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PREFACE

What is Knowledge Bytes ?

Knowledge Bytes is a collection of riddles, interesting facts, mnemonics and puzzles that will make your learning fun and engaging.

We want you to be delighted about studying. Knowledge Bytes helps you to know more about the subject in a fun, motivating and educational way and helps to implement what you learn in a creative way.



Leads to Increased Comprehension

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EXPLORE

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Aakash Brju's

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C Aakash Educational Services Limited [AESL]

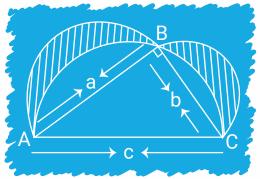
Areas Related To Circles Crossword Across 2 The longest chord of a circle. [8] 4. 3 4 5 6 A line that touches the circle at only one 7. point is a ____. [7] 8 Two circles having the same radii are 8. [9] 9 10 11 A parallelogram circumscribing a circle. [7] 9. 12 Angles in the same segment of a circle are 11. 13 ____. [5] The region between a chord and its corresponding arc is called a _____. [7] 12. An arc formed by the end points of a diameter is a _____ arc. [12] 13. Down The tangent at any point on a circle is _____ to the radius through the point 1. of contact. [13] Tangents drawn at the ends of a diameter are _____. [8] 2. A cyclic parallelogram is _____. [9] 3. The centre of the circle lies in the _____ of the circle. [8] 5. The maximum number of tangents to a circle through a point lying outside 6. the circle. [3] A quadrilateral with all its four vertices lying on a circle is called _____. [6] 8. The region between an arc and the two radii joining the centre to the end 10.' points of the arc is known as the ____. [6]

Interesting Facts

1

3.

Here, semicircles are drawn by considering sides of a right triangle as a diameter, where a,b and c are the sides of a right angled triangle.



2

Area of shaded region = Area of right angled $\triangle ABC$

If any n-sided regular polygon is inscribed in a circle of radius 'r', then -

- (i) Polygon side : $a = 2r \sin\left(\frac{\pi}{n}\right)$, where n = No. of sides of a polygon
- (ii) Polygon area : $A_p = \frac{1}{2}nr^2 \sin\left(\frac{2\pi}{n}\right)$

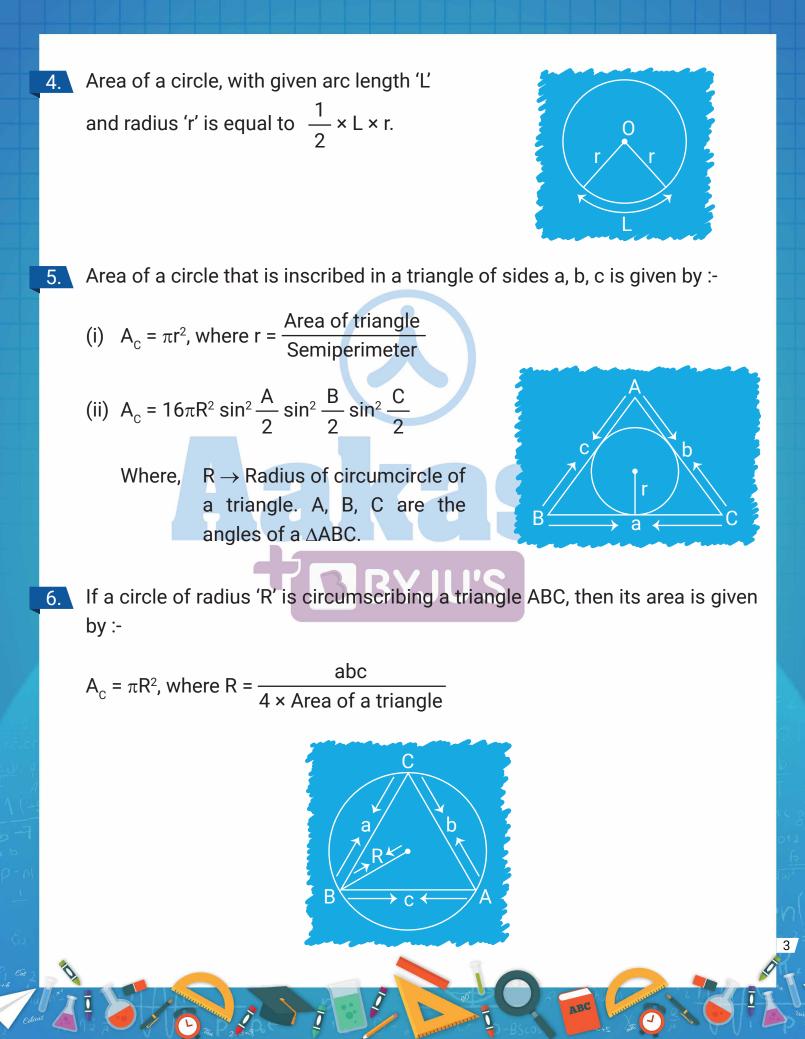
(iii) Circle area : $A_c = \pi r^2$

- If any n-sided polygon is circumscribing a circle of radius 'r', then -
 - (i) Polygon side : a = 2r tan $\left(\frac{\pi}{n}\right)$, where n = No. of sides of a polygon

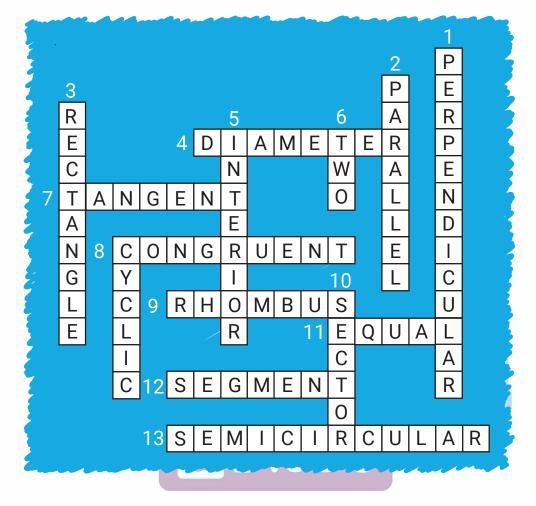
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- (ii) Polygon area : $A_p = \frac{1}{2}$ nar
- (iii) Circle area : $A_c = \pi r^2$



Answer (Crossword)

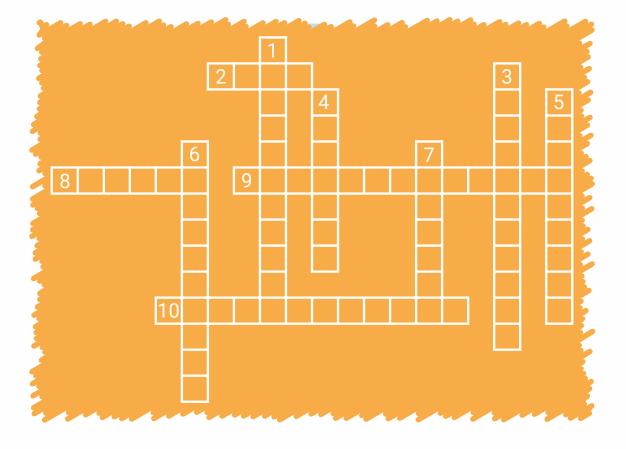




ABC



Crossword



Across

5

ABC

- 2. The most abundant fuel we use in South Africa to generate electricity.
- 8. The ability to do work.
- 9. The gas released when coal is burnt.
- **10.** The type of energy source will be used up.

Down

- 1. A nuclear fuel has this disadvantage.
- 3. Fuels that were made from living matter many years ago.
- 4. The name of the nuclear power station near Cape Town.
- 5. This type of energy source will not be used up.
- 6. An energy source making use of falling water.
 - Wood and animal dung are examples of this energy source.

Refill the fuel in your car once in a life..

Hypothetically if katharp utilise the 10 kg of petrol in a day which has calorific value 45000 kJ/kg. If car engine only utilise 30% of energy as per its efficiency than he would require $45000 \times 10 \times 30/100 = 135000$ kJ in a day.

If he replaces his car with modern car which runs on the nuclear fission, than 0.1 mg mass converts into energy due to mass deficiency and it will generates

$(0.1 \times 10^{-3} \times (3 \times 10^8)^2 = 9 \times 10^{12} \text{ J} = 9 \times 10^9 \text{ kJ}$

According to Albert Einstein formula

So when the katharp will come for refill the fuel

900000000/135000 = 666666.67 days

666666.67/365 = 183 years approx...



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great !!



Humans have been using the power of the wind in some way for thousands of years.

A single wind turbine has around 8,000 different parts.

- 3. If taken full advantage of, the sunlight beamed on the earth for 1 hour could meet world's energy demands for an entire year!
- 4. If solar power generation doubled every decade for 100 years, it would still be pretty far behind oil today.
- 5. Portugal powered their entire country running on renewable energy alone.
- 6. Wind turbines can stand taller than the Sydney Opera House.
- 7. The solar cell does not works on cloudy day is absolutely a myth. Although it is not as effective but it produce 10-25% of its regular capacity on cloudy day.
- 8. On the roof of the Swiss Federal Institute of Technology, a heliostat array solar panel focuses sunlight on a reactor that can turn carbon dioxide from the air into fuel.
- 9. Super scholars at Oregon State University have discovered that cellulose in trees can be used to create supercapacitors. A supercapacitor is a high-power energy storage device which can be recharged much faster than a battery, and can hold a great deal more power.
- 10. Plastic bags make fine diesel fuel. 1000 billion plastic shopping bags are thrown away each year in the world, with only 13% recycled. By using pyrolysis, a process of heating the bags in an oxygen-free chamber can produce a synthetic fuel with the equivalent energy content of diesel.

Answer (Crossword)

R 3 F 0 S S A 2 C O R E K D 0 Η 0 В N E W A R B C E Y D 9 C O N D 0 X 8 E N E R G D 0 L F U E L S R R G F A B L 0 U Е V 10 N 0 Ε NR WA NE В W E R BBYJU'S

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Periodic Classification of Elements

1. The periodic table reflects its creator's love for card games

Dmitri Mendeleev was very fond of card games. That's why he wrote the weight of each element on a separate index card and sorted them as they would be organized in solitaire.



Technetium was the first artificially produced element Today, there are 118 confirmed elements in the periodic table.

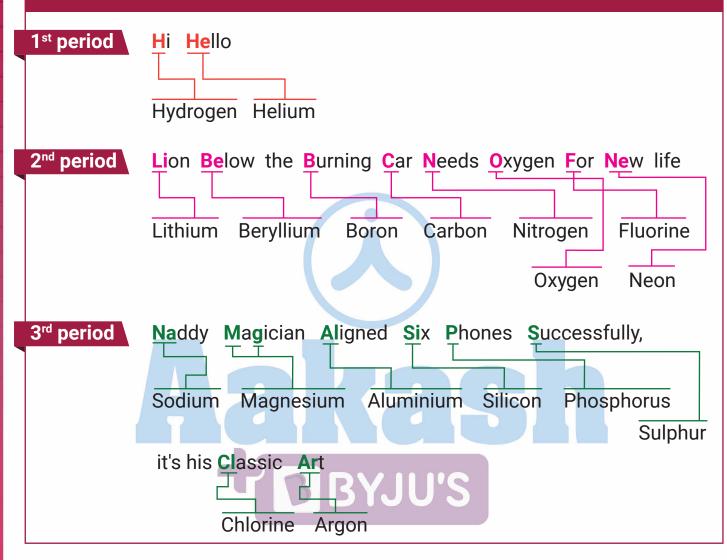
Technetium was the first element to be synthesized. It was first produced in 1937. Today there are 24 other elements that are primarily produced synthetically.

3. The periodic table might not be able to extend to 137 elements

The physicist Richard Feynman predicted that, if it exists, we will never be able to observe the 137th element.

That's partly because, theoretically, element 137's electrons would orbit at the speed of light. Hypothetically speaking, element 139's electrons would orbit faster than the speed of light, making it impossible given today's scientific knowledge.

Pneumonics for Elements of First Three Periods





 Three elements P, Q and R form a Dobereiner triad. The atomic weights of P and R are 35 and 127 respectively. Find the atomic weight of middle element Q.

(1) 40(3) 81

(2) 60 (4) 120



Our Environment

Read the statements to guess the word and find the same in below list of jumbled words.

1.	Eye defect that occurs	C	H	L	0	R	0	F	L	U	0_	R	0	C	A	R	В	0	N_	S	G
	due to exposure to UV.	K	Α	Κ	D	Α	Κ	J	J	Y	G	I	R	Т	В	С	W	J	W	Ζ	R
		V	Т	Y	Ζ	F	В	S	G	Y	Н	Ν	I	I	С	I	L	Μ	X	W	S
2.	Accumulation of harm-	S	Y	E	G	U	Т	K	I.	Ζ	Н	С	Ρ	Ν	В	Ν	E	S	0	Y	Ζ.
	ful chemicals in succes-	F	U	G	F	D	U 	S	R	E	Α	1	B	Α	K		X	F	Q	N	N
		S	Z	Q	G	R	Н	Y	S	Y _	M	N		0	В	0	X	Y _	Y	F	S
	sive trophic levels.	Т	R	A _	N	S	D	U _	C	E	R	E	0	U	В	J	M	Z .	R	к –	Α
		M	S -	E	0	V	V	2	S	L	в	R	M	M	V	۲ ۲	J	L		F	P
3.	Type of nutrition seen in		-	G	J	X	0	C V	C	Q		A T	A	F	C o	ĸ	A	P	X	S	R
	detrivores like Fungi.	U C	F .	P V	U L	S V		Y	P	к р	0		G	E	ъ т		U		ъ Е	N	0 P
	detrivores like Fungi.			R C		А А		J	ע ע	к с	G				l D	A	T C	V		G M	
		́т	۰ ۱	۰ ۸	W	A V	D	т	v C	о Б		N	Ē	ש ו	R A	ч	о D		Ч П	7	
4.	Unit to measure ozone.		F	T	7		K	۱ ۷	P	P	C	F	ì	L M	T	S	W	Δ	G	-L	÷
		т	· Y	A	Δ	Y	ï	K		M	н	т	C	U	0	J	R	w	Y	F	
	Major azona deploting	K	E	R	W		D	D	Ŷ	Y	E	N	A	В	S	Y	R	ĸ	E	D	C
5.	Major ozone depleting		R	A	A	Ĺ	D	0	S	N	M	R	Т	E	Ρ	M	Z	K	F	В	G
	substance.	D	В	С	Κ	Ρ	F	В	U	T	T	S	I	R	н	0	V	U	v	R	F
		ĸ	0	Т	J	Q	Ζ	S	Н	L	С	Ρ	0	Μ	Е	Н	R	K	Е	0	D
6.	A layer in the atmo-	L	Е	U	Ε	V	Y	0	Ε	0	Α	D	Ν	Ε	R	В	X	Q	L	L	в
		Ν	Α	Κ	Т	Т	V	Ν	V	Ε	L	Ρ	Н	0	Ε	G	U	L	R	I	X
	sphere.			4						-		-			~			~~			

7. The cyclical flow of elements between biotic and abiotic components.

- 8. Pollution free method of garbage removal.
- 9. Another name for autotrophs.

Not Know > Which was the first book to set the stage for society in becoming more environmentally aware?

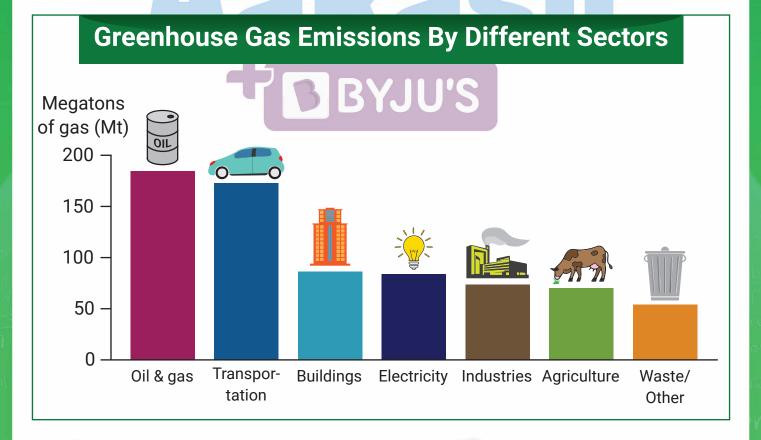
Silent Spring was an extraordinary book that opened the public's

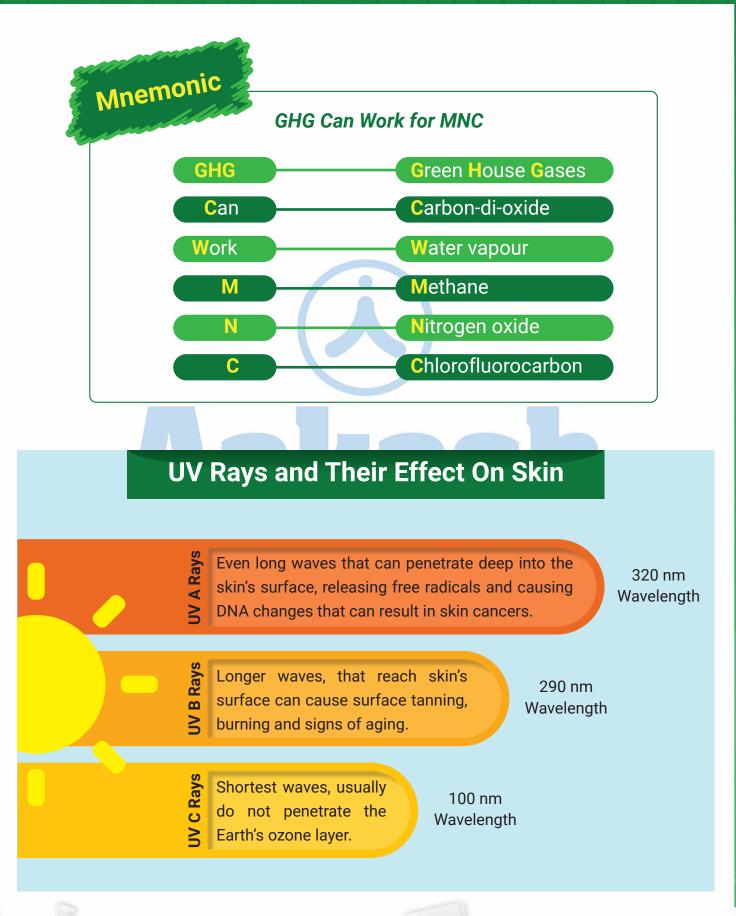
eyes to the dangers of DDT, (published in the year 1962, the first broadly-used synthesized pesticide), to wildlife and human health. Due to the public outcry raised by Silent Spring, by Rachel Carson, DDT was banned but the impacts of Carson's book did not end there. For the first time, the environment became a part of the public consciousness. Now, more than 50 years later, we see that the people across the world take up Car-



13

son's banner in the modern-day 'Environmental Movement'.





Polaint



Name the gas released from landfills, decaying organic matter under shallow water in marshes and bogs, flooded paddy fields, by ruminant animals & termites and by the burning of biomass. A molecule of this gas has 21 times more global warming potential than a molecule of CO₂.

(1) Sulphur dioxide

(2) Methane

(3) Ammonia

- (4) Nitrous oxide
- Name the metal contained in broken fluorescent bulbs, tube lights and dead batteries which gets transported with common municipal solid waste and can be easily swallowed, inhaled or absorbed through the skin and can cause damage to the kidneys and nervous system.
 - (1) Copper Cadmium (2)
 - (3) Mercury

- (4) Arsenic
- 3. Cataract blinds at least 120 million people globally every year. What is its main cause?
 - (1) Heredity

(2) Ultraviolet radiation

(3) Unbalanced diet

(4) Gasoline fumes

15

What is the primary source of food for marine life? (1) Phytoplankton (2) Zooplankton (3) Sea weed (4) Grass The use of microorganism metabolism to remove pollutants such as oil spills in the water bodies is known as ; (2) Bioremediation (1) Biomagnification (3) Biomethanation (4)Bioreduction Answer: 1. (2)2. (3)(2)5. 3. 4. (1)(2)

1.	Montreal protocol signed in	(a)	5 th June
2.	Earth Summit was held in	(b)	1987
3.	National Pollution Prevention Day is observed on	(c)	1942
4.	Discovery of ozone hole over Antartica	(d)	1985
5.	World Environment Day	(e)	1992
6.	10% law was proposed in the year	(f)	2 nd December

(a) .d

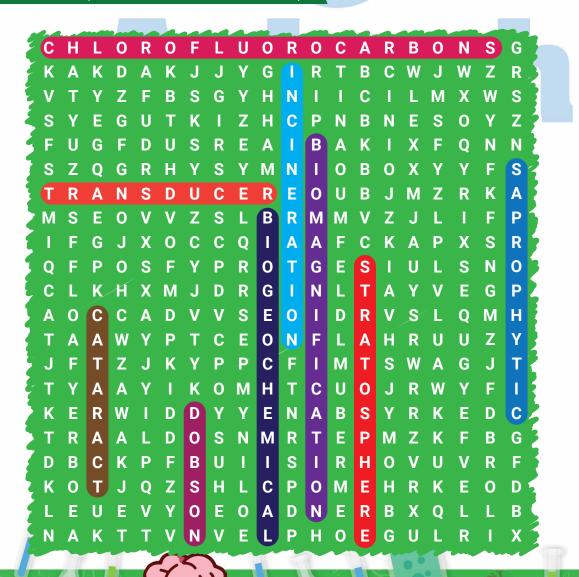
(b) .4

(f) .5

(9).2

16

Answer (Jumbled Words)



(c) .ð

Gender, Religion and Caste

The basic difference between the Gender and Sex is that Sex is a Biological

classification and Gender is the sociological classification. The gender division is not based on biology but on social expectations and stereotypes which is very much prevalent in the form of the sexual division of labour. In the sexual division of labour the work is assigned whether one is male or female. For example most of the household works are assigned to the women and outside works are assigned to the men.

The basis of this discrimination is enshrined in the patriarchal mindset under which there is the domination of male in the society.

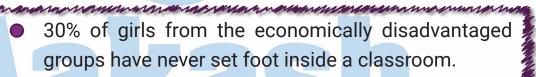
Impact of this Discrimination

- Female Infanticide/foeticide : Unborn girls are illegally aborted in India.
- Preference to the male child than the female child: Because of various social, cultural, religious, economic reasons the male child are preferred which often leads to the sex-selective abortion.



At least 117 million girls around the world demographically go "missing" due to sex-selective abortions.

- Gap between the literacy rate of male and female : The literacy rate of India according to the 2011 census is 73 percent. However, Literacy rate among females is 64.6 percent whereas the literacy rate among males is 80.9 percent.
- Literacy rate among women in India is less as many of the girl children have not gone to school.



Nearly 40% of adolescent girls in the age group of 15-18 years are not attending school.

This discrimination is also visible in the jobs where the male section for a particular job gets higher salary than the females for the same job.

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 According to the latest World Economic Forum's (WEF) Global Gender Gap Report 2018, India ranked 108th out of 149 countries on the gender gap index.

According to the Monster Salary Index (MSI) published in March 2019, women in the country earn 19% less than men.

18

Celcius

Way Forward

- Sustainable Development Goal (SDG): The SDG's Goal Number 5 strives to achieve 100% Gender equality by 2030.
- The Equal Remuneration Act, 1976 provides that equal wages should be paid to equal work.
- Protection of women from sexual harassment at the workplace.
- Reservation to women (at least 33%) in the House of People.

Religion

Religion is the code of conduct which gets its authority from the religious text i.e. Bible for Christianity, Quran for Islam and Bhagavad Gita for Hinduism etc...

Religion in private sphere is good but in the political sphere sometimes it is reason behind the ideology of communalism.



Communalism is an idea which considers religion as the basis of the society.

Interference of politics in religion sometimes associated with the communal riots which disturb the social balance, leads to the loss of life and public property.



Communalism in India is a recent phenomenon which started with the Partition of Bengal, 1905.

Before this, there were no such incidents reported either in Ancient Period or Medieval Period.

Way Forward

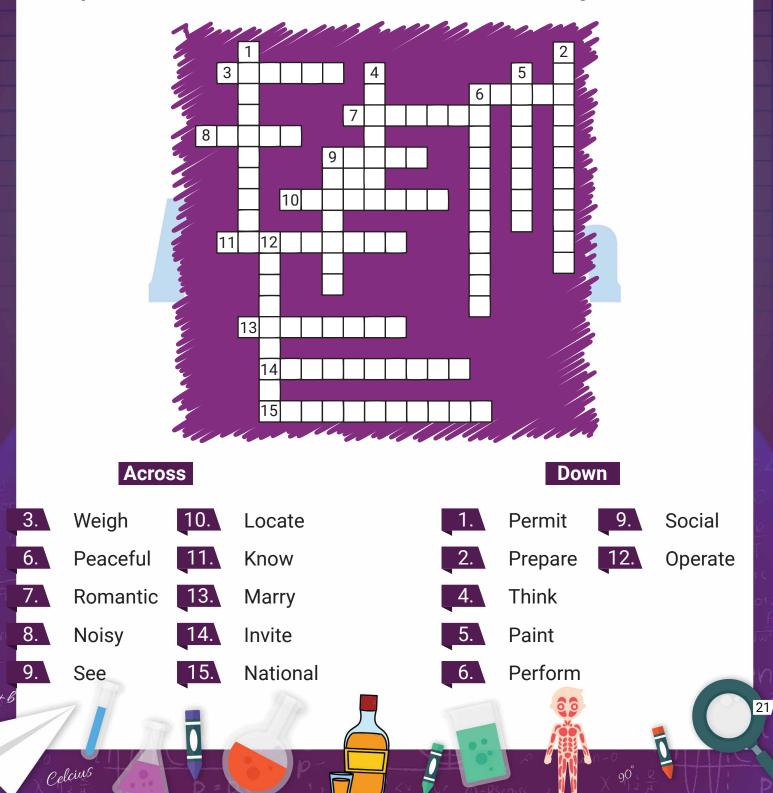
- We can deal with the communal riots by reducing the religion based discrimination and interference of politics in the religious sphere and thereby protecting the secular atmosphere.
- More responsible social media.
- Following the fundamental duty under Article 51A(e) of the Indian Constitution, which says,

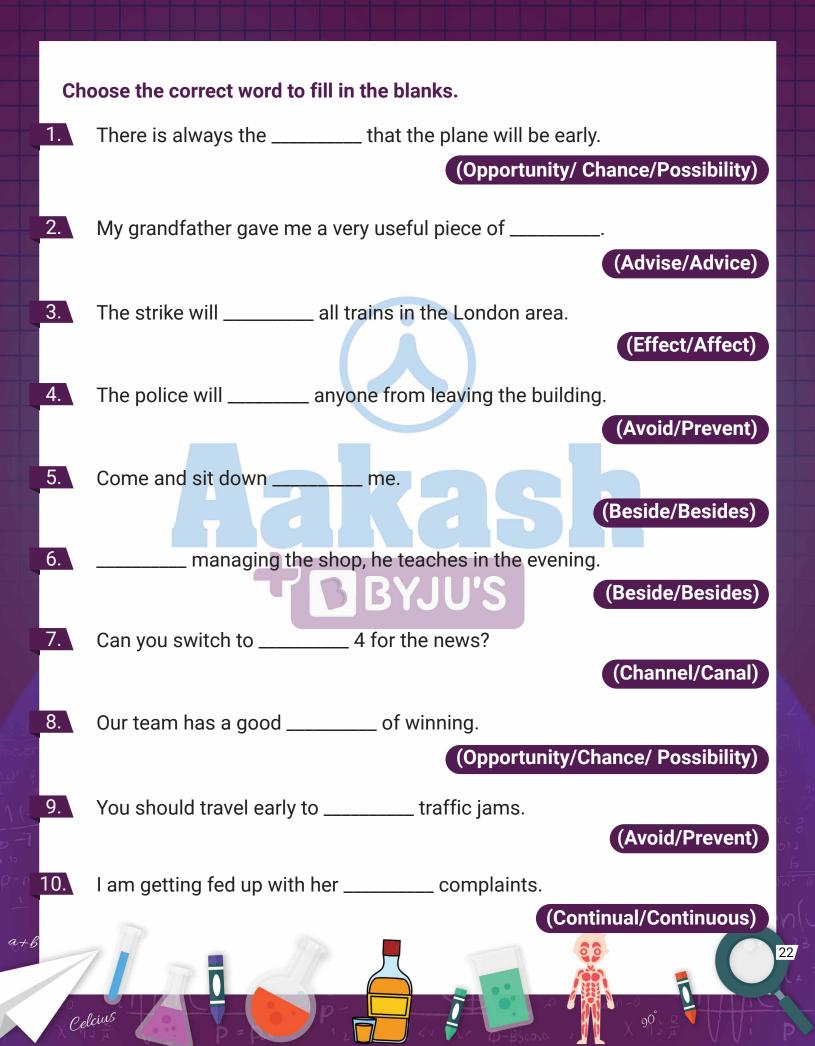
"Promote harmony and the spirit of common brotherhood amongst all the people of India transcending religious, linguistic and regional or sectional diversities; to renounce practices derogatory to the dignity of women".

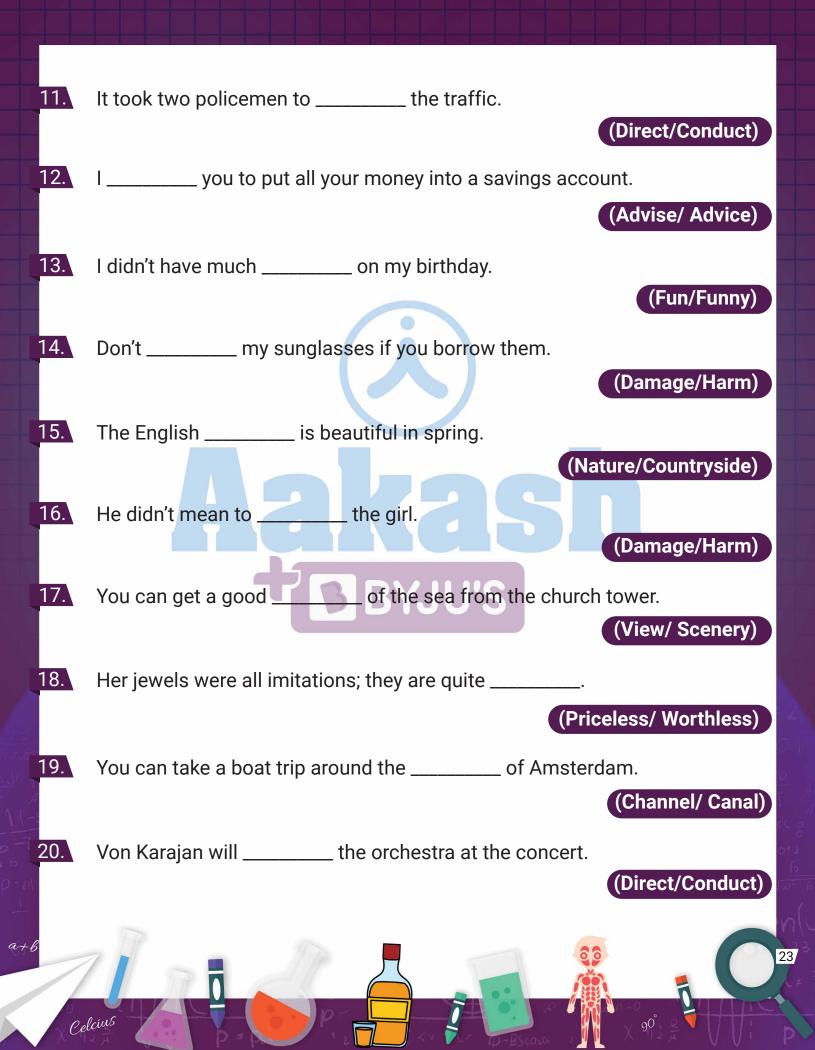


Vocabulary

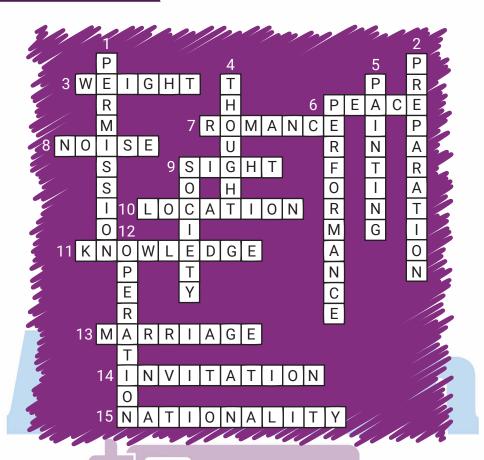
Complete the crossword with nouns formed from the words given below.







Answer (Crossword)



Answer (Fill in the Blanks)

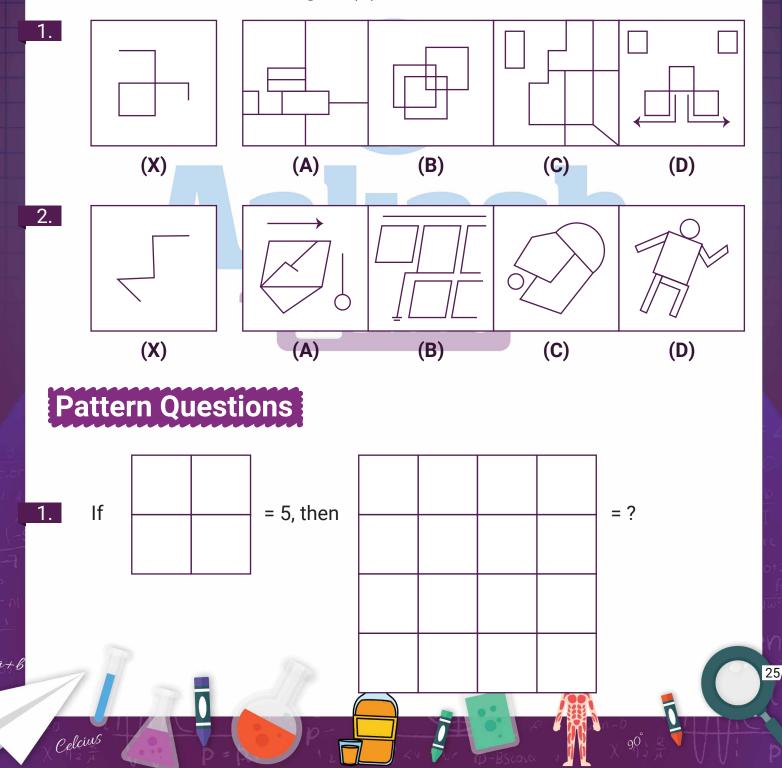
1.	Possibility
2.	Advice
3.	Affect
4.	Prevent
5.	Beside
6.	Besides
7.	Channel
8.	Chance
9.	Avoid
10.	Continual

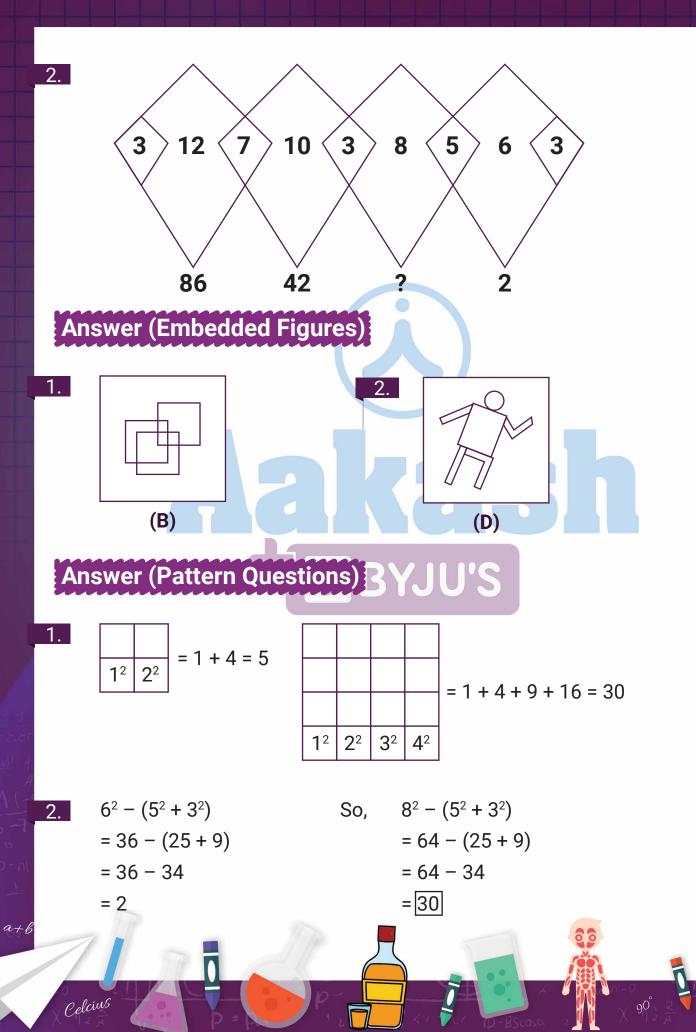
11.	Direct
12.	Advise
13.	Fun
14.	Damage
15.	Countryside
16.	Harm
17.	View
18.	Worthless
19.	Canal
20.	Conduct

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Embedded Figures NTSE Pattern Questions

Figure (X) is embedded in any of the four alternative figures. Find the alternative which contains figure (X).





Advantages of Starting Early in Foundation Years

With the competition getting stiffer with each passing day, students need to develop the right skills and aptitude from an early stage in order to gain a competitive edge over others. It gives the right direction in terms of career planning and exposes students to efficacious strategies that would help them to smoothly cruise through their exams.

If you are still pondering over whether or not to start your preparation early in foundation years, reading further may prove to be of some help.

Advantages of Starting Early in Foundation Years

Develops Skills

Cracking competitive examinations is all about having adept skills. Training your mind at an early stage helps to develop logical, reasoning and analytical skills which require gradual grooming. Once your mind gets accustomed to rational thinking and develops cogent thought process, preparing for competitive exams in senior classes doesn't appear to be a tough nut to crack. The ability to visualise and bloom ahead isn't a product of mere rote-learning. It requires innovative learning and discussion-based adaptive learning right from the start.

Gives Competitive Edge & Lays Strong Foundation

Once you start developing your critical thinking skills, you'll acquire an edge over others right from the beginning. Your fundamental understanding and problem-solving skills will already be developed by the time your peers start their preparation in senior classes.

Bridges the Gap between School Exam Pattern & Competitive Exam Pattern

The school curriculum and exam pattern are different from competitive examinations. While the school exam pattern focuses more on knowing the concepts, competitive exam pattern focuses on the application of the concepts. Starting early in foundation years helps you to bridge this gap at an early stage and prepare for both school and competitive examinations simultaneously.

Exposure to Competitive Environment

Starting early in foundation years provides you with the necessary exposure by preparing you for scholarship examinations such as NTSE and several Olympiads, conducted at national and international levels. It fosters an environment that promotes discipline and drives you to work hard and dedicatedly towards your goal. It instils in you a competitive spirit that is essential to succeed in life.

Builds Time Management Skills

Success in competitive examinations depends on good time management skills. Starting early in foundation years will not only teach you time management among other skills at an early age but also help you to manage your time between school and competitive exam preparation in an effective way.

Prepares for the Future

No learning or training is effective unless it prepares you to overcome challenges from an early stage by gradually developing your skills, temperament and instilling in you immense confidence. Moreover, you will learn to strive ahead under academic pressure at an early stage.

What makes Foundation @Aakash the smartest choice ?

- Nurtures you with personalized attention in a competitive atmosphere.
- Improves your performance in school & board examinations.
- Builds your analytical & reasoning skills to succeed in Olympiads & Scholarship examinations such as NTSE.
- Lays the strong groundwork for entrance examinations such as NEET, JEE, UPSC, IAS, IFS, CAT, MAT, etc.
- Introduces you to innovative learning methods to make learning fun, engaging and easy.
- Focuses on conceptual and application-based learning, thereby debunking old rote-learning methods.
- Indulges in more than just academic syllabi.
- Offers you competitive exposure through national level test series that enables you to know your potential at all India level.

Fundamentally, "the key to success is to start before you are ready". Starting early in foundation years can help you in planning strategically for the future. You can utilise the early years wisely by focusing on in-depth learning where you can give more time to understanding lessons and grasping concepts. Foundation @Aakash is an opportunity to build the tomorrow you want today. Aakash Foundation courses not only help you pass school/board exams with flying colours but also crack competitive scholarship exams and Olympiads held at national as well as international level.

THE FIRST WOMAN TO WIN A NOBEL PRIZE

Marie Curie

Happy Birthday

Marie Curie was born on November 7, 1867 in warsow, Died 4 July 1934 Capital of Poland. She died in 1934 from Leukemia in Paris.

• She studied physical at the Sorbonne, in Paris.

• She was the discover of Polonium and Radium.

Marie Curie is famous for her work on radioactivity. She was the first woman to win a Nobel Prize, the only woman to win in two fields, and the only person to win in multiple sciences. She was also the first woman to become a professor at the University of Paris.

Our Top Rankers in AIATS -02 Class X





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