

RIMC, Dehradun
PREVIOUS YEAR PAPER
2018

Class – 8th



Admission Helpline No: 74199-99228

Instructions

1. Read all the nineteen questions and their sub parts thoroughly before answering.
2. The question paper can be retained by the candidates post exam.
3. The question paper comprises three sections.
 - (a) Reading Section - 20 Marks
 - (b) Writing Section - 50 Marks
 - (c) Grammar - 55 Marks

Section - A (Reading)

1. Read the following passage carefully and answer the questions given below it. [5 Marks]

In this work of incessant and feverish activity, men have little time to think, much less to consider ideals and objectives. Yet how are we to act, even in the present, unless we know which way we are going and what our objectives are? It is only in the peaceful atmosphere of a university that these basic problems can be adequately considered. It is only when the young men and women, who are in the university today and on whom the burden of life's problems will fall tomorrow, learn to have clear objectives and standards of values that there is hope for the next generation. The past generation produced some great men but as a generation it led the world repeatedly to disaster. World Wars I and II are the price that has been paid for the lack of wisdom on man's part in this generation. I think that there is always a close and intimate relationship between the end we aim at and the means adopted to attain it. Even, if the end is right, but the means are wrong, it will vitiate the end or divert us in a wrong direction. Means and ends are thus intimately and inextricably connected and cannot be separated. That indeed has been the lesson of old taught us by many great men in the past, but unfortunately it seldom remembered.

- (a) Why do people have little time to consider ideals and objectives?
- (b) What does 'The burden of life's problems' refer to?
- (c) What is the reason for two world wars?
- (d) What according to the writer the adoption of wrong means even for the right end lead to?
- (e) Find the words in the passage which are similar in meaning to the given words
 - (i) Blemish
 - (ii) United

2. Read the poem given below and fill the blanks that follow.

[5 Marks]

LIFE STILL HAS A MEANING

If there is a future there is time for mending.

Time to see your troubles come to an ending

Life is never hopeless however great your sorrow,

If you're looking forward to a new tomorrow.

If there is time for wishing them there is time for hoping

When through doubt and darkness you are blindly groping.

Though the heart be heavy and hurt you may be feeling.

If there is time for praying there is a new day breaking.

Thank god for the promise though mind and soul be aching

If with harvest over there is grain enough for gleaning-

There is a new tomorrow and life still has meaning.

(a) Life is never hopeless when _____

(b) We should offer our thanks to God when _____

(c) If there is a good harvest then there is a hope for _____

(d) If you are able to pray God in the days of deep sorrow so there is chance for _____

(e) If anybody has courage to face problems, in future his troubles _____

3. Write the summary of the following passage in your own words. No Marks will be awarded for the copied sentences.

[10 Marks]

Yoga originated in ancient India thousands of year ago, long before the first religion or belief system was born. It is believed that Shiva is the first Yogi or Adiyogi and the first guru. Thousands of years ago, on the banks of Lake Kantisarovar in Himalayas, Adiyogi shared his knowledge into legendary seven sages as it was hard to put all his wisdom and knowledge in one person. The sages took this powerful yogic science to various part of the world including Asia, North Africa, Middle East and South America. India is blessed to have found the yogic system in the fullest expression.

The fossil remains of Indus – Saraswati civilizations are an evidence of the presence of Yoga in ancient India. The presence finds a mention in the folk traditions. It is included in the Indus

Valley Civilisation, Buddhist and Jain traditions. According to the studies, Yoga was being practiced under the direct guidance of a Guru and its spiritual value was given a lot of importance. Sun was given the highest importance during Vedic period and that's how Suryanamaskar was invited later on.

However, Maharishi Patanjali is known as the father of modern Yoga. He did not invent Yoga as it was there in various forms. He assimilated it into the system. He saw it was getting quite complex for anyone to understand it in any meaningful way. So, he assimilated and included all aspects into a certain format – Yoga Sutras. The role of breath is very important in the practice of Asana or Yoga positions. Breath is a vital force and our body requirement of oxygen changes depending on our actions. If we exercise then we require more oxygen hence breathing becomes faster and if we are relaxing then our breathing becomes relaxed and deep. In yoga, the focus is integrated on Breath while indulging in slow movements as well as while doing complete. Asana, Yoga promotes smooth and relaxed inhalation and exhalation during the practice.

Section - B (Writing)

4. Write an essay on ANY TWO in about 120 words. [10 Marks]

- (a) The Journey of a thousand miles begins with a single step.
- (b) Need to accurate to girl child.
- (c) Freedom of speech.

5. Write a story on the basis of the clue given below: (100 - 120 words) [10 Marks]

- A young boy – travelling by a train – has a briefcase containing a lot of money
- befriends a fellow traveller – train stops – boy goes out to buy snacks
- returns – briefcase gone.

6. Write a composition on ANY TWO in about 120 words. [10 Marks]

- (a) Failure are the stepping stones to success.
- (b) When the going gets tough, the tough get going.
- (c) Time and tide wait for none.

7. Write a letter to the editor of the Times of India expressing your views about how students are distracted by Facebook and whatsapp from their studies. Sign yourself as XYZ, a resident of Dehradun, Uttarakhand. [10 Marks]

9. As a concerned resident you are worried about the harmful effects of insanitary conditions in your town. Write a speech on the necessity of sanitation to be given in the morning assemble in about 150 – 200 words. [10 Marks]

Section – C (Grammar)

9. Rewrite the following using correct tenses [3 Marks]

- (a) My brother went to play football before my father wake up.
(b) Have you told mother yesterday about your plans to join the new company?
(c) She will complete the work before noon tomorrow.

10. Fill in the blanks with appropriate preposition. [3 Marks]

- (a) My uncle is an authority _____ Mathematics.
(i) at (ii) in (iii) on (iv) for
(b) He is intolerant _____ anything concerning racism.
(i) about (ii) on (iii) of (iv) at
(c) My Friend is _____ the theatre buying sweets from nearby shop.
(i) in (ii) at (iii) by (iv) before

11. Choose the correct answer from the given options that give the same meaning as the idioms given below. Write the answers in your answer book. [3 Marks]

(a) A risky number

- (i) A lucky number (ii) A comfortable job
(iii) A job that involves a lot of calculations
(iv) A number which is difficult to remember

(b) A black swan

- (i) Something rare and unique (ii) Something ugly
(iii) A capable person (iv) Something outdated

(c) On the mat

- (i) To be surprised (ii) To be praised
(iii) To be rebuked (iv) To be beaten.

12. Change the following into direct or indirect speech. [4 Marks]

- (a) Tom said to Ram, "What did you do yesterday?"
- (b) They said, "Hurrah! We won the match easily."
- (c) My sister told me that a smooth sea never made a skillful sailor.
- (d) My father told me that he saw what I was doing.

13. Fill in the blanks with right form of the verbs.

[5 Marks]

- (a) For three weeks, she behaved as if nothing _____ (change)
- (b) I _____ you at the entrance of the mail in another two hours. (meet)
- (c) Listen! The wolves _____ at the full moon. (howling)
- (d) Alexa _____ for her class two hour ago. (Leave)
- (e) This _____ not make any sense. Why would he leave without saying goodbye? (do)

14. Fill in the blanks with appropriate phrasal verbs.

[5 Marks]

- (a) The rope _____ while they were hauling up the pillar.
 - (i) gave up
 - (ii) gave in
 - (iii) gave away
 - (iv) gave out
- (b) The horrible weather _____ me _____.
 - (i) puts, down
 - (ii) breaks, down
 - (iii) gets, down
 - (iv) works, down
- (c) John is a rich man because he _____ a lot of money last year.
 - (i) fell behind
 - (ii) came into
 - (iii) went through
 - (iv) fell through
- (d) I had better leave, I don't want to _____ my welcome.
 - (i) give up
 - (ii) take in
 - (iii) wear out
 - (iv) go off
- (e) Unfortunately my trip to Indonesia _____ because I couldn't save money.
 - (i) Fell through
 - (ii) wash away
 - (iii) turn up
 - (iv) go off

15. Choose a word which is nearest in meaning to the word give in capital letter. [5 Marks]

(a) Factory workers are RESTIVE as the company has not declared any bonus this year.

- (i) Restful
- (ii) Restless
- (iii) Resting
- (iv) Satisfied

(b) Even the most careful researcher cannot predict the possible RAMIFICATIONS of his findings.

- (i) Uses
- (ii) Developments
- (iii) Consequences
- (iv) Conclusions

(c) Buoyed by these visions of the future of his son, the artist SOLDIERED on.

- (i) Continued bravely
- (ii) Stopped further
- (iii) Struggled hard
- (iv) Fought on.

(d) The relics of the Roman rule are still EXTANT in England.

- (i) Hidden
- (ii) Scattered
- (iii) Existent
- (iv) Spread

(e) The invasion force has no artillery and was completely ANNIHILATED.

- (i) Reduced
- (ii) Destroyed
- (iii) Dismembered
- (iv) Split

16. Choose the alternative that best expresses the meaning of the given expression. [4 Marks]

(a) MAKE NO BONES ABOUT

- (i) To make no effort
- (ii) To admit something readily
- (iii) To make fuss about
- (iv) To create no hindrance

(b) CALL ONE'S SHOT

- (i) Make intentions clear
- (ii) Call with a shot
- (iii) Shoot at a call
- (iv) To show determination

(c) CUT NO ICE WITH ME

- (i) Had no influence on me
- (ii) Did not hurt me
- (iii) Did not benefit me
- (iv) Did not make me period

(d) TO KICK THE BUCKET

- (i) To start a account (ii) To start a serious jounery
(iii) To die (iv) To start agriculture activity

17. Complete each sentence with the correct word from the given pair of confusing words.

[4 Marks]

- (a) To _____ the required information, one should know how to ask or set questions.
(elicit/illicit)
- (b) It is _____ that our leaders possess both ability and personality. (imperative/impervious)
- (c) Don't provoke her further so as to allow her _____ anger to die down.
(momentary/momentous)
- (d) I like writing and have published books regularly. Am I considered a _____ writer?
(Prolific/prolix)

18. Change the following sentences into Passive voice.

[5 Marks]

- (a) Men with slide rules used to do these calculations; now a computer does them.
- (b) Why did no one inform me of the change of plan?
- (c) I am afraid we have sold all our copies but we have ordered more.
- (d) You are to leave this here. Someone will call for it later on.
- (e) We have to pick the fruit very early in the morning; otherwise we can't get it to the market.

19. Put the following into direct speech.

[5 Marks]

- (a) 'It isn't so foggy today as it was yesterday', I remarked.
- (b) 'I'll come with you as soon as I am ready', She replied.
- (c) 'How far is it?' ,I said, 'and how long will it take me to get the little boy.
- (e) 'Make good use of your time. You won't get such an opportunity again', he said to us.

20. In each of the following questions, choose the alternative which is closest to the opposite in meaning of the underlined word or phrase in the sentence.

[4 Marks]

- (a) He is quite industrious.
- (i) Hardworking (ii) Lazy
(iii) Indifferent (iv) Indisposed
- (b) People who are actually running the system often take a myopic view of the situation.

- (i) Blind (ii) Glassy
(iii) Visionary (iv) Farsighted
(c) They had an **insipid** conversation
(i) Curious (ii) Loud
(iii) Argumentative (iv) Lively
(d) The Chief Minister was given a warm welcome at the **onset** of the function.
(i) Hindrance (ii) Finale
(iii) Commencement (iv) Conclusion

21. In each of the following questions, out of the given alternative, choose the one which can best replace the bold word in the sentence without changing the meaning of the sentence.

[5Marks]

- (a) Hearing the news, the workers were in a state of **euphoria**.
(i) Pleasant excitement (ii) Utter depression
(iii) Intense indignation (iv) Greater disorder
(b) Some people adopt excellent manners only to **camouflage** their real character.
(i) Project (ii) Misrepresent
(iii) Hide (iv) Reveal
(c) The new scheme was aimed at prohibiting all people from **imbibing** alcoholic drinks.
(i) Offering (ii) Smuggling
(iii) Preparing (iv) Drinking
(d) The guests were offended by his **uncouth** manners
(i) Wasteful (ii) Undesirable
(iii) Dirty (iv) Ungracious

Subject Mathematics

Time: 1Hr 30 min

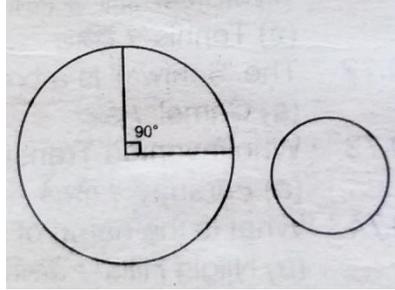
Marks : 200

Instruction:

1. Attempt all 30 questions.
2. Part 'A' contains 20 questions and each question in this part carries five marks.
3. Part 'B' contains 10 questions and each question in this part carries ten marks.

Part - A

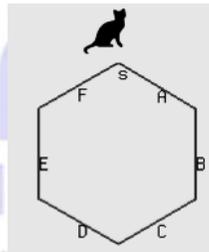
1. Find the least number which when divided by 8, 14, 20, 25 and leaves 4 as remainder in each case.
2. By reducing the selling price of an article by 50 dollars, a gain of 5% turn into a loss of 5%. Find the original selling price of the article.
3. If $\frac{3}{5}$ th of a number exceeds its $\frac{2}{7}$ th by 44, find the number.
4. Abhimnyu weights 56.7 kg. If he reduces his weight in the ratio 7 : 6. Find his new weight.
5. Tanmaya was asked to multiply a given number by $\frac{4}{5}$, by mistake; he divided the number by $\frac{4}{5}$. His answer was 36 more than the correct answer. What was the given number?
6. On selling 33 m of cloth, Vishal obtains a profit equal to the selling price of 11 m of same cloth. Find the profit percentage?
7. Factorize $x^3 - x^2 + ax + x - a - 1$.
8. Each interior angle of a regular polygon is 144° . Find the interior angle of a regular polygon which has double the number of sides as in the first polygon.
9. Area of square is 16 cm^2 . Find the area of the square joining the mid-point of the sides.
10. Factorize $2x^2 - 17xy + 26y^2$
11. Divide $x^4 - y^4$ by $(x - y)$
12. The first figure given below shows a wire in circular shape with the radius of 80 cm. Shyam cut out an arc from wire such that the arc makes an angle of 90° at the centre. If this arc is again bent in circular shapes as shown in the second picture. Find the radius of the new circle.



13. If line PR and ST are parallel to each other, find the value of angle x .

40°

14. A cat is walking on the periphery of a regular polygon, as shown below, if it starts from point S in the clockwise direction, which side will the cat reach after walking $18/25$ of distance on the periphery?



15. In the image given below, if the radius of all the large circles is r , then what is the radius of the inner smaller circle?

16. In a family, the father took $\frac{1}{4}$ of the cake and he had 3 times as much as other had. How many is the total number of family member?

17. Factorize $(a + b)(x + y) + (2a + 3)(x + y) - (3a + 4b)(x + y)$

18. Two adjacent angles of a parallelogram are in the ratio $2 : 3$. Find the measures of all the angles of the parallelogram.

19. Find the largest four - digit number which is exactly divisible by 459.

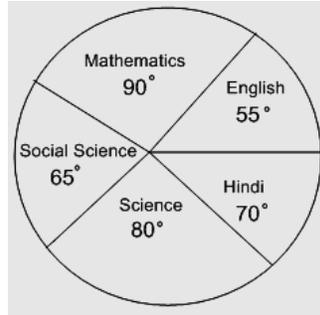
20. In what time will the simple interest on a certain sum of money at $\frac{25}{4}\%$ per annum be $\frac{3}{8}$ th of itself.

Part - B

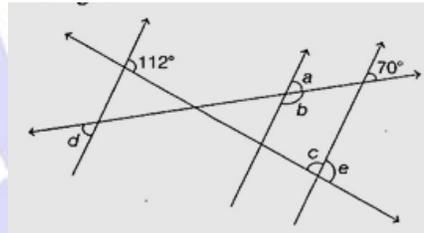
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21. Simplify $23x - [15y - \{4y - 2(3x - 2y) - 3(3x - 2x - y)\}]$
22. Three cubes of silver with edge 3cm, 4cm and 5cm are melted and recast into a single cube. Find the cost of coating the entire surface of the new cube with gold at the rate of Rs.350 per sq cm.
23. Find the value of
- (i) $\left(\frac{x^m}{x^n}\right)^{m+n} \cdot \left(\frac{x^n}{x^k}\right)^{n+k} \cdot \left(\frac{x^k}{x^m}\right)^{k+m}$
- (ii) $\frac{1}{1+x^{m-n}} + \frac{1}{1+x^{n-m}}$
24. Divide Rs.1200 into two parts such that the simple interest on the first part of 2 year at 6% per annum is equal to the simple interest on the second part of 3 year at 8% per annum.
25. Shyam completes a journey of 360 km in $5\frac{3}{4}$ hour by a car. If he covers the first three - fourth of the journey at 60 km/h, find the speed of the car for the balance of the journey.
26. What number should be added to each of the number 3, 5, 13 and 19 so that the resulting number may be in proportion?
27. The following graph gives the marks scored by a student in different subjects, English, Hindi, Mathematics, Science and Social Science in an Examination. Assuming that the total marks obtained for the examination is 540, answer the question below.
- (i) The marks scored in English, Science and Social Science exceeds the marks scored in Hindi and Mathematics by how much?
- (ii) The marks scored in Hindi and Mathematics exceeds the Marks scored in English and Social Science by how much?
- (iii) The subject in which the students scored 105 marks is
- (iv) The subject in which marks obtained are 22.2% is
- (v) The difference of marks between English and Science is the same as between which two other subjects.



28. A wall 4.84 m long and 3.1 high is to be covered both sides with rectangular tiles of size 22 cm × 10 cm. Find total cost of the tiles at the rate of 12 tile.
29. After allowing a discount of 10% on MP, a shopkeeper charge Rs.540 for a watch. Had he not allowed any discount, he would have made a profit of 20%. What the CP of the watch.
30. Find the measures of each lettered angle.



Subject - General Knowledge

Time: 1 Hr

DEFENCE SCHOOL
Making officers....Building Nation....

Marks: 75

Instructions

- There are a total of 75 questions and each question carries one mark.
- There is no negative marking for a wrong answer.
- The 70th Army Day was celebrated on 15th Jan 2018. Who is the chief of Army Staff of India?

(a) Bipin Rawat	(b) Sunil Lamba
(c) Birender Singh Dhanoa	(d) Anup Raha
- Which of the following films was named the Best Film at the 63rd edition of the Filmfare Awards?

(a) Bahubali	(b) Padmavath
(c) Hindi Medium	(d) Magical Box
- In the World Blitz Chess Championship 2017, who clinched the bronze medal?

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- (a) Vishwanathan Anand (b) Adithi Ashok
(c) Magnus Carlsen (d) Garry Kasparov
4. Which State Government is supporting Miss World Manushi Chhillar Project 'Shakti' Which is aimed at women empowerment?
(a) Punjab (b) Haryana
(c) Uttarakhand (d) Uttar Pradesh
5. Hornbill is a festival celebrated in which state of India?
(a) Nagaland (b) Manipur
(c) Meghalaya (d) Assam
6. "Two" novel is written by whom?
(a) Gulzar (b) Arundhati Roy
(c) Aravind Adiga (d) Vikram Seth
7. Famous historical monument 'Raigad' Fort is in which state?
(a) Madhya Pradesh (b) Karnataka
(c) Chhattisgarh (d) Maharashtra
8. The resources which are found everywhere are known as
(a) Ubiquitous (b) Non - renewable resources
(c) Human made resources (d) None of these
9. Which of the following layers of the atmosphere is free from clouds?
(a) Troposphere (b) Stratosphere
(c) Mesosphere (d) None of these
10. Which one of the following does not use concave mirror?
(a) Magnifier mirror by dentist (b) Reflector in flashlight
(c) Solar heater (d) Rear view mirror in cars
11. Which of the following is ruminant?
(a) Buffalo (b) Camel
(c) Goat (d) All of these

12. Which of the following is physical change?
- (a) Oxidation (b) Reduction
(c) Sublimation (d) Decomposition
13. Which of the following undergoes chemical change on heating?
- (a) Sodium chloride (b) Silica
(c) Lead nitrate (d) Platinum wire
14. Dew forms most readily on nights that are
- (a) Calm and clear (b) Stormy
(c) Windy (d) Cloudy
15. The metal having highest melting point is
- (a) Chromium (b) Tungsten
(c) Diamond (d) Silver
16. Water holding capacity is the highest in
- (a) Loamy soil (b) Clayey soil
(c) Sandy Soil (d) Soil containing gravel
17. Muscle cramps occur due to accumulation of
- (a) Lactic acid (b) Acetic acid
(c) Alcohol (d) Malic acid
18. A thermos flask prevents loss or gain of heat by
- (a) Conductions only (b) Conventions only
(c) Radiation only (d) All of the above
19. Stainless steel pans are provided with copper bottom because
- (a) Copper is easier to clean than stainless steel
(b) Such pans are colourful
(c) Copper bottom makes the pan more durable
(d) Copper is better conductor of heat than stainless steel
20. A wooden spoon is dipped in a cup of ice cream. Its other end

- (a) does not become cold
(b) become cold by the process of radiation
(c) becomes cold by the process of convection
(d) becomes cold by the process of conduction
21. Acetic acid is found in
- (a) Curd (b) Spinach
(c) Citrus fruits (d) Vinegar
22. Identify the writer who created the famous character Mowgli.
- (a) Rudyard kipling (b) Robert Grave
(c) RL Stevenson (d) None of these
23. What is the full form of ASLV?
- (a) Augmented Satellite Launch Vehicle
(b) Automatic Satellite Launch Vehicle
(c) Aero Space Launch Vehicle
(d) Area Satellite Launch Vehicle
24. Select the example of application software of computer
- (a) MS Word (b) MS Excel
(c) Both (a) & (b) (d) MS DOS
25. Where is VIKRAM Sarabhai Space Center?
- (a) Thiruvanthapuram (b) Odisha
(c) Kerla (d) Andhra Pradesh
26. Chief of Air Force is called
- (a) Admiral (b) Air Marshal
(c) Air Chief Marshal (d) Marshal of the Air
27. Which of the following pass links Srinagar to Leh?
- (a) Mana Pass (b) Rohtang Pass
(c) Nathula Pass (d) Zojila Pass

28. Where is India's permanent research station Dakshin Gangotri?
- (a) Great Himalayas (b) Indian Ocean
(c) Antarctica (d) Arabian Sea
29. Which of the following cities are called the twin cities?
- (a) Delhi and Faridabad
(b) Hyderabad and Secunderabad
(c) Mumbai and Pune
(d) Bengaluru and Mysore
30. Which of the following is largest fresh water lake of India?
- (a) Pulicat Lake (b) Chilika Lake
(c) Wular Lake (d) Vembanad
31. Which state is called the sugar bowl of India?
- (a) Uttar Pradesh (b) Punjab
(c) Andhra Pradesh (d) Bihar
32. Which of the following newspaper was started by Annie Besant?
- (a) The Hindu (b) Indian Express
(c) The Times of India (d) New India
33. Which of the following British Prime Minister headed the First Round Table conference in London?
- (a) Churchill (b) Ramsay Mac Donald
(c) Chamberlain (d) Disraeli
34. Which of the Act made government of Bengal as Governor General of India?
- (a) Pitt's India Act, 1784 (b) The Regulating Act, 1773
(c) The Character Act, 1813 (d) Character Act, 1833
35. Who won Blind Cricket World Cup 2018?
- (a) Pakistan (b) Britian
(c) Australia (d) India

36. Which is the headquarters of SAARC located?
- (a) Kathmandu (b) Jakarta
(c) New Delhi (d) Beijing
37. Pointing to a photograph, Anjali said, "He is the son of the only son of my grandfather", how is the main in the photograph related to Anjali?
- (a) Brother (b) Uncle
(c) Son (d) None of these
38. One morning after sunrise, Suresh was standing facing a pole. The shadow of the pole fell exactly to his right. To which direction was he facing.
- (a) East (b) West
(c) South (d) None of these
39. One day Ravi raj left home and cycled 20 km southwards, turned right and cycled 20 Km. How many kilometers will have to cycle to reach his home straight?
- (a) 50 km (b) 30 km
(c) 40 km (d) 60 km
40. Today is Monday. After 61 days, it will be
- (a) Tuesday (b) Monday
(c) Sunday (d) Saturday ...
41. Sardar Sarovar Dam is situated on which of the following river?
- (a) Rihand (b) Chenab
(c) Narmada (d) Yamuna
42. Name a gas released which is used in the fermentation of sugar?
- (a) Ammonia (b) Butane
(c) Propane (d) Carbon dioxide
43. Which sports person has won the 2018 Asia Billiards Championship?
- (a) Subhas Agarwal (b) Manan Chandra
(c) Pankaj Advani (d) None of these
44. Bagh - e - Babur where Babur is buried is located at

- (a) Tashkent (b) Karachi
(c) Lahore (d) Kabul
45. Sultan Azlam Shah Cup is related to which among the following sports?
(a) Badminton (b) Hockey
(c) Table Tennis (d) Golf
46. Which of the following state has officially been declared open defecation free?
(a) Assam (b) Arunachal Pradesh
(c) Nagaland (d) Sikkim
47. Ooty is the famous hill station of which of the following state of India?
(a) Andhra Pradesh (b) Karnataka
(c) Maharashtra (d) Tamil Nadu
48. Samadhi of Late Prime Minister Mr.Rajiv Gandhi at New Delhi is
(a) Shakti Sthala (b) Shanti Vana
(c) Vijay Ghat (d) Veer Bhumi
49. What is Jhum?
(a) A type of cultivation (b) A Tribe
(c) A Folk Dance (d) A River Valley
50. Kandla Port is located in which of the Indian State?
(a) Odisha (b) Andhra Pradesh
(c) Kerala (d) Gujarat
51. The first foreigner to receive Bharat Ratna Award is
(a) Nelson Mandela (b) Khan Abdul Ghaffar Khan
(c) Mikhael Gorbachev (d) Kwame Nkrumah
52. What percentage of Earth water is fresh water?
(a) 3% (b) 20%
(c) 40% (d) 70%
53. The largest and the leading employer of the world is

- (a) Indian Railways (b) Post & Telegraph, India
(c) Reliance Industries (d) State Bank of India
54. Din - I - Ilahi was the religion promoted by
(a) Jahangir (b) Humayun
(c) Shahjahan (d) Akbar
55. Where did Aurangzeb die?
(a) Pune (b) Aurangabad
(c) Ahmednagar (d) Mumbai
56. The General who gave the firing order at Jallianwala Bagh was
(a) General Tegat (b) General Cornwallis
(c) General Simpson (d) General Dyer
57. Ban ki - Moon, the present Secretary General of UNO belongs to
(a) Austria (b) China
(c) Republic of Korea (d) Japan
58. Who constructed the Sanchi Stupa?
(a) Chandragupta (b) Gautam Buddha
(c) Mahavira (d) Ashoka
59. Bahur was succeeded to the Mughal Throne by
(a) Sher Shah (b) Akbar
(c) Humayun (d) Bahadur Shah
60. The soil deposited by the rivers is called
(a) Alluvial (b) Black
(c) Red (d) Laterite
61. Sound waves cannot travel in
(a) Air (b) Water
(c) Vacuum (d) Steel
62. World Environment Day is celebrated on

- (a) 5th June (b) 4th February
(c) 13th June (d) 2nd October
63. Which day is observed as 'International Day of Happiness'?
- (a) 20th March (b) 21st February
(c) 24th February (d) 24th March
64. Which country recently as handed over Hambantota port to Chine for a 99 year lease?
- (a) Iraq (b) Pakistan
(c) Srilanka (d) Bangladesh
65. Who is the author of the Book 'Exam Warriors'?
- (a) Smriti Irani (b) Maneka Gandhi
(c) Narendra Modi (d) Uma Bharti
66. Which company has launched the new mobile App named 'Bulletin'?
- (a) Microsoft (b) Amazon[®]
(c) Google (d) TCS
67. Har Gobind Khorana was associated with which field?
- (a) Sports (b) Science
(c) Music (d) Politics
68. Who among the following was the last ruler of Slave Dynasty?
- (a) Arma Singh (b) Qaidubad
(c) Khusrau (d) None of these
69. Angkor Wat is a Hindu temple located in which country?
- (a) India (b) Srilanka
(a) Cambodia (d) Thailand
70. Central Institute of Indian languages is located at
- (a) Banglore (b) Mysore
(c) Bhopal (d) Lucknow
71. The term 'Tee' is used commonly in which among the following sports?

- (a) Tennis (b) Polo
(c) Golf (b) Racing
72. The 'Sahiwal' is a breed of which among the following in India?
(a) Camel (b) Cattle
(c) Buffalo (d) Sheep
73. Who invented Transformer?
(a) Faraday (b) Einstein
(c) Parsons (d) CRT Wilson
74. What is the name of southernmost hill ranges in India?
(a) Nilgiri Hills (b) Anaimalia Hills
(c) Nallamala Hills (d) Cardamon Hills



Hints and Solutions

English

1. (a) People have little time to consider ideals and objectives because of non - stop and hectic activities faced by them in the fast changing world for survival.
 - (b) The burden of life's problem refers to professional, family and social affairs of the ever growing competitive world.
 - (c) The lack of wisdom on part of the people of this generation has been the main reason for two world wars.
 - (d) According to the writer, the adoption of wrong even for the right end means it will either impair the quality of the purpose to be achieved or divert one's focus in the wrong direction.
 - (e) (i) Blemish - disaster
(ii) United - separated
2. (a) One is looking forward to a new tomorrow.
 - (b) One's mind and soul are aching.
 - (c) reaping sufficient produce.
 - (d) hope of brightness amid doubt and darkness.
 - (e) will come to an end.

3. Summary

Yoga has been there in the universe for ages even before the advent of any religion or belief system. Shiva is considered to be its first yogi practicing it in and around the Himalayas and promoting it all across the world. India is believed to be the origin of yoga with evidence of its fossil remains in Indus Saraswati Civilisation.

Vedic period witnessed great prevalence of yoga with Sun, being given the highest importance and ultimately resulting into Surya Namaskar.

But in modern times, Maharishi Patanjali is termed as the father of Yoga who combined various forms into Yoga Surtas. Yoga plays importance role in breathing process to enhance other life processes.

4. (b) Need to Educate the Girl Child

Girl Education in India is largest essential for the growth of the nation because girls can do most of the things better than the boys. Now - a - days girls education is necessary and compulsory

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because they are the future of the country. In India, girls education is necessary, as to develop socially and economically. Educated women yield a positive impact on Indian society through their contribution in professional fields like - medical, defence services, science and technology. They do good business and are also well versed in handling their home and office. An improved economy and society are the outcome of girl's education. Educated women can also help in controlling the population of the country by marrying at the right or later age in comparison to the uneducated women.

Women education in early Indian society was quite good but in the middle age, the women could not be educated because of numerous limitations towards women. However, again it is getting improved and better day by day as people in India have understood the fact that without educating the women, the development of the country is not possible. It is very true that equivalent expansion of both sexes will boost the economic and social growth in every area of the country.

(c) Freedom of Speech

Freedom of Speech is one of the Fundamental Rights provided to the citizens of India. It allows the citizens of our country to express their ideas and share their opinions freely. It allows the general public as well as the media to comment on any of the political activities and even show discontentment against the ones they find inappropriate.

Just like India many other countries also provide the Freedom of Speech and Expression to its citizens but with some limitations. The restrictions put on the Freedom of Speech vary from country to country.

There are also many countries that do not allow this basic human right. The general public and the media in such countries are refrained from commenting on the activities carried out by the government.

Criticism of government, political parties or ministers is a punishable offence in such countries.

While Freedom of Speech is essential for the overall growth of the society it may have certain negative repercussions too. People must not use it to disrespect or instigate others. The media must also act responsibly and not misuse the Freedom of Speech.

Freedom of speech empowers the people to share their ideas and bring about positive changes in the society. I am lucky to have been born in India - a country that respects its citizens and provides them with all the rights that are needed for their growth and development.

5. Briefcase of a Boy Lost during Train Travel

A young boy was travelling by train to Mumbai. It was a very long journey of 2 days. He had a briefcase containing a lot of money. He was lonely and wondered whether he could make some friends to pass his time. But his conscience didn't agree to this.

However, as time passed and he was bored out of nothing to do. So, he made friend with a passenger. The passenger was very nice with him, this pleased the young boy. The passenger shared sweets with the young boy and the boy started trusting the passenger. As the young boy developed faith in passenger, he told all secrets about the briefcase to the fellow traveller. He went to buy some snacks after it. But when he returned his briefcase was gone. The young boy was very sad and disappointed.

But to his pleasant surprise, his fellow passenger was back with his luggage. On his return he told the boy that his innocence reformed the man and motivated him to return his briefcase. Thus, both were happy at the end for one's trust was not breached and another's spirit was kept intact.

6. (a) Failures are the Stepping Stones to Success

Most people fear failure, but failure does not prevent success. Actually, failure can lead to success as long as we learn from it. Failure is one of the keys to success because it teaches us more. Thomas Edison, may be the greatest inventor of the modern era, said the following while on his journey to create the long - lasting electric light bulb, "I've failed. I've just found 10,000 ways that won't work."

There is no failure, no disappointment, no mistake in our past that can stop us from taking a positive step forward right now. No matter how many times we may have fallen short of the mark before, success is closer than ever. All our past failures were actually laying the foundation for our future successes.

Each time we get it wrong, we learn much more about how to get it right. Like Edison, we need to keep putting that growing knowledge and experience to use, and we're certain to reach our goal. Each adversity, disappointment, and failure carries with it the seeds of success. It just takes a little positive mental attitude and a commitment to keep trying.

Once you are able to treat failure as a learning opportunity you can put it in the past and be able to move forward. The disappointments you experienced in the past is over and can hold you back no longer.

Whether it has seemed to work or not, every step you've taken up to now has brought you closer to success. Failures are but stepping stones on the road to success. You have the confidence to

move ahead. You understand that your desire for success has to be greater than your fear of disappointment and failure. Take the steps that will take you where you need to be.

(b) Time and Tide Wait for None

Time and tide wait for none is a famous proverb which illustrates the value and importance of time. It realizes us that nothing is more precious than time. Time and tide (come out in the sea), both never wait us. We cannot stop the tide to occur in the sea, it occurs whenever it has to come. In the same way, we cannot stop or store the time for further use, it runs continuously without any stoppage. It never follows the order of anyone and never stops for anyone. It runs on its own axis without waiting for the orders of anyone.

Everyone, who has taken birth, has to die a day and everything will decay as time passes. Idle people always waste their time and postpone things to do in future. People, who do not perform their duties on time, are destroying their own lives as well as development of the nation. Time is very powerful and it punishes people who destroy time. So, all of us must value time and utilize it to the fullest.

7. Letter to the Editor

The Editor,

The Times of India

New Delhi

27th Dec. 2018

Subject: Impact of Social Media on Students

Dear Sir,

Through the columns of your esteemed News daily, I would like to share my views on impact of social media on all including students in particular. While researching the effects of social media addition in our population, I came to realize that this epidemic has huge prevalence in our society. A large majority of adolescents are being negatively affected socially and academically, we just choose nothing to do about it because social media is assumed only to be a positive force. Studies have shown that young people are experiencing harmful effects such as internet harassment, privacy exposed, and consuming harmful content such as violence and pornography. All these affects have a negative impact on students' academic performance, social lives, family relations and amount of sleep, to name only a few.

To begin a push in the other direction, we must first realize what some of the common precursors are and what can be done to stop that problem at its source.

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Parents and Educators play an enormous role, as they are the ones who spend the maximum time with these kids and are most influential in their lives. Giving teens and adolescents alternate sources of information and different routes to satisfy their social and psychological needs at an early age can allow these kids not to rely on these platforms to satisfy these needs. If we all knew the harmful effects that social media and internet addiction pose to our children and our society, maybe we would start taking necessary steps to counter internet risks so that we call all benefits from the endless opportunities offered by the internet and social media.

Thanking you

Yours Sincerely

XYZ

8. Speech: The Necessity of Sanitation

Hello everyone,

Today, I stand before you to share my views on the topic: The Necessity of Sanitation. Sanitation is the hygienic means of promoting health through prevention of human contact with physical, biological, chemical hazards which may cause disease and illness. Sanitation is a major cause of diseases worldwide and through improvement of Sanitation, there can be seen beneficial impacts on health both in households and across communities. The standard Sanitation technology is the collection of waste water in Sewers, its treatment in waste water treatment plants for reuse or disposal in rivers, lakes and seas.

No one can deny the importance of Sanitation in reducing infections and disease and for any social and economic development adequate sanitation in conjunction with good hygiene and safe water are essential to good health. It is important to cultivate hygienic habits and follow Sanitation at personal habits and follow Sanitation at personal level in our homes and Sanitation at our surroundings or environment.

Personal Sanitation includes washing our hands before eating anything, cutting hair and nails regularly, drinking clean water etc.

Sanitation at Home can be maintained by keeping our house, washrooms etc in clean conditions.

However there is also need to clean fruits and vegetables before eating or cooking so that we consume hygienic food only.

Keeping Sanitation of our surroundings like Schools, Offices streets etc. are also very important for our health. Cleanliness is thus directly related to hygiene and disease prevention. Everyone must make sure to throw garbage only in the dustbins and not spread in streets Sanitation also

involves proper disposal and treatment of waste such as sewerage and drainage which is very important for healthy living of all human beings. For all these reasons we must try to understand and enjoy a long, happy, disease free life.

9. (a) My brother had gone to play football before my father woke up.
(b) Did you tell your mother yesterday about your plans to join the new company.
(c) She will have completed the work by not tomorrow.
10. (a) (ii) in (b) (iii) of
(c) (iv) before
11. (a) (iii) A job that involves a lot of calculations.
(b) (i) Something rare are unique
(c) (iii) To be rebuked
12. (a) Tom asked Ram what he had done the day before.
(b) They excluded with joy that they had won the match easily.
(c) My sister said to me, "A smooth sea never makes a skillful sailor".
(d) My father said to me, "I see what you doing."
13. (a) Had changed (b) will meet
(c) are howling (d) had left
(e) does
14. (a) (ii) gave in (b) (i) puts, down
(c) (ii) came into (d) (ii) take in
(e) (i) fell through
15. (a) (ii) restless (b) (iii) consequences
(c) (iii) continued bravely (d) (iii) existent
(e) (ii) destroyed
16. (a) (ii) To admit something readily (b) (i) Make intentions clear
(c) (i) Had no influence on me (d) (iii) To die
17. (a) elicit (b) imperative

(c) momentary

(d) prolific

18. (a) These calculations were used to be done by men with slide rules, now they are done by a computer.

(b) Why was I not informed of the change of the plan by anyone?

(c) It is feared that all our copies have been sold and more have been ordered by us.

(d) This had to be left here by you. It will be called for by someone later on.

(e) The fruit has to be picked very early in the morning, otherwise, it can't be taken (got) to the market.

19. (a) I remarked that it wasn't so foggy that day as it had been the previous day.

(b) She replied that she would come with me as soon as she was ready.

(c) I asked how far it was and how long it would take me to get those.

(d) The mother asked the little boy if he was sorry for what he had done.

(e) He advised us to make good use of our time and continued that we would not get such an opportunity again.

20. (a) (ii) Lazy

(b) (iv) Far - Sighted

(c) (iv) Lively

(d) (iv) Conclusion

21. (a) (i) Pleasant excitement

(b) (iii) Hide

(c) (iv) Drinking

(d) (iv) Ungracious

Mathematics

1. Required number = LCM of (8,14,20, 25) + 4

2 | 8 14 20 25

2 | 4 7 10 25

2 | 2 7 5 25

5 | 1 7 5 25

5 | 1 7 1 5

7 | 1 7 1 1

| 1 1 1 1

$$LCM(8, 14, 20, 25) = 2 \times 2 \times 2 \times 5 \times 5 \times 7$$

$$LCM(9, 13) = 1400$$

In each case it leaves a remainder 4 so we add 4 in the LCM of the numbers. i.e. $1400+4=1404$.

2. Let the cost price of an article be 'a' dollars.

$$\begin{aligned} \therefore \text{Original selling price of an article} &= \left(\frac{100+5}{100}\right) a && [S.P = \left(\frac{100 \pm \text{profit/loss}}{100}\right)] \\ &= \frac{21}{20} a \end{aligned}$$

$$\text{Also, new selling price} = \left(\frac{100-5}{100}\right) a = \frac{19}{20} a$$

According to the question,

$$\frac{21}{20} a - \frac{19}{20} a = 50$$

$$\frac{2}{20} a = 50$$

Or $a = 500$ dollars

$$\therefore \text{Original selling price} = \frac{21}{20} \times 500 = 525 \text{ dollars}$$

3. Let the number be 'a'.

According to the question,

$$\frac{3}{5} a - \frac{2}{7} a = 44$$

$$\frac{21a-10a}{35} = 44$$

$$\frac{11a}{35} = 44$$

$$a = \frac{35 \times 44}{11} = 140$$

Required number = 140

4. Abhimanyu reduces his weight in the ratio 7 : 6. Let the original weight be '7a' kg and the reduced weight be '6a' kg.

But original weight of Abhimanyu = 56.7 kg

$$\therefore 7a = 56.7$$

$$a = \frac{56.7}{7} = 8.1$$

∴ New weight (Reduced weight) of Abhimanyu = $6 \times 8.1 = 48.6$ kg

5. Let the given number be '20a'.

Result when the number is multiplied by $\frac{4}{5}$

$$= 20a \times \frac{4}{5} = 16a$$

Result when the number is divided by $\frac{4}{5} = \frac{20a}{4} \times 5$

According to the question, $25a - 16a = 36$

$$9a = 36 \text{ or } a = 4$$

$$\text{Given number} = 20 \times 4 = 80$$

6. Let the selling price of 1 m cloth be Rs.a and the cost price of 33 m cloth be Rs.c.

According to the question, $33a - c = 11a$ [$\therefore \text{profit} = \text{selling price} - \text{cost price}$]

$$c = 33a - 11a = 22a$$

Or cost price of 33 m cloth = $22a$

$$\text{Profit percentage} = \frac{\text{Selling Price} - \text{cost Price}}{\text{Cost Price}} \times 100$$

$$= \frac{33a - 22a}{22a} \times 100$$

$$= \frac{1}{2} \times 100 = 50\%$$

7. $x^3 - x^2 + ax + x - a - 1$

$$= x^2(x - 1) + ax - a + x - 1$$

$$= x^2(x - 1) + a(x - 1) + (x - 1)$$

$$= (x^2 + a + 1)(x - 1)$$

8. Given interior angle of polygon = 144°

$$\therefore \text{Exterior angle of polygon} = 180^\circ - 144^\circ = 36^\circ$$

Now we know that

$$\text{Each exterior angle of polygon} = \frac{360^\circ}{\text{No. of Sides}}$$

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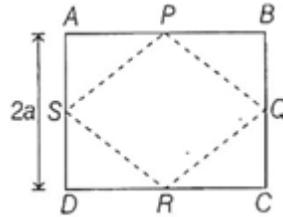
$$\text{Number of sides of polygon} = \frac{360^\circ}{36^\circ} = 10$$

$$\text{Number of sides of new polygon} = 2 \times 10 = 20$$

$$\text{Each exterior angle of new polygon} = \frac{360^\circ}{20} = 18^\circ$$

$$\text{And required interior angle} = 180^\circ - 18^\circ = 162^\circ$$

9. Let ABCD be the given square of side '2a' cm and P,Q,R and are the mid - points of its sides.



Given, area of square = 16cm^2

$$(2a)^2 \cong 16 \quad [\because \text{area of square} = (\text{side})^2]$$

$$4a^2 = 16$$

$$a^2 = 4 \text{ or } a = 2$$

or side of square = 4cm

$$AD = 4 \text{ cm and } AS = AP = \frac{AD}{2} = 2 \text{ cm}$$

Now, in ΔAPS , using Pythagoras theorem,

$$PS^2 = AS^2 + AP^2$$

$$PS = \sqrt{2^2 + 2^2} = 2\sqrt{2} \text{ cm}$$

$$\text{Side of square PQRS} = 2\sqrt{2} \text{ cm}$$

$$\text{and area of square PQRS} = 2\sqrt{2} \times 2\sqrt{2} = 8\text{cm}^2$$

10. Given, $2x^2 - 17xy + 26y^2$

$$= 2x^2 - 13xy - 4xy + 26y^2$$

$$= 2x^2 - 4xy - 13xy + 26y^2$$

$$= 2x(x - 2y) - 13y(x - 2y)$$

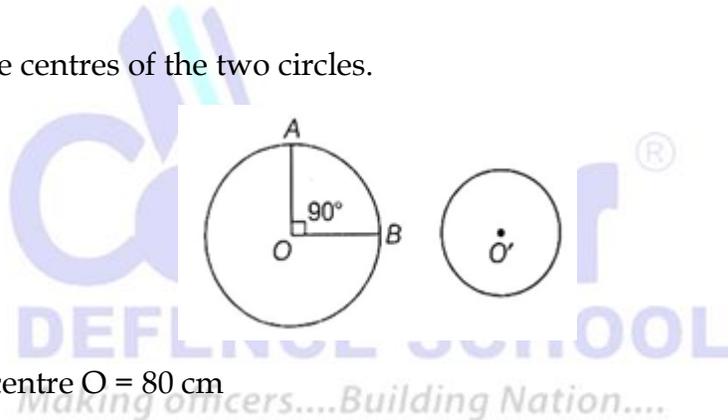
$$= (2x - 13y)(x - 2y)$$

11.

$$\begin{array}{r}
 x^3 + x^2y + xy^2 + y^3 \\
 x-y \overline{) \quad x^4 - y^4} \\
 \underline{x^4 - x^3y} \\
 x^3y - y^4 \\
 \underline{x^3y - x^2y^2} \\
 x^2y^2 - y^4 \\
 \underline{x^2y^2 - xy^3} \\
 xy^3 - y^4 \\
 \underline{xy^3 - y^4} \\
 0
 \end{array}$$

$$\therefore \frac{x^4 - y^4}{x - y} = x^3 + x^2y + xy^2 + y^3$$

12. Let O and O' be the centres of the two circles.



Radius of circle with centre O = 80 cm

Circumference of circle with centre O = $2\pi \times 80 = 160\pi$ cm

Now, length of wire in sector OAB = $\frac{\theta}{360^\circ} \times \text{circumference}$

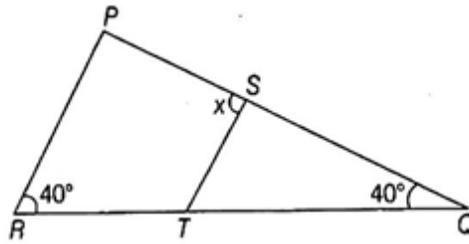
$$= \frac{90^\circ}{360^\circ} \times 160\pi$$

$$= 40\pi \text{ cm}$$

And radius of smaller circle = $\frac{40\pi}{2\pi} = 20$ cm

13. Given, PR || ST

$$\angle PRT = \angle STQ \text{ (correspondence angles)}$$



$$\angle STQ = 40^\circ$$

Now, in ΔSTQ

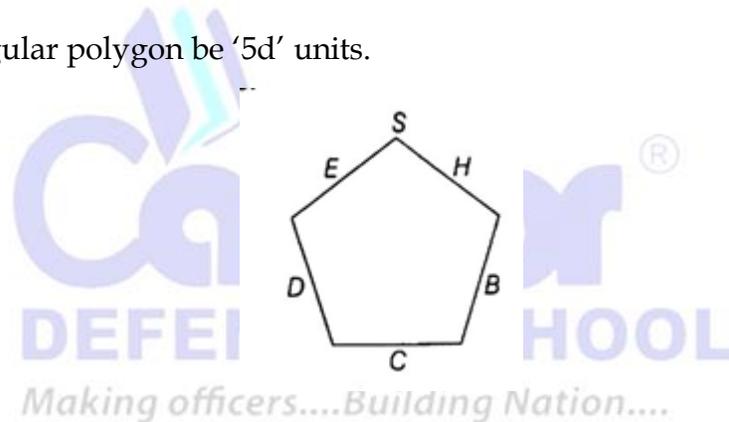
$$\angle STQ + \angle TSQ + \angle TSQ = 180^\circ \quad (\text{angles sum property of a triangle})$$

$$\angle TSQ = 180^\circ - 40^\circ - 40^\circ = 100^\circ$$

$$\text{Now, } x + \angle TSQ = 180^\circ \text{ (linear pair)}$$

$$x = 180^\circ - 100^\circ = 80^\circ$$

14. Let the side of regular polygon be '5d' units.



$$H = B = C = D = E = 5a$$

Now, perimeter = Total distance

$$= 5 \times 5a = 25a \text{ units}$$

Now, the cat covers $\frac{18}{25}$ of distance from S in clockwise direction.

$$\text{Distance Covered} = \frac{18}{25} \times 25a = 18a \text{ units}$$

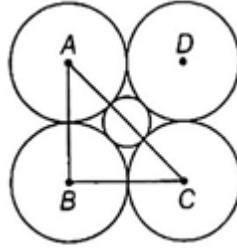
So, the cat will be at side D after covering $\frac{18}{25}$ of total distance.

15. Given, radius of each large circle = r

Let A, B, C and D be the centres of the circles.

$$AB = BC = 2r$$

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Now, in ΔABC using Pythagoras theorem,

$$AB^2 + BC^2 = AC^2$$

$$AC = \sqrt{(2r)^2 + (2r)^2}$$

$$AC = \sqrt{8r^2} = 2r\sqrt{2}$$

Now, $AC = r + r + \text{Diameter of smaller circle}$.

$$\text{Diameter of smaller circle} = 2r\sqrt{2} - 2r$$

$$= 2r(\sqrt{2} - 1)$$

$$\text{Radius of smaller circle} = \frac{2r(\sqrt{2}-1)}{2}$$

$$= r(\sqrt{2} - 1)$$

16. Let the total part of cake be '4a' units

Now, the father had $\frac{1}{4}$ part of cake i.e. $\frac{1}{4} \times 4a = a$ unit

Remaining part = $4a - a = 3a$ unit

Now, 3a unit is divided among the others. Also, the father has 3 times as much as others.

Let number of members other than father = n

$$n\left(\frac{a}{3}\right) = 3a$$

$$n = 9$$

Total members of family = $9 + 1 = 10$

17. Given $(a + b)(x + y) + (2a + 3)(x + y) - (3a + 4b)(x + y)$

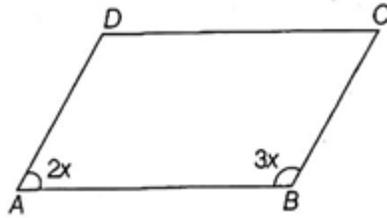
$$= (x + y)[a + b + 2a + 3 - 3a - 4b]$$

$$= (x + y)(3 - 3b) = 3(x + y)(1 - b)$$

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18. Let ABCD be the given parallelogram.

Let $\angle A$ and $\angle B$ of the parallelogram be $2x^\circ$ and $3x^\circ$ respectively.



Now, $AD \parallel BC$

$$2x + 3x = 180^\circ$$

$$x = \frac{180^\circ}{5} = 36^\circ$$

$$\angle A = 2x = 2 \times 36^\circ = 72^\circ$$

$$\angle B = 3 \times 36^\circ = 108^\circ$$

$$\angle C = 72^\circ \text{ and } \angle D = 108^\circ$$

19. Largest four - digit number = 9999

$$\text{Now, } 9999 = 459 \times 21 + 360$$

$$\text{Largest four - digit number which is exactly divisible by } 459 = 9999 - 360 = 9639$$

20. Let the sum be Rs.P and time period be T years.

$$\text{Rate of Interest} = 25/4\%$$

$$\text{and simple interest} = \frac{3}{8} P$$

$$SI = \frac{P \times R \times T}{100}$$

$$\frac{3}{8} P = \frac{P \times (\frac{25}{4}) \times T}{100}$$

$$\frac{3}{8} = \frac{1}{16} T, T = 6 \text{ years}$$

21. We have,

$$= 23x - [15y - \{15y - \{4y - 2(3x - 2y) - 3(3x - 2x - y)\}\}]$$

$$= 23x - [15y - \{15y - \{4y - 6x + 4y - 9x + 6x + 3y\}\}]$$

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$$\begin{aligned}
 &= 23x - [15y - \{15y - \{11y - 9x\}\}] \\
 &= 23x - [15y - \{4y + 9x\}] \\
 &= 23x - [15y - 4y - 9x] \\
 &= 23x - 11y + 9x \\
 &= 32x - 11y
 \end{aligned}$$

22. We know that, volume of cube = (Edge)³

Volume of bigger cube = Sum of volume of smaller cubes

$$\begin{aligned}
 \text{Volume of bigger cube} &= (3)^3 + (4)^3 + (5)^3 \\
 &= 27 + 64 + 125 = 216\text{cm}^3
 \end{aligned}$$

Now, edge of bigger cube = $\sqrt[3]{216} = 6$ cm

Also, surface area of cube = 6 (Edge)²

Surface area of bigger cube = 6 × (6)² = 216 cm²

Now, required cost of coating = Rs.(350 × 216) = Rs.75600

23.

(i) Given,

$$\begin{aligned}
 &\left(\frac{x^m}{x^n}\right)^{m+n} \cdot \left(\frac{x^n}{x^k}\right)^{n+k} \cdot \left(\frac{x^k}{x^m}\right)^{k+m} \\
 &= (x^{m-n})^{m+n} \cdot (x^{n-k})^{n+k} \cdot (x^{k-m})^{k+m} \\
 &= x^{m^2-n^2} \cdot x^{n^2-k^2} \cdot x^{k^2-m^2} \\
 &\quad [\because (a+b)(a-b) = a^2 - b^2] \\
 &= x^{m^2-n^2+n^2-k^2+k^2-m^2} \\
 &= x^0 = 1
 \end{aligned}$$

(ii) Given, $\frac{1}{1+x^{m-n}} + \frac{1}{1+x^{n-m}}$

Let $x^{m-n} = y$

$$\Rightarrow x^{n-m} = \frac{1}{y} \quad \left(\because a^{-1} = \frac{1}{a}\right)$$

\therefore We have, $\frac{1}{1+y} + \frac{1}{1+\frac{1}{y}}$

$$= \frac{1}{1+y} + \frac{y}{1+y} = \frac{1+y}{1+y} = 1$$

24. Let the two parts of Rs.1200 be Rs.P and Rs.(1200 - P)

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$$\text{Simple Interest} = \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$$

$$\frac{P \times 6 \times 2}{100} = \frac{(1200 - P) \times 3 \times 8}{100}$$

$$12P = 28800 - 24P$$

$$36P = 28800$$

$$P = \frac{28800}{36} = 800$$

Hence, the two parts are Rs.800 and Rs.(1200 - 800) i.e. Rs.400

25. Total distance = 360 km

Distance travelled at 60 km/h

$$= \frac{3}{4} \times 360 = 270 \text{ km}$$

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}}$$

$$\text{Time taken to cover 270 km} = \frac{270}{60} = 4 \frac{1}{2} \text{ h}$$

$$\text{Remaining distance} = 360 - 270 = 90 \text{ km}$$

$$\text{Remaining time} = 5 \frac{3}{4} - 4 \frac{1}{2} = \frac{5}{4} \text{ h}$$

$$\text{Required speed of car} = \frac{90}{\frac{5}{4}} \times 4 = 72 \text{ km/h}$$

26. Let 'a' be added to the numbers, such that the resultant is in proportion.

$$\frac{3+a}{5+a} = \frac{13+a}{19+a}$$

$$(3 + 2)(19 + a) = (13 + a)(5 + a)$$

$$57 + 22a + a^2 = 65 + 18a + a^2$$

$$22a - 18a = 65 - 57$$

$$a = \frac{8}{4} = 2$$

Required number = 2

27. Total marks = 540

$$\text{Marks scored in Mathematics} = \frac{55}{360} \times 540 = 1425$$

$$\text{Marks scored in English} = \frac{65}{360} \times 540 = 825$$

$$\text{Marks scored in Hindi} = \frac{70}{360} \times 540 = 105$$

$$\text{Marks scored in Science} = \frac{80}{360} \times 540 = 120$$

$$\text{Marks scored in Social Science} = \frac{60}{360} \times 540 = 90$$

$$\begin{aligned} \text{(i) Required difference} &= (82.5 + 120 + 90) - (142.5 + 105) \\ &= 292.5 + 247.5 = 44.5 \end{aligned}$$

$$\begin{aligned} \text{(ii) Required difference} &= (142.5 + 105) - (82.5 + 90) \\ &= 247.5 + 172.5 = 75 \end{aligned}$$

(iii) Clearly, marks scored in Hindi is 105.

(iv) Percentage marks obtained = 22.2%

$$\text{Marks obtained} = \frac{22.2}{100} \times 540 = 120$$

(v) Required difference = 120 - 82.5 = 37.5

which is equal to the difference in marks between Mathematics and Hindi.

28. Area of wall = Area of rectangle

$$\begin{aligned} \text{Area of both sides of wall} &= 2 \times 4.84 \times 3.1 \times 100 \times 100 \text{ cm}^2 \text{ (1m = 100cm)} \\ &= 200080 \text{ cm}^2 \end{aligned}$$

$$\text{Area of tile} = 22 \times 10 = 220 \text{ cm}^2$$

$$\text{Number of tiles used} = \frac{\text{Area of wall}}{\text{Area of tile}} = \frac{300080}{220} = 1364$$

$$\text{Hence, total cost} = 1364 \times 12 = \text{Rs.16368}$$

29. Selling price of watch = Rs.540

Discount = 10%

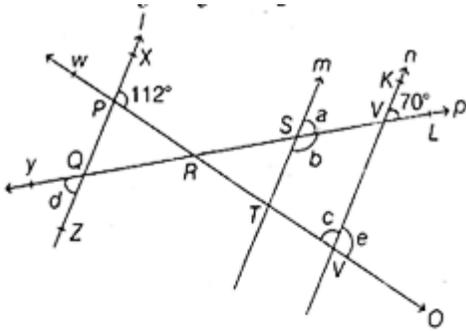
$$\text{Market Price} = \frac{100}{(100 - \text{Discount}\%)} \times \text{selling price}$$

$$= 540 \times \frac{100}{90} = \text{Rs.600}$$

Now, profit percentage = 20%

$$\begin{aligned} \text{Cost price of watch} &= \frac{100}{(100 + \text{Discount}\%)} \times \text{selling price} \\ &= 600 \times \frac{100}{120} = \text{Rs.}500 \end{aligned}$$

30.



Here, $l \parallel m \parallel n$

$\therefore e = \angle XPR =$ (corresponding angles)

$\therefore e = 112^\circ$... (i)

Now, $c + e = 180^\circ$ (linear pair)

$\therefore c = 180^\circ - 112^\circ = 68^\circ$... (ii)

Also, $a = \angle KVL$ (corresponding angles)

$\therefore a = 70^\circ$... (iii)

and $a + b = 180^\circ$ (linear pair)

$\therefore b = 180^\circ - 70^\circ = 110^\circ$... (iv)

Now, $\angle ZQR = b$ (corresponding angles)

$\therefore \angle ZQR = 110^\circ$

and $d + \angle ZQR = 180^\circ$ (linear pair)

$\therefore d = 180^\circ - 110^\circ = 70$... (v)

From Eqs. (i), (ii), (iii), (iv) and (v)

$a = 70^\circ, b = 110^\circ, c = 68^\circ,$

$d = 70^\circ$ and $e = 112^\circ$