**Class 10th Set 2**

**Q1.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Simple interest and Compound interest**

**Sub- Concept: Compound interest**

**Concept Field:**

In a business Radha invests an amount of Rs40,000 for a period of 3 years at 12% per annum compounded annually. If the interest is subjected to income tax at 35% at the end of each year, find the total amount he received at the end of 3 year? `

1. Rs.43854.88
2. Rs.455728
3. Rs.438953.056
4. Rs.25826.8

**Answer:** c

**Solution:**

Here the principal given

Rate of interest given is 12%

So, Interest received for first year

Amount after 1st year

Income tax to be paid at the rate of 35%

Balance sum

So, Interest received for the second year

Amount after 1st year

Income tax to be paid at the rate of 35%

Balance sum

So, Interest received for third year

Amount after third year

Income tax to be paid at the rate of 35%

Balance sum

So, the total amount he received after 3rd year=

**Q2.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Profit and loss**

**Sub- Concept: Sale tax**

**Concept Field:**

A person purchased a Scooty which cost him Rs.13456 including sale tax. If the sale tax rate is 20%. Find its original price without sale tax?

1. Rs.16,3242
2. Rs.11213
3. Rs.24421
4. Rs.22467

**Answer: B**

**Solution:**

Let the original price

Rate of sale tax given=20%

So, sale tax

Selling price for which the scooty sold

If the selling price is then its original price

And if the selling price is then its original price

**Q3.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Number system**

**Sub- Concept: LCM and HCF**

**Concept Field: HCF**

A shopkeeper has three type of refined in his shop. He has 200 liter of first type, 300 liter of another type and 500 litre of third type. He wants to sell all this refined by filling the three kind of refined in tins which has equal capacity. What should be the greatest capacity of such a refined tin?

1. 20 litre
2. 23 litre
3. 45 litre
4. 33 litre

**Answer: A**

**Solution:**

According to the question,

Let three kind of refined be A,B and C

Quantity of refined of type A=200liters

Quantity of refined of type B=300 liters

Quantity of refined of type C=500 liters

Now, we want to fill the refined A,B and C in tins of same capacity

The greatest capacity of the tin that can hold this refined is the HCF of A,B and C

By fundamental theorem of airthmetic

HCF

The greatest capacity of tin that hold refined is of 20 litres.

**Q4.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Advance math**

**Concept: Algebra**

**Sub- Concept: General form of Polynomial**

**Concept Field:**

If α and β are the zeros of a quadratic polynomial f(x)= find the quadratic equation which form a polynomial whose roots are ?



**Answer:** A

**Solution:**

f(x)=

Sum of the zeros=3=α+β

Product of zeros of the given polynomial=108=αβ

Sum of the zeros of the polynomial

Product of zeros of polynomial

Now the quadratic equation is

**Q5.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Advance Math**

**Concept: geometry**

**Sub- Concept: Circle**

**Concept Field:**

A sector of 240° is carved out from wooden circle board, which has an area of 472 square cm, then find the radius of the circle?

1. 34 cm
2. 13 cm
3. 54cm
4. 15 cm

**Answer: D**

**Solution:**

From given data, we get

Angle subtend by sector of a circle

Area given

Let us consider r cm be the radius of the circle

**Q6.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Advance Math**

**Concept: mensuration**

**Sub- Concept: cones**

**Concept Field: volumes**

Find the ratio of their volumes, if the heights of two right circular cones are in the ratio of 2:3 and the radius of their bases are in the ratio of 2:1?

1. 2 : 3
2. 1 : 9
3. 9 : 4
4. 8 : 3

Answer: D

Solution:

From given data,

The height of the two cones given

Radius of their bases given

Let the ratios of radius of two right circular cones be

Let the ratios of height of two right circular cones be

We know that volume of right circular cone

**Q7.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Time and work**

**Sub- Concept: Relation between efficiency and time**

**Concept Field:**

A and B can do a piece of work in 10 days. B and C do it in 8 days; C and A in 16 days. In how many days will C finish it alone?

1. 23 days
2. 42 days
3. 53 days
4. 67 days

**Answer: A**

**Solution:**

As per the given data, we get

On adding, eq. 1,2 and 3 we get

Amount of work done by 2(A + B + C)’s in one day

Amount of work done by A,B and C in one day

Amount of work done by C in one day

(approximately)

C alone can finish the work in 23 days

**Q8.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Maths**

**Concept: Time, speed and distance**

**Sub- Concept: Relative motion between two or more bodies**

**Concept Field:**

Hari and Sarla travel from firozabad to Varanasi in the same direction at the rate of 20 kmph and 30 kmph. If Hari takes 20 minutes larger than Sarla, the distance they travel is

1. 30 km
2. 45 km
3. 26 km
4. 15 km

**Answer: A**

**Solution:**

As per the given data, we get

We know the formula of speed

Subtracting equation (2) from equation (1),we get

By substituting the value of t in equation (2) in hours, we get

So, the distance they travel is 30km.

**Q9.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Profit and loss**

**Sub- Concept: Discount**

**Concept Field:**

Eeshwar and Satwik got two successive discounts, a bouquet with a list price of Rs.800 is available at Rs.256. If the second discount given is 80 %, then find the first discount?

1. 11%
2. 45%
3. 62%
4. 60%

**Answer: D**

**Solution:**

Let the first discount be x % and the cost price be Rs.100.

It is given that 80% is the second discount and the bouquet is available at Rs256. So,

Hence, the First discount is given is of 60%.

**Q10.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Percentage**

**Sub- Concept:**

**Concept Field:**

The bag contains certain number of red, yellow, orange and blue balls. The number of red balls is equal to 120% of the number of blue balls and the number of yellow balls is 50% of the number of red balls. If 40% of the orange balls is equal to the 60% of the blue balls and difference between the number of orange and red balls is 15, the find the total number of balls.

1. 215
2. 232
3. 664
4. 432

**Answer: C**

**Explanation:**

Let Blue balls = x

Red balls = x × =

x× = ×Orange balls

Orange balls =

Yellow balls =

– = 15

15x – 12x = 150

x = 50

Total number of balls = x + + +

= 50+60+75+30

= 215

**Q11.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Simplification**

**Sub- Concept: Surds and Indices**

**Concept Field: law of surds**

Given the value of ., then the value of is

1. 324.12
2. 234.21
3. 180.4
4. 232.21

**Answer: C**

**Solution:**

From the given data,we get

**Q12.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Probability**

**Sub- Concept: results on probability**

**Concept Field:**

A box contains 4 white and 8 yellow balls. Two balls are taken out at random, without replacement. If the first ball is white, then what is the probability that the second ball is also white?

1. 1/11
2. 1/33
3. 1/8
4. 1/3

Answer: A

Solution:

As per question,

Number of white balls = 4, Number of yellow balls = 8

Number of balls taken out at random=2

Total balls = 4 + 8=12

Required probability =

**Q13.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Algebra**

**Sub- Concept: basic identities**

**Concept Field:**

**The sum of the ages of father and son is 72 years. Six years ago, the ratio of their ages is 11: 4. Then what is the present ages (in years) of the father and son respectively?**

1. **22 yrs**
2. **45 yrs**
3. **13 yrs**
4. **19 yrs**

**Answer: A**

**Solution:**

Let the present age be=x

Six years ago, the ages of Father and Son be 11x and 4x respectively

Six year after the present age of Father = 11x + 6

Six year after the present age of Son= 4x + 6

we get F = 50 years and S = 22 years

**Q14.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

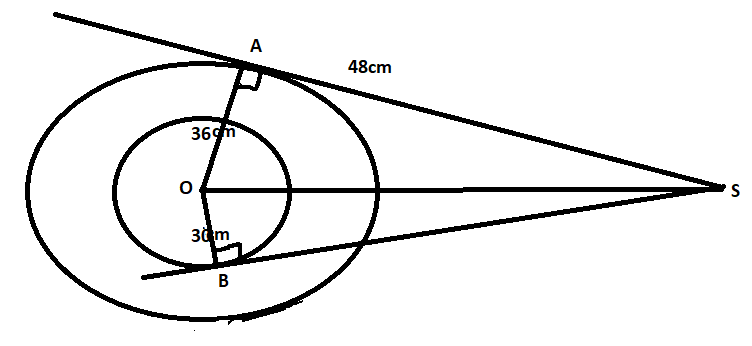
**Topic: Advance Math**

**Concept: Geometry**

**Sub- Concept: Circle**

**Concept Field:**

There are two concentric circle given in which o is the centre with radius 36 cm and 30cm. from an external point S, two tangent SA and SB are drawn on Big and smaller circle. If AS given is 48cm, find the tangential length of SB?



1. 80
2. 75
3. 60
4. 100

Answer: D

Solution:  
According to the question,

Length of OA=36cm

Length of OB=30cm

Length of AS=48cm

BS=?

We know that,

SO is bisector and at the point of contact radius is perpendicular to the tangent of the circle

For bigger circle, ΔOAS is a right angled triangle.

By pythagorus theorem,

For smaller circle, Δ OBS is a right angled triangle

So, BS length is cm.

**Q15.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Mixture and allegation**

**Sub- Concept: Mixture**

**Concept Field:**

Aman owns a dairy which has two type of milk. The milk in vessel A cost Aman Rs.66 per liter and the milk in vessel B cost him Rs.51. If milk in vessel A and B are mixed, then the Aman sold 37.5 liters of this mixture at the cost price of milk in vessel A while he gets the profit of 10%. If he sold the same mixture at the cost price of milk in vessel B, then what is the percentage of loss or profit earned by Aman?

1. 21% profit
2. 10% loss
3. 4% gross profit
4. 15% loss

Answer: D

Explanation:

Quantity of vessel B = x

Quantity of vessel A = 37.5 – x

CP of the mixture = x × 51 + (37.5 – x) × 66

= 2475 – 15x

SP of the mixture = 37.5 × 66 = 2475

Profit = × 100 = 10

1500x = 24750 – 150x

x = 15

CP of the mixture = 2475 – 15 × 15 = 2250

New SP of the mixture = 37.5 × 51 = 1912.5

Required loss percentage = × 100

= 15% loss

**Q16.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Permutation and combination**

**Sub- Concept: permutation**

**Concept Field:**

There are how many words that can be formed with the letters of the word ‘MATHEMATICS’ without changing the relative order of the vowels and consonants?

1. 720
2. 360
3. 2401
4. 1200

**Answer:** A

**Solution:**

There are 11 letters in the word ‘MATHEMATICS’ and there are two M's. two A's. two T's and four other different letters. Number of consonants = 8 and number of vowels = 3. Since relative order of the vowels and consonants remains unchanged. vowels can occupy only vowel’s place and consonants can occupy only consonants place. Now 8 consonants can be arranged among themselves ways (since there are two M's and two T’). And 3 vowels can be arranged among themselves in ways (since A occurs twice). Therefore, required number

**Q17.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

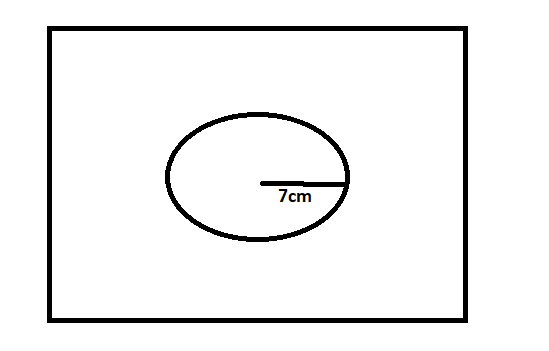
**Expected time to solve: 30 seconds**

**Topic: Advance Math**

**Concept: geometry**

**Sub- Concept: Square**

**Concept Field:**

There is a square field of area ‘X’ square meters. A cylindrical ditch of radius 7 meters and depth 2 meters is dug, and the mud is taken out and spread over the remaining part of the square field, the height of square field which goes up by 0.77 meters. What is the value of ‘X’?

1. 548 m2
2. 245m2
3. 524m2
4. 554m2

**Answer: D**

**Solution:**  
Given that,

**Q18.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Advance Math**

**Concept: Cordinate geometry**

**Sub- Concept: Distance from two given point**

**Concept Field:**

Which point on x axis is equidistance from (3,5) and (-8,9)?

1. 2/3,0
2. -111/22,0
3. 8/3,31/2
4. 2/3,53/3

**Answer:** B

**Solution:**

Let P(3,5) and Q(-8,9) are the two given points.

Let R (x,0) is the point on x-axis.

Now,

Hence the point on x axis is

**Q19.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Advance Math**

**Concept: Mensuration**

**Sub- Concept: Sphere**

**Concept Field: volume**

The internal and external diameter of the surface of an hollow spherical ball are 9cm and 12cm. if the shell is melted and rebuilt into a solid cylinder of diameter 15 cm. find the height of the cylinder?

1. 2.96cm
2. 2cm
3. 4.53cm
4. 7.3cm

**Answer:** A

**Solution:**

Internal diameter of the hollow spherical shell=9cm

Internal Radius of the hollow spherical shell=9/2=4.5cm

External diameter of the shell=12cm

External Radius of the shell=12/2=6cm

Diameter of the cylinder=15cm

Radius of the given cylinder=15/2=7.5cm

Let height of the cylinder=ycm

From the question,

Volume of the cylinder=volume of the spherical shell

h=

**Q20.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Basic Math**

**Concept: Number series**

**Sub- Concept: Airthmetic progression**

**Concept Field:**

The sum of 5th and 10th term of an Airthemetic progression series is 48 and the sum of 7th and 12th term is 58. Find the first term and the common difference of the A.P?

1. 2 yr
2. 14 yr
3. 15 yr
4. 9 yr

**Answer:** D

**Solution:**

---------------1

------------------------2

So we know A.P formula

Hence and common difference

**Q21.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Data interpretation**

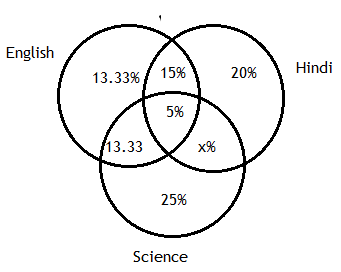
**Concept: venn diagram**

**Sub- Concept: Percentage**

**Concept Field: Percentage**

Study the following venn diagram information carefully and answer the questions given below.

A venn diagram is given in which a total of 1200 students appeared in an examination. The exam consist of three papers, Science, Hindi and English. The given venn diagram presents shows the percentage of students who passed the exam in these papers. And also none of the students failed in all the three papers together. Answer the questions based on this venn diagram.



Find the total number of student who passed the examination in Hindi and science but not in English?

1. 213
2. 533
3. 100
4. 355

Answer: C

Solution:

It is given that,

Total subject consist of All the subject Hindi, science and English formed complete 100%

S0,

**Q22.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Data interpretation**

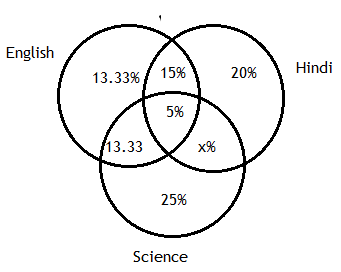
**Concept: Venn diagram**

**Sub- Concept: Percentage**

**Concept Field:**

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Find the difference between the number of students who passed in subject English and only English in the examination?

1. 341
2. 214
3. 264
4. 400

**Answer:** D

**Solution:**

**Q23.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Data interpretation**

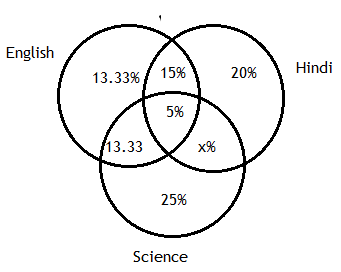
**Concept: Venn diagram**

**Sub- Concept: ratio and proportion**

**Concept Field: Ratio**

Study the following venn diagram information carefully and answer the questions given below.

A venn diagram is given in which a total of 1200 students appeared in an examination. The exam consist of three papers, Science, Hindi and English. The given venn diagram presents shows the percentage of students who passed the exam in these papers. And also none of the students failed in all the three papers together. Answer the questions based on this venn diagram.



What is the ratio of students passed in exactly two subjects and students passed in only one subject respectively?

1. 22:35
2. 11:54
3. 45:43
4. 13:23

Answer: A

Solution:

Percentage of students passed in exactly two subjects

Number of students passed in exactly two subjects

Percentage of students passed in only one subjects

Number of students passed in only one subjects

Required ratio

**Q24.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Data interpretation**

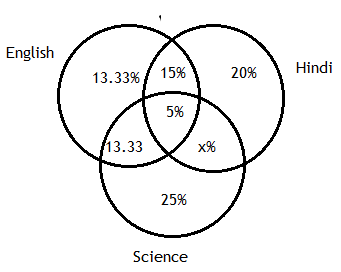
**Concept: Venn diagram**

**Sub- Concept: Percentage**

**Concept Field:**

Study the following venn diagram information carefully and answer the questions given below.

A venn diagram is given in which a total of 1200 students appeared in an examination. The exam consist of three papers, Science, Hindi and English. The given venn diagram presents shows the percentage of students who passed the exam in these papers. And also none of the students failed in all the three papers together. Answer the questions based on this venn diagram.



Find the number of students who passed in at-least two subjects.

1. 365
2. 500
3. 424
4. 567

Answer:

Solution:

Percentage of students passed in atleast two subjects

Number of students passed in atleast two subjects

**Q25.**

**Question Type: MCQ**

**Question Difficulty Level: Medium**

**Marking: (+2, -0.5)**

**Expected time to solve: 30 seconds**

**Topic: Data interpretation**

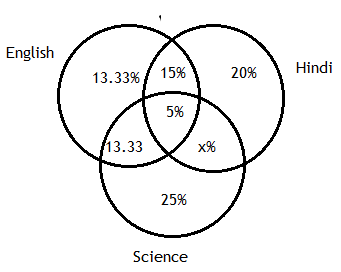
**Concept: Venn diagram**

**Sub- Concept:**

**Concept Field:**

Study the following venn diagram information carefully and answer the questions given below.

A venn diagram is given in which a total of 1200 students appeared in an examination. The exam consist of three papers, Science, Hindi and English. The given venn diagram presents shows the percentage of students who passed the exam in these papers. And also none of the students failed in all the three papers together. Answer the questions based on this venn diagram.



Find the number of students who passed the examination with the subject in only science?

1. 352
2. 546
3. 300
4. 100

Answer: C

Solution:

Number of students passed in only science