THE PIQUE LAB LEARNING CENTRE

Primary School Science Programme

P6 CCI™ SCIENCE COURSE

Answers to FITB Booklet (2026)

Name: _____

Class: _____

TOPICS COVERED

2026 P6 CCI™ SCIENCE COURSE

TOPIC: BODY SYSTEMS

Page 1 of FITB Booklet

5 TYPES OF BODY SYSTEMS	HOW DIFFERENT BODY SYSTEMS WORK TOGETHER
Digestive Respiratory Circulatory Muscular Skeletal	Oxygen — Respiratory Carbon dioxide — Circulatory Digested food — Digestive **How do the circulatory, digestive and respiratory systems work together to provide energy for the body?** simpler ; small intestine ; bloodstream nose ; windpipe ; lungs ; Oxygen ; lungs ; bloodstream heart ; digested food ; oxygen ; respiration ; energy

Page 2 of FITB Booklet

DIGESTIVE SYSTEM

Digestion starts **here.**

Teeth ; chew ; smaller

[D] Mouth

Saliva ; digestive juices ; simpler

surface area ; food ; digestive juices (saliva) ; FASTER digestion of food

Least ; Least digestion

Gullet

Churns ; mixes ; digestive juices

muscles ; mouth ; stomach

[D] Stomach

Most ; Most digestion

Digested ; bloodstream

[D] Small intestine [A]

ends

Absorption

Folds ; Villi ; surface area ; small intestine ; digested food ; FASTER absorption of digested food into the bloodstream

Water ; undigested food ; bloodstream

[A] Large intestine

waste materials

Anus

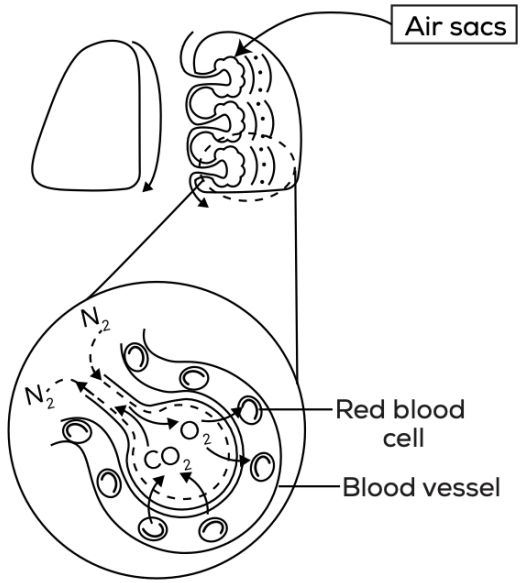
Page 3 of FITB Booklet

RESPIRATORY SYSTEM

Nose

Windpipe

Lungs



nose hair ; mucus

dirt ; dust

1. Oxygen
2. Carbon dioxide

exchange of gases

exposed surface area ; lungs ; inhaled air ; FASTER exchange of gases

RICHER IN O_2
POORER IN CO_2

POORER IN O_2
RICHER IN CO_2

	Inhaled air	Exhaled air
Oxygen	21% — -5% → 16%	
Carbon dioxide	0.03% — +4.36% → 4.4%	
Nitrogen	78%	78%
Water vapour (And other gases)	0.96% — +0.64% → 1.6%	
Temperature	Lower	Higher

Always more O_2 than CO_2

Page 4 of FITB booklet

CIRCULATORY SYSTEM

Heart
Blood
Blood vessels

Poorest
Richest

(exchange of gases)

Lungs

Richest
Poorest

Heart

Poor
Rich

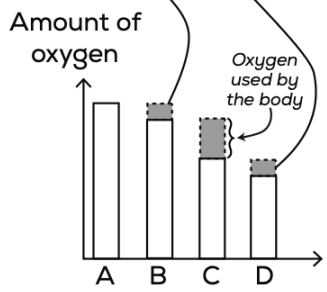
Rich
Poor

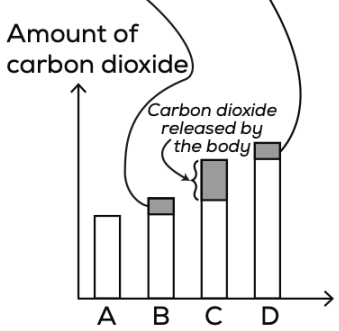
Body

(muscle)

Oxygen is used by the heart during respiration to release energy and carbon dioxide.

(to pump blood)





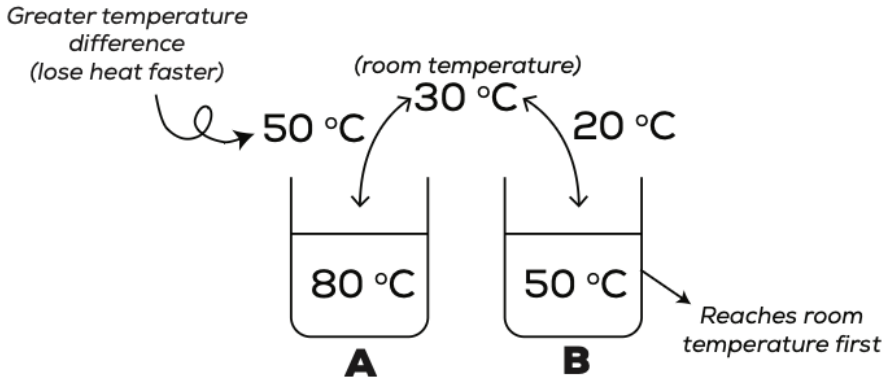
Page 5 of FITB Booklet

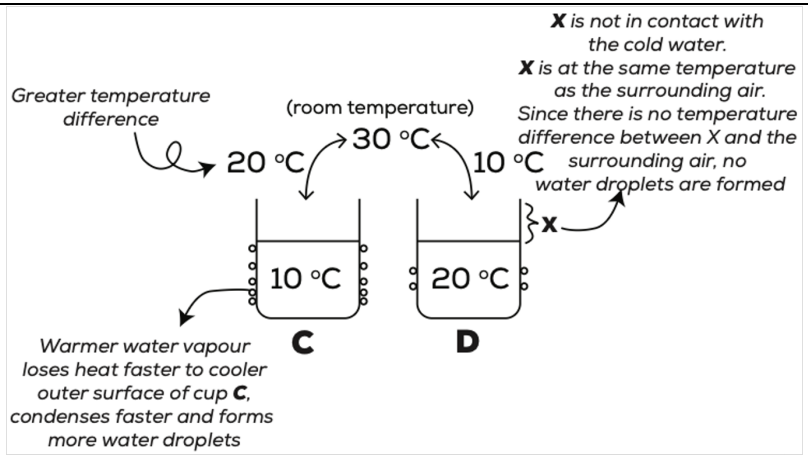
warmer ; cooler

3 FACTORS AFFECTING RATE OF HEAT TRANSFER (TEH / THE)

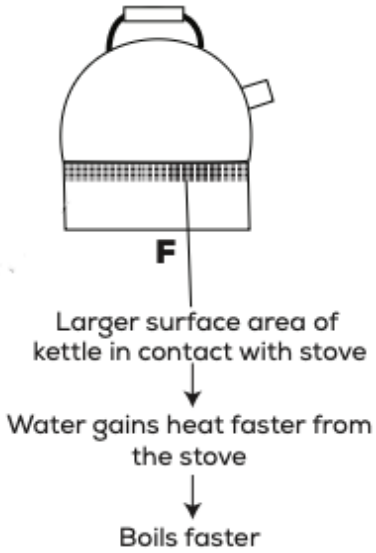
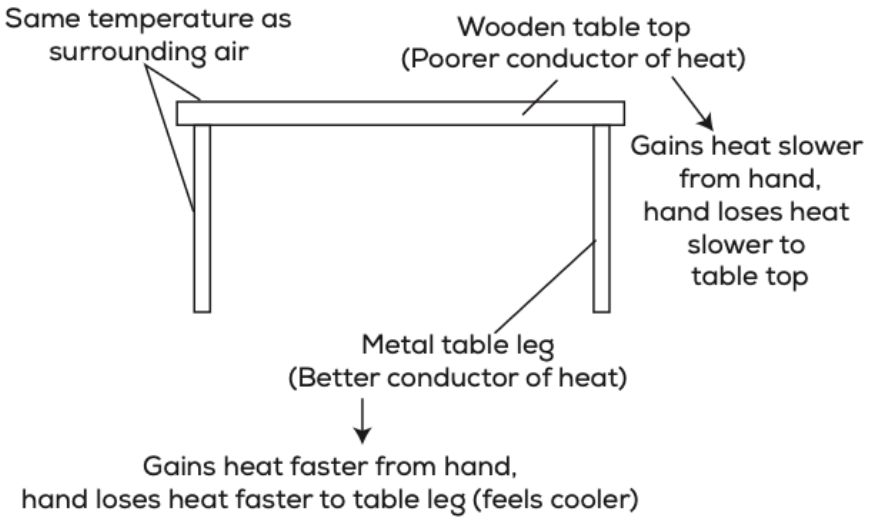
Temperature difference

- greater ; temperature difference ; faster ; rate of heat transfer
- no heat transfer ; same temperature ; temperature difference





Page 6 of FITB Booklet

3 FACTORS AFFECTING THE RATE OF HEAT TRANSFER	
(Exposed) surface area • greater ; (exposed) surface area ; faster ; rate of heat transfer	**H**eat conductivity • Better conductors of heat ; faster • Poorer conductors of heat ; slower
	

Page 7 of FITB Booklet

7 HEAT PROCESSES

Melting (G)

Evaporation (G)

Boiling (G)

Condensation (L)

Freezing (L)

Expansion (G)

Contraction (L)

Heat gain / loss

gains ; from

loses ; to

Process

Change in state

The water in the t-shirt gains heat from the warmer surrounding air to evaporate and form water vapour.

Page 8 of FITB Booklet

HEAT CAN DO 2 THINGS

temperature

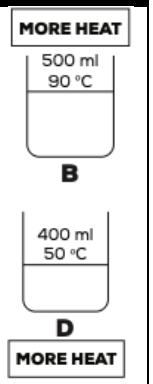
- Increase
- Decrease

state

- Solid → Liquid (Melting)
- Liquid → Solid (Freezing)
- Liquid → Gas (Boiling)

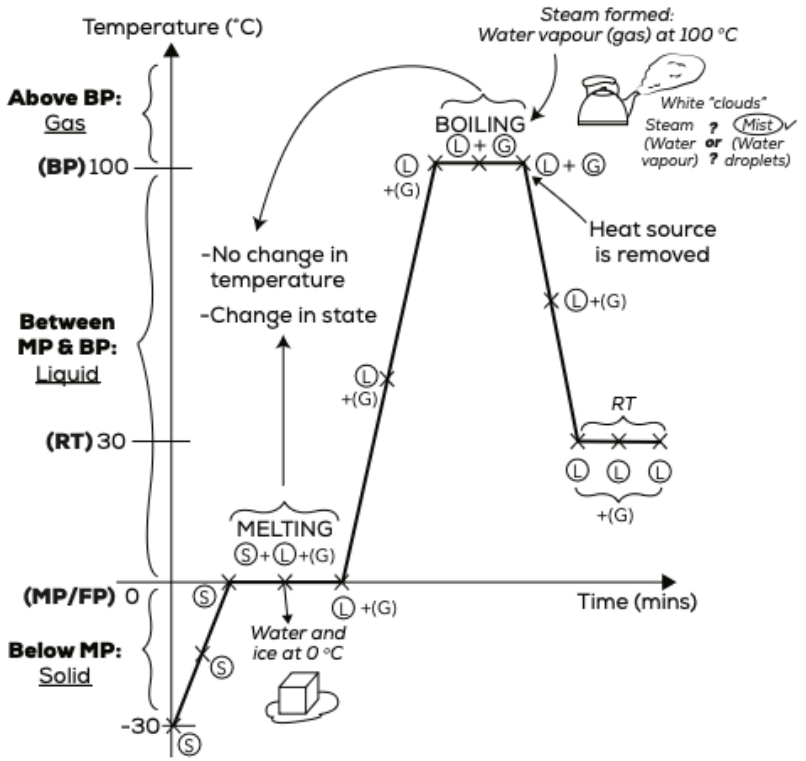
FACTORS AFFECTING THE AMOUNT OF HEAT IN A SUBSTANCE

Temperature



Volume

HEAT GRAPH OF WATER

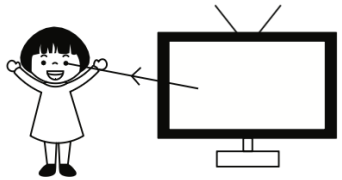
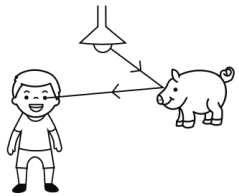
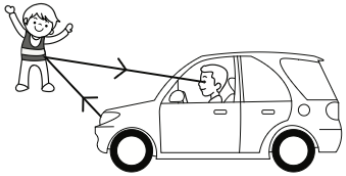


evaporation ; liquids ; MP ; BP ; +(G) ; state ; L to G ; evaporation

Page 9 of FITB Booklet

2 PROPERTIES OF LIGHT

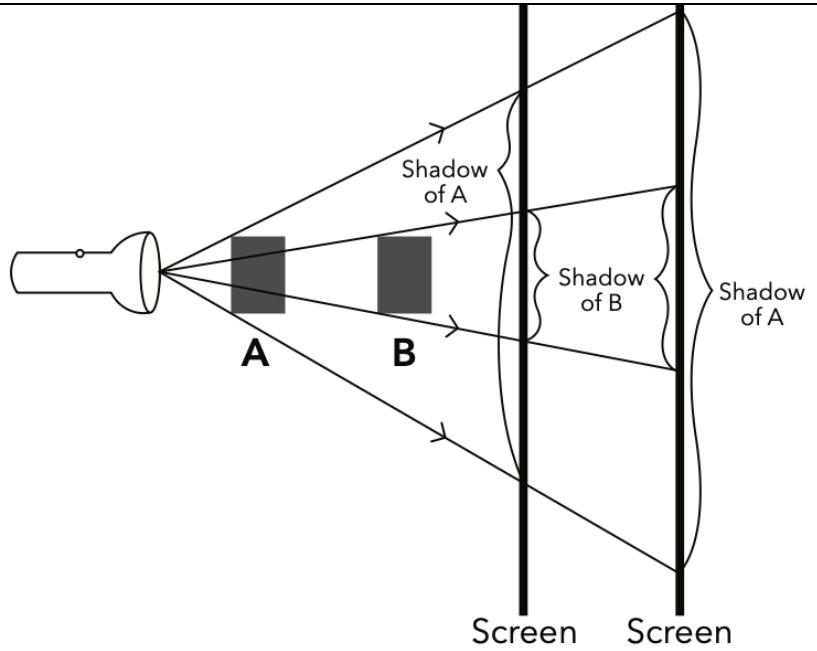
- travels in a straight line
- reflected
- blocked

The object is the light source	The object is NOT the light source	
 television ; travels ; Dora's ; (her) ; (light source) television (object)	 lamp ; reflected ; piggy bank ; John's ; (light source) (object) (him) ; piggybank (object)	 MORE light from the headlights of the car (light source) is reflected off the safety vest into the driver's eyes, enabling the driver to see the person wearing the safety vest MORE clearly.

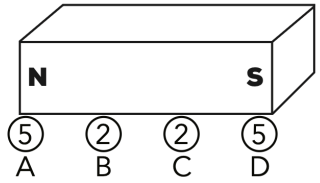
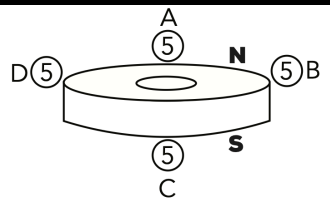
Page 10 of FITB Booklet

TRANSPARENCY
Transparent • most • does not cast a shadow • does not allow shadows
Translucent • some • casts a faint shadow • allows faint shadows ; e.g. shadow puppet shows
Opaque • no • casts a dark shadow • allows dark shadows ; e.g. projector screens

Page 11 of FITB Booklet

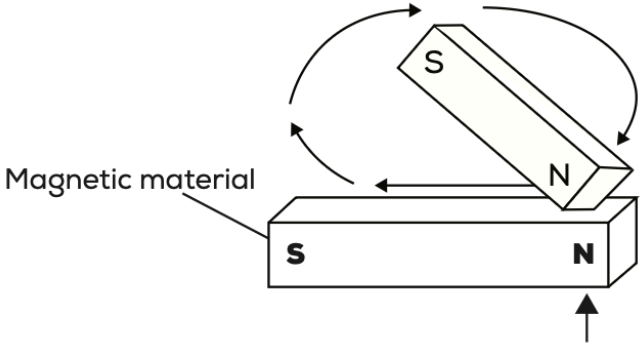
SHADOW TEMPLATE ANSWER	
light from the (light source) ; travels in a straight line ; blocked ; (object) ; opaque / translucent	
	• closer to the light source • away from the screen • Fainter ; blurrier • away from the light source • Closer to the screen • Darker ; clearer / sharper

Page 12 of FITB Booklet

BAR MAGNET	RING MAGNET	IDENTIFYING UNKNOWN OBJECTS
 strongest at its poles	 same throughout	*(attract)* Move towards each other • Objects A and B are made of magnetic materials. • At least one of the objects must be a magnet. *(repel)* Move away from each other • Objects C and D are made of magnetic materials. • Both objects are magnets. • No conclusions can be made.

Attraction	Repulsion
• Unlike poles of magnets facing each other attract. • Magnets attract magnetic materials.	• Like poles of magnets facing each other repel.

Page 13 of FITB booklet

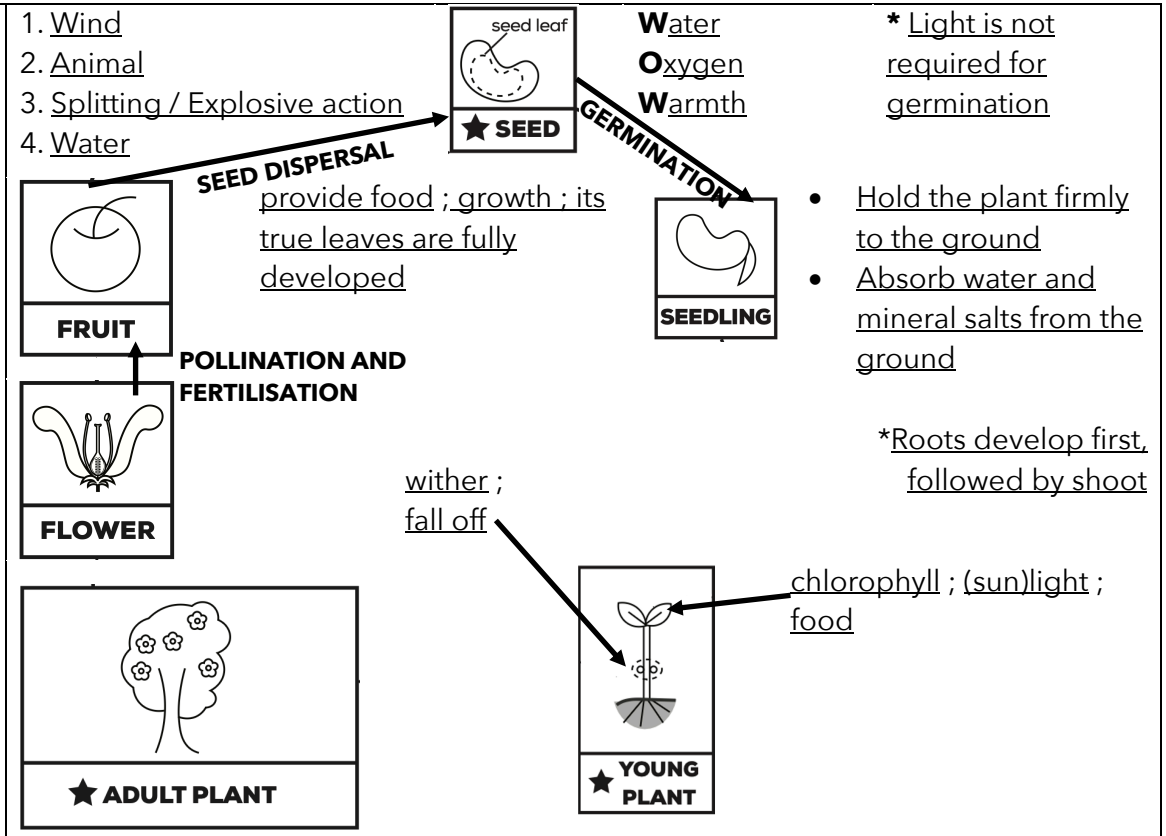
CREATING MAGNETS	
 Use one pole of a magnet to stroke a magnetic material in one direction at least 30 times. • same ; more ; same • greater magnetic strength	The steel paper clips will remain stationary. Copper is a non-magnetic material and will not be magnetised to become an electromagnet to attract the steel paper clips. **S**teel **I**ron **N**ickel **C**obalt (not copper!) • coils / turns of wire around the magnetic object • batteries

Page 14 of FITB Booklet

transfer of pollen grains from the anther to the stigma (of the flower of the same species)

process where the male reproductive cell (in the pollen grain) fuses with the female reproductive cell (in the ovule)

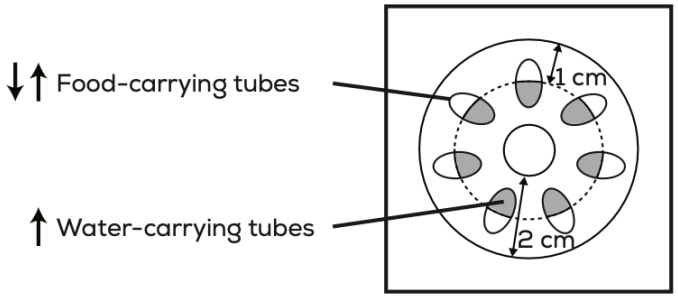
Large and brightly coloured	Small and dull coloured
Scented	Non-scented
Present	Absent
Inside the flower	Hanging out of flower
Sticky stigma inside the flower	Large and feathery stigma protrudes out of flower



Page 15 of FITB Booklet

TRANSPORT IN PLANTS

Cross-section of a Stem



W ater _____

I nside _____

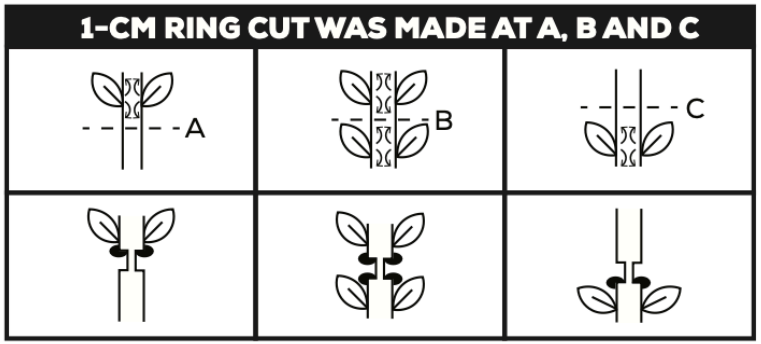
F ood _____

O utside _____

Both water and food-carrying tubes die

Food-carrying tubes

1) Swell



2) Bigger fruits

*More food transported to fruit X to be stored

3) Die

Roots cannot receive food

↓

Roots die

↓

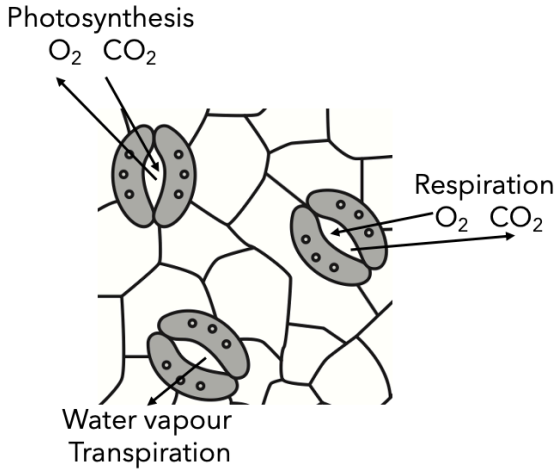
Cannot absorb water

↓

Plant die

Page 16 of FITB Booklet

FUNCTION OF THE STOMATA (TINY OPENINGS)



exchange of gases

- Oxygen **P**hotosynthesis
- Carbon dioxide **R**espiration
- Water vapour **T**ranspiration

underside

- Direct exposure to sunlight
- Water loss through the stomata as water vapour (in the process of transpiraton)

Page 17 of FITB booklet

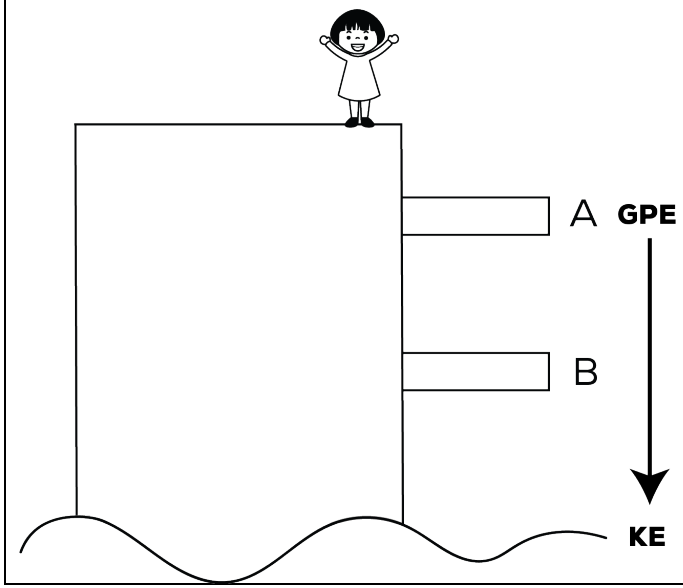
work ; created ; destroyed (used up) ; converted

Converted ; change	**T**ransferred ; no change	**S**tored ; potential	**P**ossesses / **H**as ; all

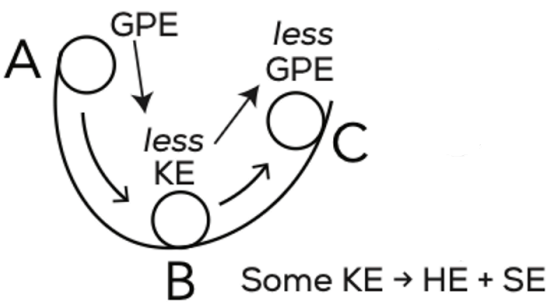
6 FORMS OF ENERGY

Potential energy ; PE Kinetic energy ; KE Electrical energy ; EE Light energy ; LE Heat energy ; HE Sound energy ; SE	• Speed • Mass • Temperature • Volume	Gravitational potential energy ; GPE • Mass • Height of object above the ground Chemical potential energy ; CPE • Food, batteries and fuels Elastic potential energy ; EPE • Stiffness of elastic object • How much the elastic object is stretched or compressed

Page 18 of FITB booklet

	State the factor Use energy conversion	**C**hoose ; Point A **U**se data ; Jane is at a greater height above the water at point A. **E**xplain data ; Thus, Jane possesses/has MORE gravitational potential energy (GPE) at point A, which is converted to MORE kinetic energy (KE) as she is falling.

Page 19 of FITB booklet

<table>
<tr>
<td> 
</td>
<td>SOME of the kinetic energy of the (object) was converted to heat energy and sound energy. Thus, the (object) will possess/have less kinetic energy, which is converted to less gravitational potential energy.</td>
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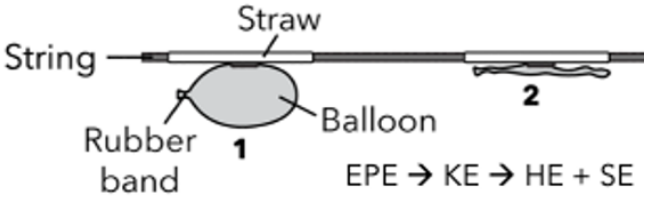
<tr>
<td rowspan="3"> 
</td>
<td>NOT ALL of the kinetic energy of the (object) was converted to heat energy and sound energy. / The (object) still possesses/has kinetic energy.</td>
</tr>
<tr>
<td>SOME of the kinetic energy of the (object) was converted to heat energy and sound energy.</td>
</tr>
<tr>
<td>ALL of the kinetic energy of the (object) was converted to heat energy and sound energy.</td>
</tr>
</table>

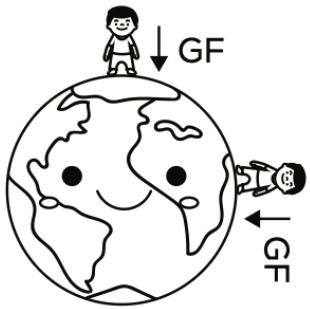
Page 20 of FITB booklet

• push ; pull • see ; feel ; see	• Acting on • Between ____ and ____ • Greater than / smaller than / equal to • Overcome (not preferred)
EFFECTS	TYPES
1. stationary ; start 2. moving ; stop 3. moving ; direction 4. moving ; speed a. increase ; speed b. decrease ; speed 5. shape	1. Gravitational 2. Frictional 3. Elastic spring 4. Magnetic

Page 21 of FITB booklet

GRAVITATIONAL ; WEIGHT ; GRAVITY ; NON-CONTACT

pull (downwards towards the Earth)



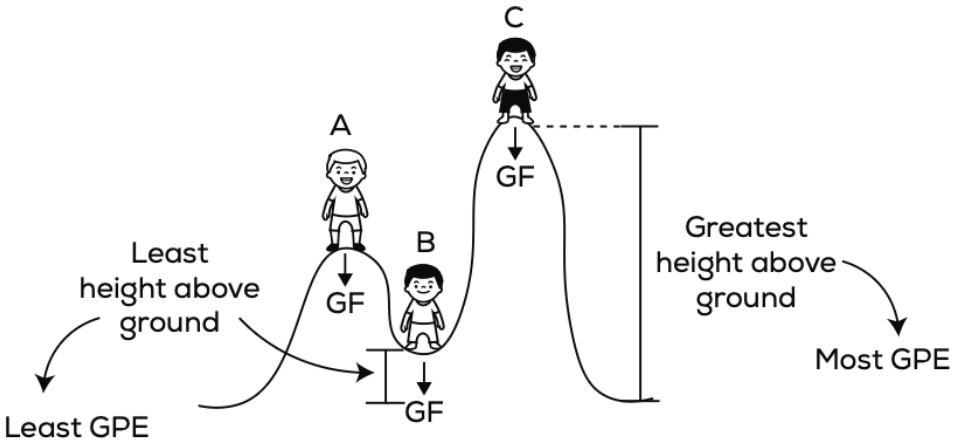
all times

1. Mass ; kg
2. Location

1 kg → 10 N	1 kg → 1.6 N
More gravitational force	Less gravitational force

Gravitational force ; Gravitational potential energy

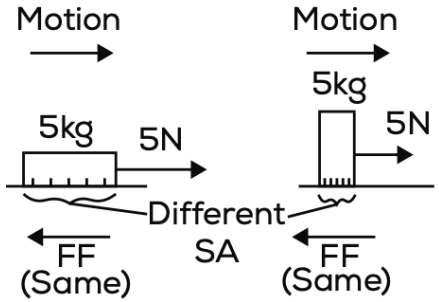
Mass Location Mass Height above ground



same gravitational force acting on them

GPE ; GPE		
C	A	B

Page 22 of FITB booklet

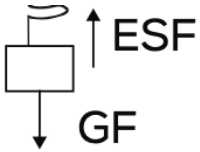
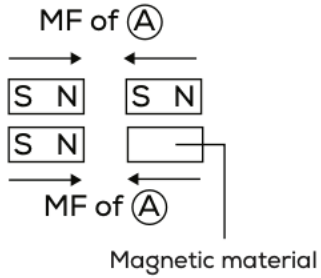
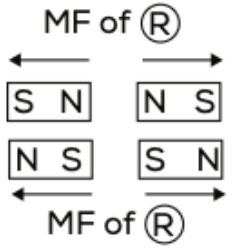
<table>
<tr><td colspan="3">FRICTIONAL ; FRICTION ; CONTACT</td></tr>
<tr>
<td>
• two surfaces rubbing
• Friction ; opposite
• Friction
1. Mass
2. Surface texture
surface area


• Friction ; (Surface A) ; (Surface B)
</td>
<td>
• friction
1. Friction ; air ; (Air resistance) — A.R.
2. Friction ; water ; (Water resistance) — W.R.
A. (Exposed) surface area (ESA)

B. Streamlined
• Friction
1. Lubricants (e.g. oil, soap, water)
2. Rollers
3. Wheels
4. Ball bearings
5. Powder
</td>
<td>
Larger ESA, More A.R.

Less streamlined, more W.R.
</td>
</tr>
</table>

Page 23 of FITB booklet

ELASTIC SPRING ; CONTACT	MAGNETIC ; NON-CONTACT
 • stretched / compressed ; attached to / placed ; original	magnetic 1. Magnetic ; attraction ; pull 2. Magnetic ; repulsion ; push   (Steel, Iron, Nickel, Cobalt) • Distance • Type ; thickness • Magnetic strength