. **Lay eggs on the underside of leaves:** *[Try by yourself: Refer to page 9 , A5 of P5 CCI notes Volume 1]* This prevents predators of the eggs from spotting them easily.
Q2 (a)	*[Hint: Refer to page 1 of P5 CCI notes Volume 1]* 
Q2 (b)	*[Hint: Refer to page 4 of P5 CCI notes Volume 1]* 16 days **2 days (Egg) + 6 days (Larva) + 8 days (Pupa)*

Q2 (c)	*[Hint: Refer to page 7 of P5 CCI notes Volume 1]* *Pupa* **10 days = 6 days (Larva) + 4 days (In the pupa stage)*
Q2 (d)	*[Try by yourself: Refer to page 10, A9 of P5 CCI notes Volume 1]* *Accept any of the following:* - The larva moults, unlike the pupa. - The larva feeds, unlike the pupa. - The larva moves from place to place, unlike the pupa.
Q3 (a)	*[Try it yourself: Refer to page 8 of P5 CCI notes Volume 1]* As the surrounding temperature increases, the number of days to complete the life cycle of the Aedes mosquito decreases. Thus, the eggs can develop into adults faster and there will be more adult Aedes mosquitoes to spread the Dengue virus.
Q3 (b)	When the eggs develop into adults, they are too large and cannot escape through the wire mesh.
Q3 (c)	Rainwater could enter the container, causing the water level in the trap to rise above the wire mesh. Thus, the eggs will be laid above the wire mesh, and when they develop into adults, they can escape out of the trap.

Qn	Answer
Q1	(i) Skipping rope: B (ii) Tissue paper: C
Q2	*[Hint: Apply the CUE(PP) structure]* **Choose:** J. **Use Data:** Distance d was the least for J. **Explain Data:** This shows that J is the most flexible. **(Property)** Thus, a pole vault made of J would be best able to propel the gymnast forward. **(Purpose)**
Q3	**Choose:** G. **Use data:** G is strong and not flexible / rigid. **(Property)** **Explain:** Thus, the handle made of G would not break and bend easily when the user is holding it. **(Purpose)**

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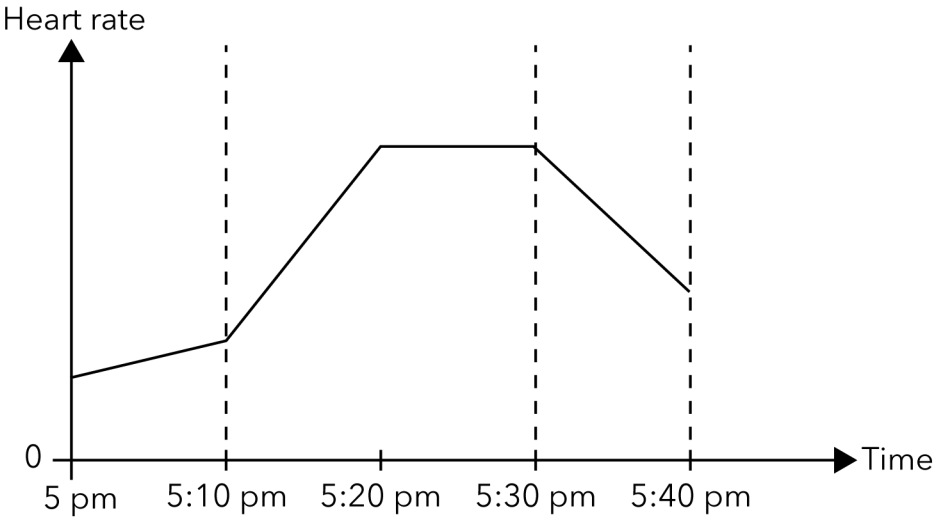
TOPIC: BODY SYSTEMS

Techniques:

1) 3 ways on how the 5 systems work together
2) Apply template answers - Heart rate/breathing rate/pulse rate
3) Increased (exposed) surface area (Chewing/Air sacs/Villi)
4) Graph for oxygen/ carbon dioxide in the circulatory system
5) Inhaled Air VS Exhaled Air

Qn	Answer
Q1 (a)	
Q1 (b)	*[Try by yourself: Refer to page 37 of CCI notes Volume 1]* During running, the heart rate increased to pump blood faster to transport more oxygen and digested food to all parts of the body for respiration to release more energy and carbon dioxide. Blood containing carbon dioxide is then transported away faster to be removed.
Q1 (c)	**Choose:** Sample B. **Use Data:** It had less oxygen and more carbon dioxide than Sample A. **Explain Data:** As Faith was running, more oxygen was used by her body for respiration to release more energy and carbon dioxide.
Q2 (a)	Mouth, stomach and small intestine.

Q2 (b)	*[Try by yourself: Refer to page 26 of CCI notes Volume 1]* There are numerous folds found on the walls of the small intestine. They increase the surface area of the small intestine in contact with the digested food for faster absorption of digested food into the bloodstream.
Q2 (c)	The digestive juices released by the digestive system are not able to break down some of the undigested food into simpler substances.
Q3	The blood vessels near the skin surface become too narrow. This causes insufficient blood containing oxygen and digested food to be transported to the skin cells, causing the skin cells to carry out insufficient respiration to release insufficient energy.

Techniques:

1) HPC Structure of writing

Qn	Answer
Q1 (a)	*[Hint: Refer to page 7 of CCI notes Volume 2]* The water (H) gained heat from the warmer surrounding air (P) to evaporate (C) and form water vapour.
Q1 (b)	*[Hint: Refer to page 9 of CCI notes Volume 2]* *Choose any 2 factors:* i) Greater wind speed **(W)** ii) Larger exposed surface area of the water puddle **(E)** iii) Higher temperature of the surrounding air **(T)**
Q1 (c)	*[Try by yourself: Refer to page 10 of CCI notes Volume 2]* The presence of wind from the breeze caused the water in the sweat on the surface of his skin to (P) evaporate faster, causing his body to lose heat to the water faster and cool faster.
Q2 (a)	*[Try by yourself: Refer to page 12 of CCI notes Volume 2]* The cups lost heat to the cold water to become cooler. The warmer water vapour from the surrounding air came into contact with the cooler outer surface of the cups, (H) lost heat to them (P) and condensed (C) to form water droplets.
Q2 (b)	Cup A is made of a better conductor of heat than cup B. Thus, the warmer water vapour from the surrounding air (H) lost heat faster to the cooler outer surface of cup A and (P) condensed faster to (C) form more water droplets.

Q2 (c)	**Choose:** Cup A. **Use Data:** There were more water droplets on the outer surface of cup A. **Explain:** This shows that cup A is made of a better conductor of heat **(Property)**, allowing cup A to conduct heat faster from the hot coffee to the cooler surrounding air **(Purpose)**.
Q3 (a)	Yes. The metal lid is a better conductor of heat than the glass bottle. Thus, the metal lid would (H) gain heat faster from the hot water and (P) expand faster.
Q3 (b)	Glass is a poor conductor of heat. When placed in iced water, the outer surface of the jar lost heat faster to the iced water and contracted faster than the inner surface of the jar. The difference in the rate of contraction between the outer and inner surface of the jar caused it to crack.

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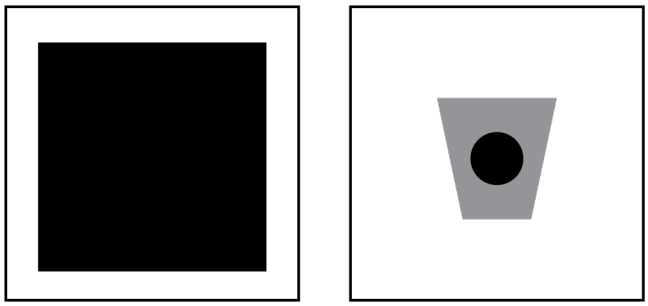
TOPIC: WATER CYCLE

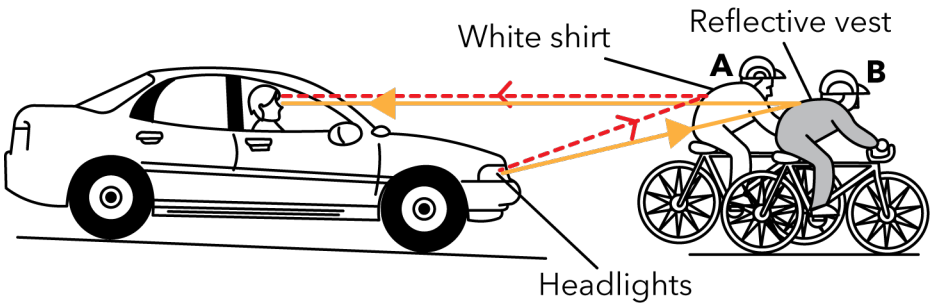
Qn	Answer
Q1 (a)	**Clouds:** Water droplets **Water from water bodies:** Water at 80 °C **Cooler surrounding air:** Plastic sheet
Q1 (b)	*[Try by yourself: Refer to page 27, Q1 of CCI notes Volume 2]* **Plastic sheet:** The plastic sheet prevents water vapour from escaping. The warmer water vapour that comes into contact with it would (H) lose heat to the plastic sheet and (P) condense (C) to form water droplets. *[Try by yourself: Refer to page 27, Q3 of CCI notes Volume 2]* **Ice cubes:** The plastic sheet loses heat to the ice cubes and becomes cooler. There is now a larger temperature difference between the water vapour and the plastic sheet. This allows the warmer water vapour that comes into contact with the cooler underside of the plastic sheet to (H) lose heat faster to it and (P) condense faster (C) to form more water droplets.
Q1 (c)	*[Try by yourself: Refer to page 28, Q4 of CCI notes Volume 2]* Water droplets would form on the outer surface of the beaker instead of on the underside of the plastic sheet. The beaker would lose heat to the cold 5 °C water to become cooler. The warmer water vapour from the surrounding air would come into contact with the cooler outer surface of the beaker, (H) lose heat to it and (P) condense (C) to form water droplets.
Q2 (a)	There were holes in terrarium B. Thus, when the water in the soil evaporated to form water vapour, the water vapour was able to escape through the holes. This caused the soil to become dry and the roots did not have water to absorb. As the plants did not have water for photosynthesis to make food, they died.

Q2 (b)	*[Try by yourself: Refer to page 23, Q1 of CCI notes Volume 2]* The water from the moist soil (H) gains heat from the warmer surrounding air to (P) evaporate and (C) form water vapour. Water is also lost through the stomata of the plants as water vapour (in the process of transpiration). The warmer water vapour then rises and comes into contact with the cooler inner surface of terrarium A, (H) loses heat to it and (P) condenses to (C) form water droplets. The water droplets fall back to the soil and the cycle repeats itself.
Q3 (a)	*[Try by yourself: Refer to page 24, Q1 of CCI notes Volume 2]* The water in the sea water (H) gains heat from the flame of the Bunsen burner and (P) evaporates to (C) form water vapour. The warmer water vapour rises and enters the delivery tube, (H) loses heat to the cooler inner surface of the delivery tube, and (P) condenses (C) to form water droplets, which drip into the beaker to be collected as pure water.
Q3 (b)	*[Try by yourself: Refer to page 28, Q5 of CCI notes Volume 2]* The cold cloth and delivery tube gained heat from the warmer water vapour to become warmer. There is now a smaller temperature difference between the water vapour and the delivery tube. This causes the warmer water vapour to (H) lose heat slower to the cooler inner surface of the delivery tube and (P) condense slower (C) to form less water droplets.
Q3 (c)	Salt. Salt is unable to evaporate.

Techniques:

- Apply light template answer
- Apply shadow template answer

Qn	Answer
Q1 (a)	1
Q1 (b)	Light travels in a straight line.
Q1 (ci)	*[Hint: Refer to page 1 of CCI notes Volume 3]* Light from the light source, which travels in a straight line, is (completely) blocked by the puppet, which is opaque.
Q1 (cii)	The shadow formed on the screen facing the audience may be too faint for them to see the shadow clearly.
Q1 (d)	Bring the puppet closer to the screen.
Q1 (e)	The size of the shadow formed would decrease. The audience may not be able to see the movement of the smaller shadow easily.
Q2 (a)	 **Box 1** **Box 2**
Q2 (b)	Material P is opaque. **Use Shadow Template:** Thus, light from the torchlight, which travels in a straight line, could not pass through material P and could not be blocked by the mirror.

Q3 (a)	
Q3 (b)	*[Hint: Refer to page 1 of CCI notes Volume 3]* **Choose:** Cyclist B. **Use Data:** Cyclist B is wearing a reflective vest. **Explain:** Thus, more light from the headlights of the car would be reflected off the reflective vest of cyclist B into the driver's eyes.

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TOPIC: MAGNETS

Techniques:

1) 3 Rules of magnetism
2) Unlike poles of magnets facing each other attract
3) Like poles of magnets facing each other repel
4) Attract object with a GREATER magnetic force

Qn	Answer
Q1 (a)	*[Hint: Refer to page 20 of CCI notes Volume 3]* Place the magnet beside the bottom right corner of the plastic tank. The magnet's magnetism will pass through the non-magnetic plastic tank and oil ***(Rule 2)***, to attract the magnetic iron disc ***(Rule 3)***. Move the magnet towards the small opening with the iron disc still attracted to it.
Q1 (b)	No. Aluminium is a non-magnetic material and would not be attracted by the magnet.
Q2 (a)	*[Try by yourself: Refer to page 18 of CCI notes Volume 3]* **Choose:** The steel rod would move towards iron rod Y. **Use data:** Circuit B has more batteries, **Explain:** causing iron rod Y to become a stronger electromagnet and attract the steel rod with a greater magnetic force.
Q2 (b)	When the switch is closed, there would be a closed circuit. Thus, electric current flows through the coils of wire, causing the iron core to become an electromagnet and attract the magnetic steel block ***(Rule 3)***.

Q3 (a)	*[Try by yourself: Refer to page 16 of CCI notes Volume 3]* The magnet attracts **only** the magnetic metals, causing them to remain on the moving belt while the non-magnetic metals fall off the belt and are collected in container B. As the magnetic metals move towards container A, (*add on) ***P5 Answer:** they move further away from the magnet. The magnet can no longer attract the magnetic metals, causing them to fall into container A to be collected. ***P6 Answer:** the magnetic force of attraction acting on the magnetic metals becomes weaker than the gravitational force acting on the magnetic metals, causing them to fall into container A to be collected.
Q3 (b)	**P5 Answer: (Use magnets to explain)** Some of the magnetic metals were too heavy. Thus, the magnetic force of attraction was not strong enough to attract the magnetic metals. **P6 Answer: (Use forces to explain)** Some of the magnetic metals were too heavy. The gravitational force acting on the magnetic metals was stronger than the magnetic force of attraction acting on the magnetic metals.

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TOPIC: PLANT CYCLE

Commonly tested processes:

1) Germination
2) Photosynthesis
3) Respiration
4) Transpiration
5) Types VS agents of pollination (Special characteristics of the flower)
6) Seed Dispersal
7) Each time an adaptation is mentioned, it is mandatory to EXPLAIN the adaptation.

Qn	Answer
Q1 (a)	A, C, B, D
Q1 (b)	**Decrease in the mass of the seed leaves:** The food stored in the seed leaves is used by the plant for growth until the true leaves are fully developed. **Increase in the mass of the seedling:** The seedling uses food stored in the seed leaves to grow.
Q1 (c)	The plant has fully developed its true leaves, which contain chlorophyll to absorb sunlight to make its own food.
Q2 (a)	*[Hint: Refer to page 13 of CCI notes Volume 4]* **Choose:** W. **Use data:** Only the stem above part Q swelled. **Explain:** At part Q, the food-carrying tubes were removed **(S)**. Thus, food made by the leaves between parts P and Q could not be transported past part Q down to the roots **(T)**. This caused food to accumulate above part Q **(O)**.

Q2 (b)	*[Try by yourself: Refer to page 15, scenario 3B of CCI notes Volume 4]* No. At part P, both the food-carrying tubes and the water-carrying tubes were removed **(S)**. Thus, water absorbed by the roots could not be transported past part P up to the leaves **(T)**. As the leaves above part P could not receive water for photosynthesis to make food, the plant died **(O)**.
Q3 (a)	Plant Q; Plant P
Q3 (b)	*[Hint: Refer to page 20 of CCI notes Volume 4]* **Use data:** There are more young plant P found further from the parent plant than Q. **Explain data:** The fruits of plant P have wing-like structures to allow the fruit to stay longer in the air and be dispersed further away from the parent plant by wind, as shown in the graph.
Q3 (c)	*[Try by yourself: Refer to page 26 of CCI notes Volume 4]* The fruits of the plants on Island Y have a fibrous husk that traps air, allowing them to float on water to reach island Z. Under suitable conditions, the seeds in the fruits germinated to form young plants.
Q4 (a)	It decreases/ slows down water loss (through the stomata).
Q4 (b)	1. When the stomata reduce in size, less carbon dioxide enters the stomata. 2. When the amount of water absorbed decreases, the plant does not have enough water for photosynthesis. 3. The wilting leaves have less exposed surface area in contact with sunlight, causing the leaves to absorb less sunlight.

Commonly asked questions:

- Advantage of having 2 ovaries/testes.
    - Why are many sperms released at once?
    - Why do insects lay many eggs at once?
- What is the similarity/difference between the process of fertilisation in plants and animals?
- Note that some teachers prefer their students to use "nucleus of sperm fuses with nucleus of egg" while others simply require "sperm fuses with egg".

Qn	Answer
Q1 (a)	**Flower A is pollinated by:** Wind **Reason:** The anthers are hanging out of the flower. This allows the wind to carry the pollen grains from the anther away easily.
Q1 (b)	**Flower B is pollinated by:** Birds/Insects **Reason:** The anthers are inside the flower. When the birds or insects visit the flower to obtain nectar, their bodies would rub against the anther, causing pollen grains to be stuck on them.
Q2 (a)	*[Try by yourself: Refer to page 40 of CCI notes Volume 4]* Cutting the flower at point A removes the stigma. Thus, there is no stigma to receive the pollen grains for pollination. Thus, fertilisation cannot occur.
Q2 (b)	*[Try by yourself: Refer to page 40 of CCI notes Volume 4]* No. Cutting the flower at point B and C removes the anthers. Pollen grains from the anthers of other flowers of the same species can still land on the stigma of this flower for pollination. Fertilisation can then take place.
Q2 (c)	*[Try by yourself: Refer to page 33 of CCI notes Volume 4]* The sperm cannot meet and fuse with the egg for fertilisation.

Q2 (d)	*[Try by yourself: Refer to page 36 of CCI notes Volume 4]* When one ovary is removed / damaged, the other ovary can still produce eggs. A sperm can still fuse with the egg for fertilisation (ensuring the continuity of our kind).
Q2 (e)	*[Try by yourself: Refer to page 41 of CCI notes Volume 4]* Both fertilisation in plants and humans involve the male reproductive cell fusing together with the female reproductive cell.
Q3 (a)	**Choose:** Flower X. **Use data:** The flower has brightly-coloured petals **Explain:** to attract pollinators. **Use data:** Additionally, it still has its stigma **Explain:** to receive pollen grains from the pollinators' body for pollination, allowing fertilisation to occur.
Q3 (b)	The male wasps will be attracted to the hammer orchid. The pollen grains on the body of the male wasps will be transferred to the stigma of the hammer orchid.

Techniques:

1) 2 steps Energy answering structure
2) Kinetic energy template answer
3) Always refer to "Conversion" of energy

Abbreviations:

- GPE: Gravitational Potential Energy
- KE: Kinetic Energy
- CPE: Chemical Potential Energy
- EPE: Elastic Potential Energy

Qn	Answer
Q1 (a)	Step 1. **State the factor:** Step 1 is at a greater height from the ground. **Use energy conversion:** Thus, Benny will store/possess/have more (gravitational) potential energy, which is converted to more kinetic energy as he falls. More kinetic energy of Benny will be converted to more (elastic) potential energy of the trampoline when he lands on the trampoline, which is then converted to more kinetic energy of Jimmy as he moves up. Jimmy would then possess/have more kinetic energy which would then be converted to more (gravitational) potential energy.
Q1 (b)	Jimmy will reach a lower height.
Q2 (a)	Batteries
Q2 (b)	When the switch is closed, (chemical) potential energy in the batteries is converted to electrical energy in the circuit, which is then converted to heat energy in the nichrome wire, which is then transferred to the air above the nichrome wire. The heat energy of the air above the nichrome wire is then converted to kinetic energy of the moving / rising air, which is then transferred to the paper spiral snake.

Q3 (a)	Kinetic energy (Spinning blade) → Electrical energy (Generator) → Light energy (Lamp) + Heat energy (Lamp)
Q3 (b)	*[Try by yourself: Refer to page 17 of Energy & Forces notes]* All of the kinetic energy of the blades was converted to heat energy and sound energy.

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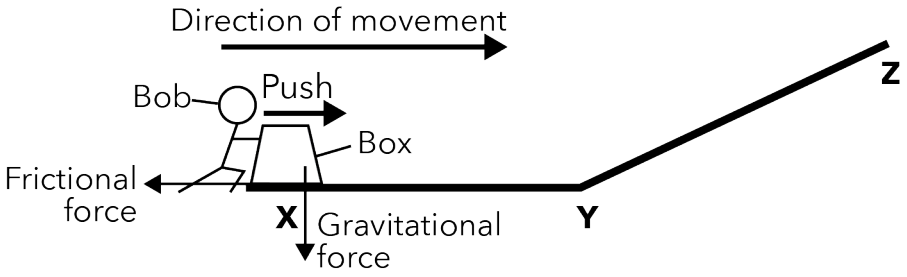
TOPIC: FORCES

Techniques:

1) 2 steps Forces answering structure
2) Friction → between _____ & _____
3) Use "acting on" and "greater than" in the "Forces" answering method
4) "Stiffness" of objects template answer

Qn	Answer
Q1 (a)	
Q1 (b)	The push force acting on the box caused the stationary box to start moving.
Q1 (c)	Decrease. **State the factor:** The carpet makes the surface rougher, **Link to forces:** which increases the friction **between** the box **and** the carpet.
Q2 (a)	A magnet
Q2 (b)	The magnetic force of repulsion between the magnets is **greater than** the gravitational force **acting on** object A, causing it to float.
Q3 (a)	Spring Y: 60 cm Spring Z: 25 cm
Q3 (b)	*[Hint: Refer to page 51 of Energy & Forces notes]* Spring Y is less stiff. For the same mass of the load hung on the springs, spring Y has a larger extension.
Q3 (c)	*[Try by yourself: Refer to page 49 of Energy & Forces notes]* When loads greater than 80 g were hung on spring Y, spring Y became fully stretched. Hence, an increase in the mass of the load hung on it does not increase the length of spring Y.