



# FAMOUS STUDENTS PLATFORM



**QUESTION BOOKLET**  
**GRADE 7 & 8**

**TIME ALLOWED : 90 MINS**  
**MAXIMUM MARKS : 90**

**2023**

**FSP SCIENCE**  
**CONTEST**



**FSP**

**VIBRANT YOUNGSTERS COMPETITIONS**





## INSTRUCTIONS



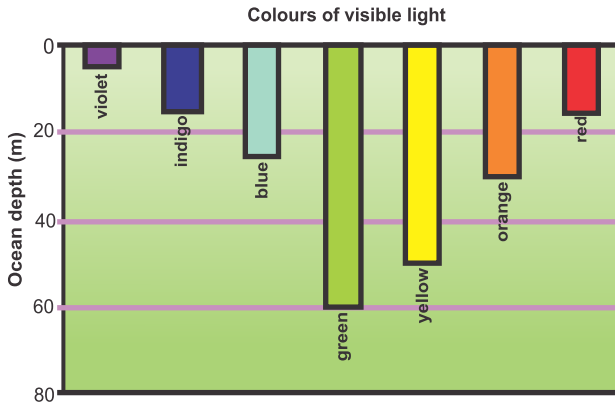
- 1) Don't start attempting the paper until instructed by the invigilator.
- 2) instructions from the examination invigilator must be carried out promptly.
- 3) Carefully recheck your name, father name, school name, address etc at the bubble sheet / answer sheet.
- 4) Record all answers on the bubble sheet only. select best answer from the four given options and mark only one option in each question.
- 5) Use blue / black ink to fill up the circles for your answers on the bubble sheet use of lead pencil is not allowed.
- 6) Use of any helping material including cell phones and electronic devices is strictly prohibited.
- 7) Every correct answer earns three points. there would be negative marking. one point would be deducted for every incorrect answer.
- 8) Candidates may not leave the examination room unescorted for any reason, and this includes using the washroom.
- 9) No materials or electronic devices shall be brought in to the room.
- 10) There are five categories of the contest as under:
  - A) Vibrant Youngsters(Grade 1 & 2)
  - B) Vibrant Youngsters(Grade 3 & 4)
  - C) Vibrant Youngsters(Grade 5 & 6)
  - D) Vibrant Youngsters(Grade 7 & 8)
  - E) Vibrant Youngsters(Grade 9 & 10 / 0-levels)
- 11) Only registered students can participate in the contest.
- 12) No candidate shall take out of the hall any answer book(s) or part of an answer book, whether used or unused, or other supplied material.
- 13) If a participant does not understand a word or phrase on the exam paper, neither examiner nor invigilator is permitted to answer.
- 14) for information about upcoming contests or providing valuable feedback,  
please visit [www.fspcompetitions.org](http://www.fspcompetitions.org)
- 15) Any academic misconduct or malpractice must be reported to fsp vibrant youngsters at [info@fspcompetitions.org](mailto:info@fspcompetitions.org)



READ THE INFORMATION BELOW. QUESTION 1 & 2

As visible light penetrates the waters of the ocean it is absorbed. At a depth of approximately 2 000 meters all light is absorbed and it is completely black.

The graph shows the depths to which some colors penetrate green coastal waters.



QUESTION 1 :

Which maximum depth does orange light penetrate to?

- (A) 20 m
- (B) 25 m
- (C) 30 m
- (D) 35 m

QUESTION 2 :

Four multi-coloured balls were dropped at the same time into green coastal water. The balls were the same size and sank at the same speed.

Which ball would be the last to appear totally grey or black?

(A) yellow and violet

(B) blue and red

(C) orange and indigo

(D) indigo and blue

- (A) A
- (B) B
- (C) C
- (D) D

**QUESTION 3 :**

The photograph shows a larval fish being measured with a centimetre ruler.

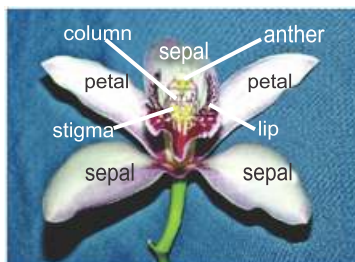


What is the diameter of the larval fish's eye?

- (A) 1 mm
- (B) 2 mm
- (C) 3 mm
- (D) 10 mm

**QUESTION 4 :**

Parts of an orchid flower are shown below.



What is the name of the part labelled X in the photograph of the orchid shown below?



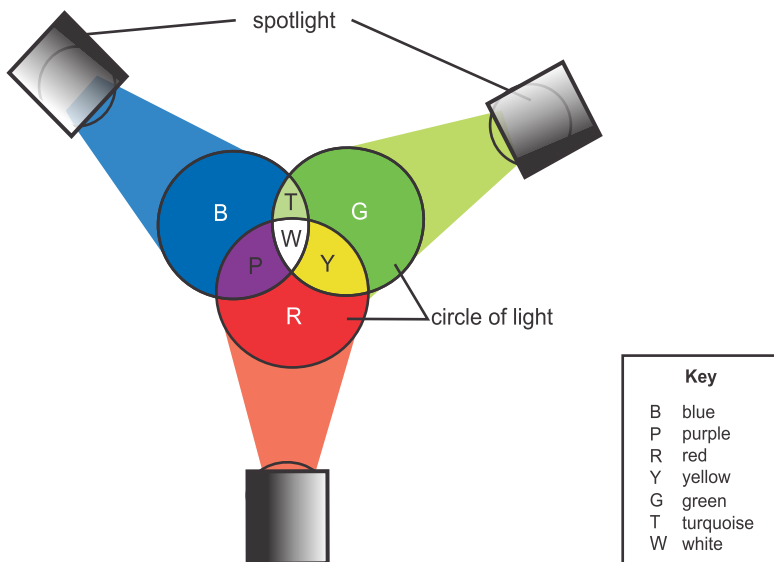
- (A) column
- (B) lip
- (C) petal
- (D) sepal



## QUESTION 5 :

The primary colours of light are blue, red and green.

The diagram shows the colours created by mixing different coloured light.



Key	
B	blue
P	purple
R	red
Y	yellow
G	green
T	turquoise
W	white

Which three colours of light can be mixed to create white light?

- (A) green, yellow and red
- (B) green, turquoise and blue
- (C) turquoise, purple and red
- (D) turquoise, purple and yellow

## QUESTION 6 :

The table gives some information about the chemicals in a cleaner.

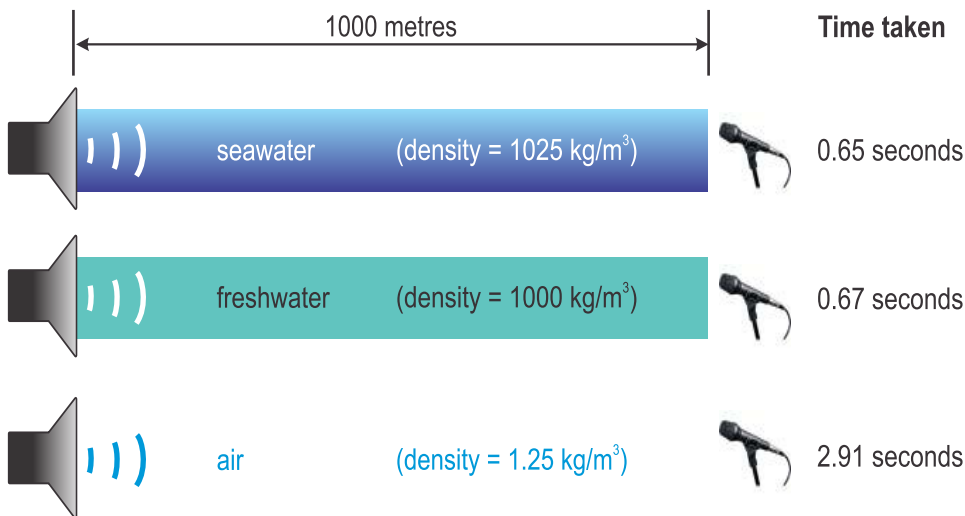
Chemical	Chemical formula	Use
sodium percarbonate	$2\text{Na}_2\text{CO}_3 \cdot 3\text{H}_2\text{O}_2$	water softener, colour-fast bleach. stain remover, deodoriser, effective disinfectant for bacteria and viruses
soda ash	$\text{Na}_2\text{CO}_3$	water softener, control of pH, detergent builder
nonionic surfactant	$\text{R} - (\text{OCH}_2\text{CH})_{2n} - \text{OH}$	reduces the surface tension of liquids
sodium tripolyphosphate	$\text{Na}_5\text{P}_3\text{O}_{10}$	water softener, detergent builder, holds oil in suspension

Three of the chemicals are sodium (Na) compounds. What is a common use of these compounds?

- (A) colour-fast bleach
- (B) control of pH
- (C) detergent builder
- (D) water softener

Read the information below. Question 7 & 8.

Yazan set up an experiment to find the speed of sound through different media. He recorded the time taken for a sound to travel 1000 meters through each medium.



$$\text{Speed (m/s)} = \text{distance travelled (m)} / \text{time taken (s)}$$

### QUESTION 7 :

Which statement is supported by Yazan's experiment?

- (A) Sound travels more quickly through air than water.
- (B) Sound travels more quickly through seawater than freshwater.
- (C) The denser the medium, the slower the speed of sound.
- (D) The speed of sound is not affected by the medium through which it passes.

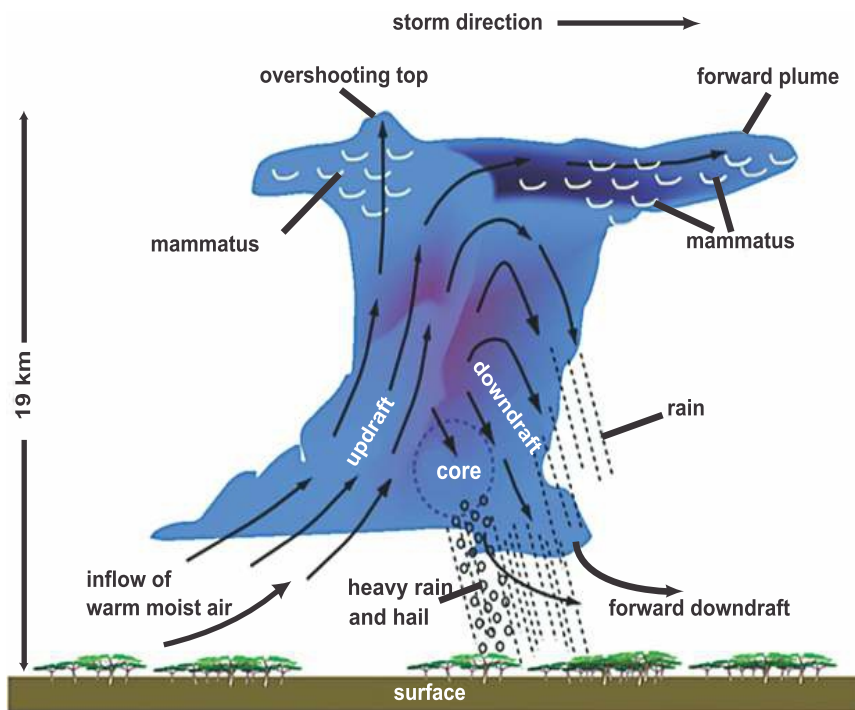
### QUESTION 8 :

What is the speed of sound (m/s) in freshwater?

- (A) 1538
- (B) 1493
- (C) 1.50
- (D) 0.67

## READ THE INFORMATION BELOW. QUESTION 9 & 10

The diagram shows features of an anvil-shaped super-cell thunderstorm.



### QUESTION 9 :

Which feature of an anvil-shaped super-cell thunderstorm is the most obvious indicator of the direction in which the storm is travelling?

- (A) the speed of the wind
- (B) the mammatus clouds forming
- (C) the height of the anvil-shaped cloud
- (D) the direction in which the forward plume develops

### QUESTION 10 :

The speed of light is approximately 300000 km/s.

The speed of sound is approximately 340 m/s.

Umair saw a flash of lightning. Twenty seconds later he heard a loud rumble of thunder. How far was the thunderstorm from Umair?

- |            |             |
|------------|-------------|
| (A) 3.4 km | (B) 6.8 km  |
| (C) 8.8 km | (D) 68.0 km |

## QUESTION 11 :

The table below gives the optimal conditions for storing certain vegetables.

Vegetable	Temperature (°C)	Relative humidity (%)	Length of storage
cabbage	0	95	10-14 days
cauliflower	0	95	2-4 weeks
cucumber	4	95	10-14 days
brinjal	7	90	1 week
garlic	0	70	6-7 months
onion	0	70	6-7 months
pumpkin	13	75	2-3 months
Lauki	13	60	2-6 months

The table below describes different storage conditions.

Condition	Description
cold-cool	temperature $\leq 10$ °C
warm	temperature $>10$ °C
dry	relative humidity $\leq 90\%$
moist	relative humidity $> 90\%$

Which vegetable has the shortest storage time under optimal conditions?

- (A) cabbage (B) cauliflower  
(C) cucumber (D) brinjal

## QUESTION 12 :

The table lists information about the types of hair growing on humans.

		Types of hair growth		
		Lanugo hair (fine, no pigment, less than 2 cm long)	Vellus hair (fine fuzz, little or no pigment, less than 2 cm long )	Terminal hair (coarse, dark hair, grows longer than 2 cm)
Stages of human growth	Foetal	covers the whole body, this hair falls out after birth	none	grows on scalp and eyebrows only
	Childhood	none	covers the whole body	grows in pubic area and under arms at puberty
	Adulthood	none	covers the whole body and on the scalp in balding adults	grows on the face, chest, abdomen and the arms and legs in males

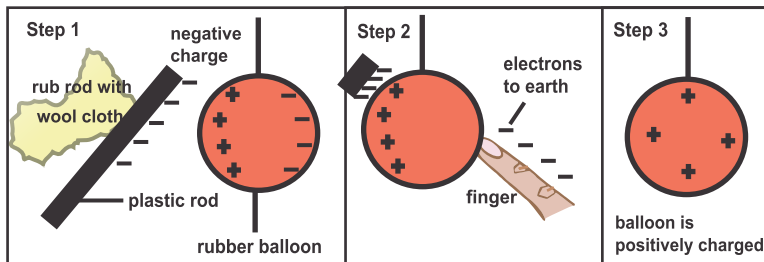
What hair would be found on a human baby at birth?

- (A) lanugo hair only  
(B) lanugo, vellus and terminal hair  
(C) short fuzzy hair less than 2 cm long all over the body and dark coarse hair under the arms  
(D) fine hair with no pigment all over the body, and coarse darker hair on the scalp and eyebrows

Read the information below. Question 13 & 14.

Static electricity is created when an object loses or gains electrons. Objects that lose electrons become positively charged (+). Objects that gain electrons become negatively charged (-). Unlike charges attract. Like charges repel.

The diagram shows the steps used to give a balloon a positive static electric charge.



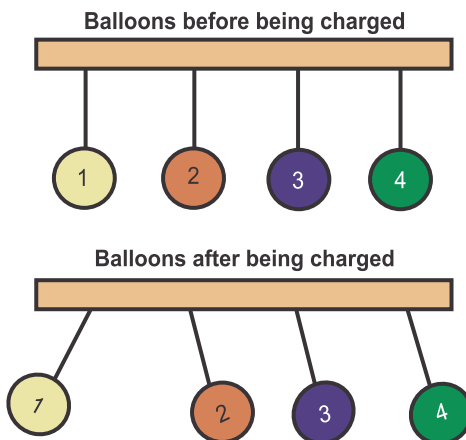
### QUESTION 13 :

What caused the rubber balloon to lose some of its electrons?

- (A) being rubbed by a wool cloth and being attracted by a plastic rod
- (B) being attracted by a plastic rod and the path to earth provided by the finger
- (C) being rubbed by a wool cloth and the charge spreading out over the balloon's surface
- (D) being attracted by a plastic rod and the charge spreading out over the balloon's surface

### QUESTION 14 :

The diagrams below show four balloons before and after they were each given a static electric charge. Balloon 2 has a positive charge.



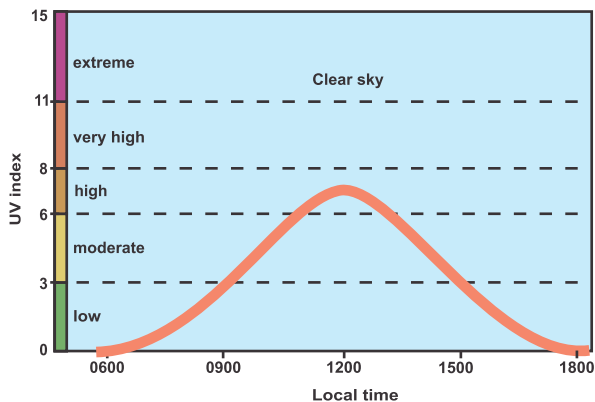
Which balloon(s) have a negative charge?

- (A) 1 only
- (B) 3 and 4 only
- (C) 1, 3 and 4
- (D) none of the balloons have a negative charge

## READ THE INFORMATION BELOW. QUESTION 15 & 16

The UV Index is a daily forecast of the expected ultraviolet (UV) radiation from the Sun.

This graph shows the UV Index at different times on a certain day.



The table shows the length of exposure to UV radiation after which people are at risk of skin damage.

UV index value	Minimum time to skin damage (minutes)	
	Skin type - never tans	Skin type - never burns
0-2	30	120
3	20	90
4	15	75
5	12	60
6	10	50
7	8.5	40
8	7.5	35
9	7	33
10	6	30
11	5.5	27
12	4	21

### QUESTION 15 :

How long could a person with skin that never tans remain in the sun at midday on this day before sustaining skin damage?

- (A) 7 Minutes
- (B) 7.5 Minutes
- (C) 8.5 Minutes
- (D) 40 Minutes

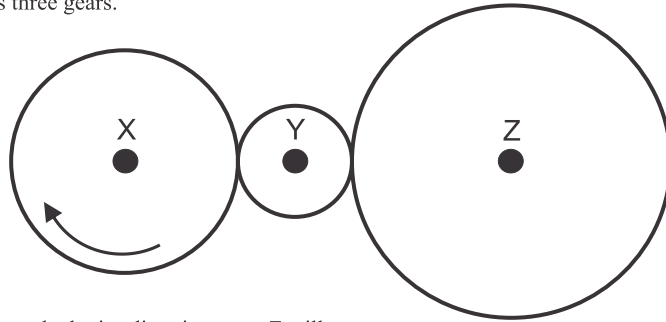
### QUESTION 16 :

Which factor listed below would **not** affect the UV Index value?

- (A) local time
- (B) a person's skin type
- (C) the amount of cloud cover
- (D) the position of the Sun in the sky

**QUESTION 17 :**

The photograph shows three gears.



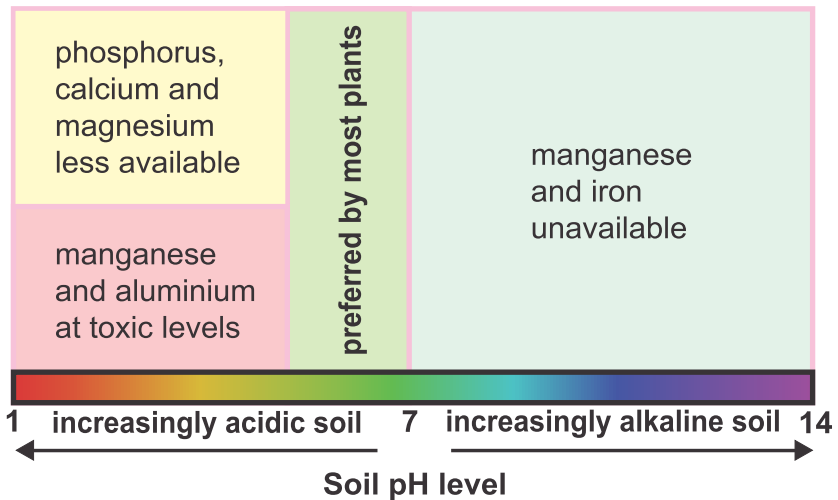
When gear X rotates in a clockwise direction, gear Z will rotate

- (A) clockwise faster than gear X
- (B) clockwise slower than gear X
- (C) anti-clockwise faster than gear X
- (D) anti-clockwise slower than gear X

**QUESTION 18 :**

If a substance is present in soil at a toxic level, plants will not grow.

The diagram indicates the availability to plants of chemicals in soil at various levels of soil acidity (pH).



The chemical manganese is

- (A) available to plants in soils with a pH of 8 to 10
- (B) less available to plants in soils of pH less than 5
- (C) at toxic levels in highly acidic soils
- (D) unavailable to plants in highly acidic soils.

## QUESTION 19 :

The photograph of the Earth was taken by Apollo 11 astronauts in July 1969. It shows the Earth as it rose into the sky above the surface of the Moon.



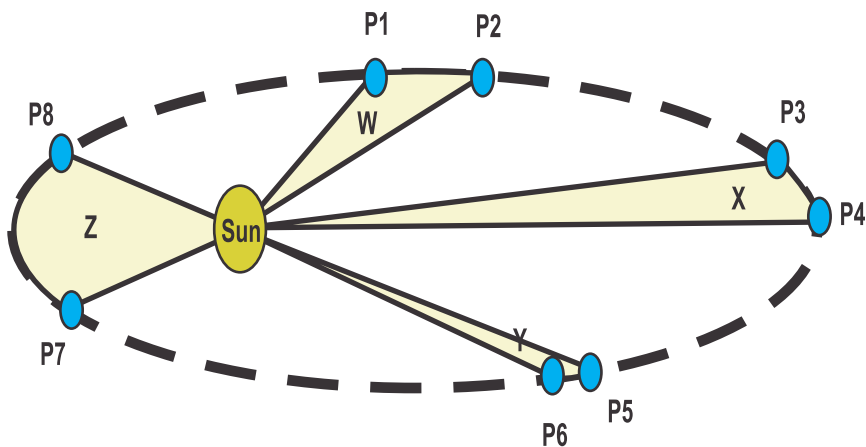
Which statement would be the most likely explanation for only part of the Earth being visible?

- (A) Part of the Earth was in the shadow of the Moon
- (B) It was a half-Moon phase when the photograph was taken
- (C) The Earth's shape was distorted by the Moon's atmosphere
- (D) Only part of the Earth's surface that faces the Moon was lit by the Sun

## QUESTION 20 :

The diagram below shows the Earth at various positions as it orbits around the Sun. The areas W, X, Y and Z are all equal to each other.

The Earth takes the same amount of time to move from P1 to P2, from P3 to P4, from P5 to P6 and from P7 to P8.



The speed of the Earth is greatest as it travels from

- (A) P1 to P2
- (B) P3 to P4
- (C) P5 to P6
- (D) P7 to P8

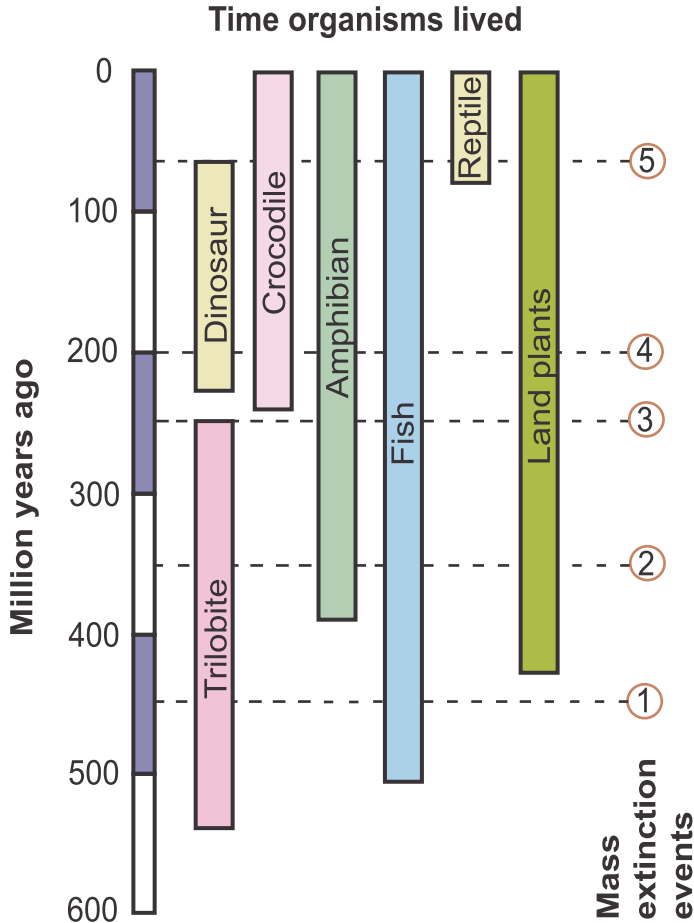




**QUESTION 23 :**

*Mass extinctions* are when there is a loss of a large number of species in a relatively short period of time. Mass extinctions occur when an event brings about rapid changes to Earth's environment.

This geological timeline shows when some organisms lived, and the times at which five mass extinction events occurred.



Which mass extinction event caused the extinction of the dinosaurs?

- (A) 1
- (B) 2
- (C) 4
- (D) 5

## QUESTION 24 :

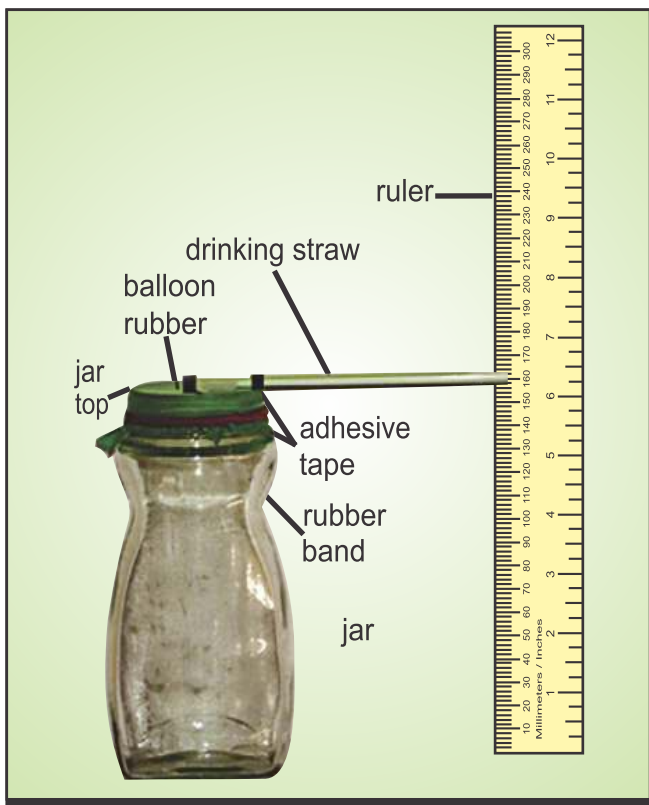
Shazia wanted to know how a change in atmospheric pressure might affect wind speed.

She made this instrument to measure atmospheric pressure.

The balloon rubber covers the opening of the jar and is held in place by a rubber band.

The drinking straw is attached with adhesive tape to the centre of the balloon rubber.

The straw is also attached to the balloon rubber where it stretches over the edge of the jar top, providing a pivot for the straw as it points at the scale.



Shazia read the value from the ruler at the point where the bottom of the straw and the ruler aligned.

In making this decision Shazia assumed that a change in atmospheric pressure would

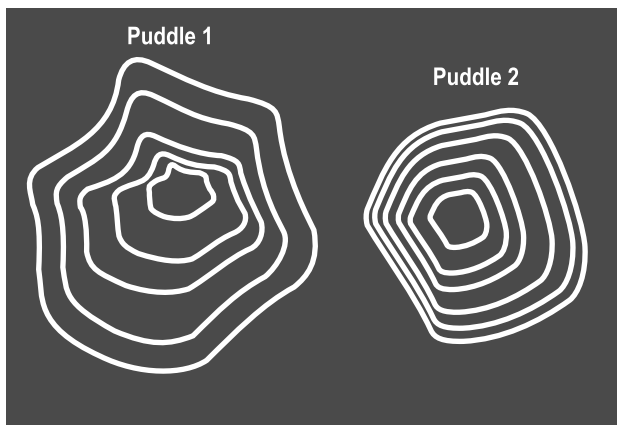
- (A) force air into the jar
- (B) force air through the straw
- (C) change the mass of air in the jar
- (D) change the volume of air in the jar

## Question 25.

In a group activity Isha wanted to know what affects the rate at which water puddles evaporate.

Isha set up an investigation on an asphalt area of the school grounds. Each puddle was created at the same time using the same volume of water. Each hour Isha drew a white chalk line on the asphalt around the perimeter of each of the puddles until all the water had evaporated. The asphalt did not absorb the water.

The diagram shows her observations.



What could Isha conclude from her investigation?

- (A) The water from puddle 1 evaporated at a slower rate than the water from puddle 2
- (B) The greater the surface area of the puddle the faster the water evaporated
- (C) The greater the volume of water in the puddle the more slowly it evaporated
- (D) The water from puddle 1 and puddle 2 evaporated at the same rate

## Question 26.

***weight (N) = mass (kg) multiplied by acceleration due to gravity (m/s<sup>2</sup>)***

<b><i>acceleration due to gravity</i></b>	<b>Earth (sea level)</b>	<b>approximately 9.8 m/s<sup>2</sup></b>
	<b>Moon (surface)</b>	<b>approximately 1.6 m/s<sup>2</sup></b>

An object has a mass of 10 kg.

What is the difference in the object's weight (N) on the Moon compared to its weight at sea level on Earth?

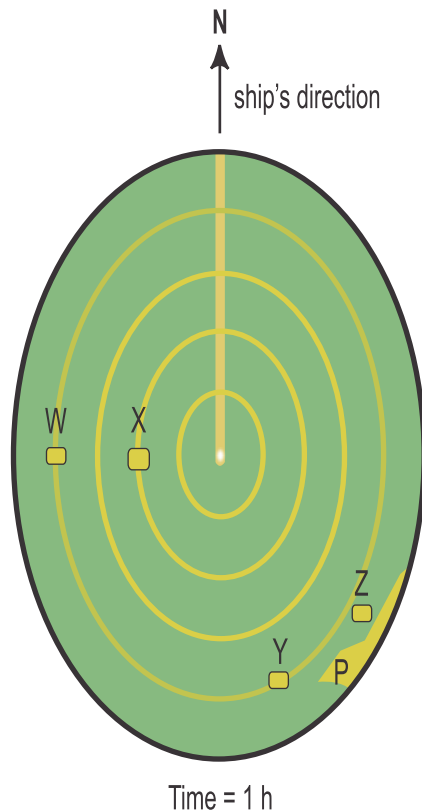
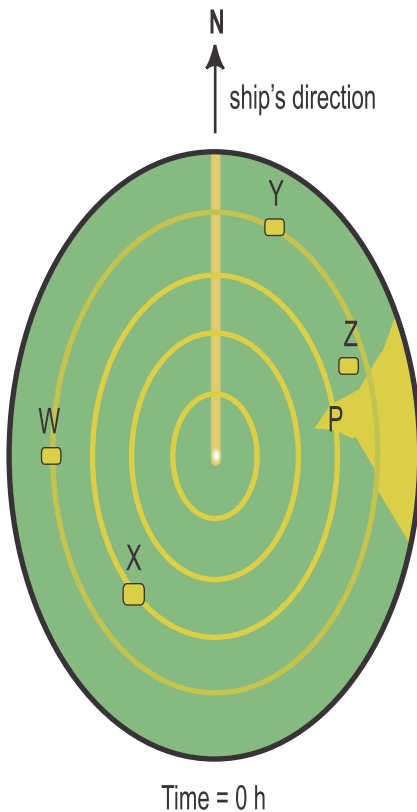
- (A) 8.2
- (B) 16
- (C) 82
- (D) 98



Read the information below. Question 27 & 28.



The diagrams show the radar display of a ship at two different times. The display shows radar returns from four other vessels: W, X, Y and Z, and from a point of land, P. The range rings show distances 5 km apart. The ship's position is at the centre of the display



**Question 27.**

At what speed (km/h) is the ship with the radar moving north?

- (A) 12
- (B) 18
- (C) 22
- (D) 26

**Question 28.**

Which vessel is stationary and which vessel is moving fastest?

	Stationary vessel	Vessel moving fastest
(A)	W	Y
(B)	W	X
(C)	Z	Y
(D)	Z	X

- (A) A
- (B) B
- (C) C
- (D) D

## QUESTION 29 :

A molecule is the smallest part of a substance that contains all of its atoms.

The photograph shows models of four molecules: ammonia ( $\text{NH}_3$ ), carbon tetrachloride ( $\text{CCl}_4$ ), chloroform ( $\text{CHCl}_3$ ) and methanol ( $\text{CH}_3\text{OH}$ ). They are not in order.

Which photograph shows a model of a chloroform molecule?

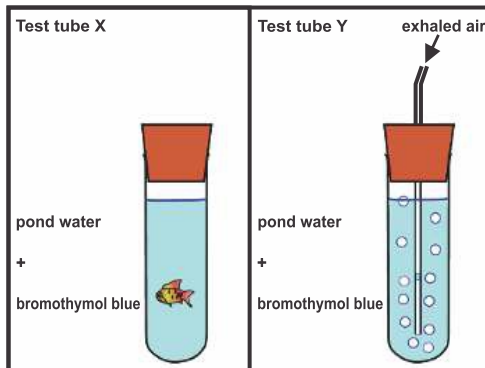


- (A) A  
(B) B  
(C) C  
(D) D

## QUESTION 30 :

Husnain set up an investigation to show that fish exhaled carbon dioxide ( $\text{CO}_2$ ).

He read that the pH indicator bromothymol blue can be used to test for the presence of carbon dioxide in water. He set up test tubes X and Y as shown.



Husnain breathed air into test tube Y.

What was his assumption, and what was his purpose?

	Husnain assumption	Husnain purpose – to show that
(A)	exhaled air contains $\text{CO}_2$	exhaled air contains $\text{CO}_2$
(B)	exhaled air contains $\text{CO}_2$	bromothymol blue changes colour in the presence of $\text{CO}_2$
(C)	bromothymol blue does not affect fish	exhaled air contains $\text{CO}_2$
(D)	bromothymol blue does not affect fish	bromothymol blue changes colour in the presence of $\text{CO}_2$

- (A) A  
(B) B  
(C) C  
(D) D



# ANSWER SHEET

## GRADE 7&8



Q.NO	ANSWER	Q.NO	ANSWER
1	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D	16	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
2	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	17	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D
3	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	18	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D
4	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	19	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
5	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	20	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
6	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	21	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
7	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	22	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
8	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	23	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
9	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	24	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
10	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	25	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D
11	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	26	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D
12	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	27	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D
13	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D	28	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
14	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D	29	<input type="radio"/> A <input type="radio"/> B <input type="radio"/> C <input checked="" type="radio"/> D
15	<input type="radio"/> A <input type="radio"/> B <input checked="" type="radio"/> C <input type="radio"/> D	30	<input type="radio"/> A <input checked="" type="radio"/> B <input type="radio"/> C <input type="radio"/> D



# FSP

VIBRANT YOUNGSTERS COMPETITIONS







FAMOUS STUDENTS PLATFORM

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