verage.html">Average</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/Percentage.html">Percentage</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/Partnership.html">Partnership</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/SimpleMaths.html">Simple Maths</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/Ratio&Proportion.html">Ratio & Proportion</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/TimeDistanceSpeed.html">Time-Distance-Speed</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/Profit&Loss.html">Profit & Loss</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/TrainProblem.html">Train Problem</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/Age.html">Age</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/Time&Work.html">Time-Work</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/SimpleInterest.html">Simple Interest</a></li>

                        <li class="point"><a href="http://127.0.0.1:5501/Project/CompundInterest.html">Compound Interest</a></li>

**Average**

Q.1) The monthly incomes of Raja, his wife and their son are Rs.6000, Rs.4000 and Rs.1880 respectively. Find their average income?

Sol: Raja’s income= Rs.6000, his wife income=Rs.4000 and son income=1880

So, Average income=(6000+4000+1880)/3= Rs.3960

Q.2) Rajiv purchased three dozen mangoes at Rs.10 per dozen, two dozen mangoes at Rs.15 per dozen and five dozen mangoes at Rs.16 per dozen. Find the average cost per dozen of the mangoes that he Purchased?

3 dozen mangoes amount=3\*10= Rs.30

2 dozen mangoes amount=2\*15= Rs.30

5 dozen mangoes amount=5\*16= Rs.80

Therefore, Average cost per dozen=total amount/total dozen=(30+30+80)/(3+2+5)= Rs.14

#### Q.3) The average temperature for Wednesday, Thursday and Friday was 40°C. The average for Thursday, Friday and Saturday was 41° C. If temperature on Saturday was 42° C, what was the temperature on Wednesday?

#### A. 39° C

#### B. 44° C

#### C. 38° C

#### D. 41° C

**Answer: Option A**

### Solution:

Average temperature for Wednesday, Thursday and Friday = 40° C  
Total temperature = 3 × 40 = 120° C  
Average temperature for Thursday, Friday and Saturday = 41° C  
Total temperature = 41 × 3 = 123° C  
Temperature on Saturday = 42° C  
Now,  
(Thursday + Friday + Saturday) - (Wednesday + Thursday + Friday) = 123 - 120;  
Saturday - Wednesday = 3  
Wednesday = 42 - 3 = 39° C

Q.4) The avg mark obtained by 40 students of a class is 86. If the 5 highest marks are removed, the avg reduced by one mark. The avg marks of the top 5 student is?

1. 92
2. 96
3. 93
4. 97

Total marks=40\*86=3440

After removing 5 highest mark the avg is reduced by 1 mark i.e. average=85 of 35 students

After removing top 5 highest marks, the total marks=85\*35=2975

Now the average of top 5 student=(3440-2975)/5=93

Q.5) 24 students collected money for donation. The average contribution was ₹50 Later on, their teacher also contributed some money. Now the average contribution is ₹56. The teacher’s contribution is:

A)55 B)210 C)200 D)194

Explanation:

\*Total money collected from 24 Students is: 24(Students)\*50(rupees)=1200

\*Total money collected from 24 Students including Teacher is: 25 (Students +one teacher)\*56(rupees)=1400

Therefore, the teacher’s contribution is: 1400-1200= 200 Rupees

Percentage

**Q.1** If A = 50 & B = 40 then, A is what % more than B?

Sol: consider 1% of B=40/100=0.4

A-B=50-40=10

Now, 10/0.4=25

Therefore, A is 25 % more than B.

**Q.2)** A = 50 & B = 40, if A is increase by 10 % and B is increase by 30% then what is the total percentage change?

Total(before increasing)=50+40=90

if A is increase by 10 %=50+((50/100)\*10)=55

B is increase by 30%=40+((40/100)\*30)=52

Total(after increasing)=55+52=107

Change in total=107-90=17

Therefore total percentage change=17/(90/100)=18.88%

**Q.3)** if length of rectangle is increase by 20% and breadth is increase by 10% then what is the increase in area of rectangle?

Sol:

Consider, length of rectangle L=100 m and breadth B=100 m

Length of rectangle is increase by 20%=100+20%=120 m

breadth of rectangle is increase by 10%=100+10%=110 m

Now, Increase in Area of rectangle=L\*B=120\*110=13200 m2

**Q.4)** The population of the district of solapur is 1,00,000 the rate of increase is 10% per annum. Find the population at the start of 3rd year?

Sol:

The population at the start of 3rd year means Population of 2 years

So, First year population=1,00,000 +10%=1,10,000

Second year population=1,10,000 +10%=1,21,000

Therefore at start of third year the population will be 1,21,000

Q. 5) Which option is better, a successive discount of 40% and 30% or flat discount of 70%

Let’s Consider the amount is 100

Case A: successive discount of 40% and 30% ,it means first 40% discount on amount, after that 30% discount on remaining amount i.e 100-40%=60, now 60-30%=42….so, final amount after 40% and 30% discount is 42

Case B: flat 70% discount i.e 100-70%=30…so, final amount after flat 70% is 30

Therefore Case B is better

Partnership:

Partnership: It refers to a business association between two or more than two persons who run a business together and share the total profit at an agreed proportion.

### Types of Partnerships:

There are mainly two types of partnership i.e. simple and compound partnerships. The details of both of them are given below.

#### 1.Simple Partnership

In such partnerships, the resources are invested for the same time period by all the investors i.e. the capital (or other resources) stays in the business for the same duration. In this kind of partnership, the profit is distributed in proportion to their contributed resources.

##### Rule 1: Simple Partnership Formula

*If P and Q contributed Rs. a and b respectively for one year in a business, their profit (or loss) at that time will be-*

*=>****P’s benefit (or misfortune) : Q’s profit(or misfortune) = a : b***

#### 2.Compound Partnership

In a compound partnership, the money is invested for different periods of time by different investors. In this, the benefit-sharing proportion is ascertained by duplicating the capital contributed with the unit of time (generally months).

##### Rule 2: Compound Partnership Formula

**=> P1 : P2 = C1 × T1 : C2 × T2**

Here,

P1 = Partner 1’s Profit.

C1 = Partner 1’s Capital.

T1 = Time period for which Partner 1 contributed his capital.

P2 = Partner 2’s Profit.

C2 = Partner 2’s Capital.

T2 = Time period for which Partner 2 contributed his capital.

**Q.1)** Anil, Mukesh and Ritesh started a business each investing Rs.20,000. After 4-month Anil withdraws Rs.6000, Mukesh withdraws Rs.8000, Ritesh invest Rs.6000 more at the end of the years, a total profit was Rs.65600. Find the share of Ritesh.

Sol:

Let’s find the ratio between Anil, Mukesh and Ritesh

=(20000 x4 +14000 x 8):(20000 x4+12000 x8):(20000x4+26000x8)

= 192000 : 176000 : 288000  
Therefore share of Rithesh will be Rs.288000

**Q.2** Joy started a business and he invested in 76000, After some month, Amar came to join with him and invest 57000.The end of the year the total profit was divided among them into ratio form 2 : 1.Find after how many months Amar join

Let A invested Rs.76000 for 12 months and B invested Rs.57000 for x months  
Then (7600×12)/(5700 × X)=2/1  
x=(76×12)/(57×2)  
x=8  
hence B invested for 8 months

**Q.3** Samir started a software business by investing Rs. 40,000. After six months, Nitish Joined him with a capital of Rs. 60,000 . After 3 years, they earned a profit of Rs . 27,900 . What was Samir’s share in the profit?

Samir invested Rs 40000 for 36 months and Nitish invest Rs 60000 for 30 months  
Then Ratio of their investment=40000×36:60000×30

1440000:1800000  
8:10  
Total profit= Rs.27900

So, per ratio profit is=27900/18=1550  
Then Samir Share of Profit=1550 x 8 =12400Rs.

**Q.4** Anil, Mukesh and Ritesh started a business by investing Rs. 125000 Rs. 150000 and Rs.175000 respectively. Find the share of Mukesh, out of an annual profit of Rs. 93,600

125000:150000:175000

Their ratio are 5:6:7

Total profit= Rs.93600

So, per ratio profit is=93600/18=5200  
Then Mukesh Share profit=5200 x 6 =Rs.31200 + 36400+ 26000

**Q.5** Yogesh started a business investing Rs. 45000. After 3 months, Pranab joined him with a capital of Rs. 60000. After another 6 months, Atul joined them with a capital of Rs. 90000. At the end of the year, they made a profit of Rs. 20000. What would be Atul’s share in it?

Yogesh invested Rs 45000 for 12 months and Pranab invest Rs 60000 for 9 months and Atul invest 90000 for 6 months   
Then Ratio of their investment=45000×12:60000×9:90000x6

540000:540000:540000  
1:1:1  
Total profit= Rs.20000

So, per ratio profit is=20000/3=6666.67  
Then Atul’s Share of Profit=6666.66 x 1= Rs.6666.67

Simple maths:

Simple includes many mathematics concepts which are as follow:

* Number System:

The collection of numbers is called the number system. These numbers are of different types such as natural numbers, whole numbers, integers, rational numbers and irrational numbers

* Simplification:

The operations required to simplify things are done in a set order called BODMAS. It **defines the correct sequence in which operations are to be performed in a given** mathematical expression to find the correct value.

* Area of Shapes

Areas of shapes such as **square**, rectangle, triangle, parallelogram, trapezium, circle are the range covered by them in space

* trigonometry,

The branch of mathematics concerned with specific functions of angles and their application to calculations. There are six functions of an angle commonly used in trigonometry. Their names and abbreviations are sine (sin), cosine (cos), tangent (tan), cotangent (cot), secant (sec), and cosecant (csc).

Q.1) Sum of multiples of 7 between (21 and 49) divide by Biggest common factor of 25 and 30 is equal to

Explanation: consider A=Sum of multiples of 7 between 21 & 49

1. e. 28+35+42=105

now, consider B=biggest common factor of 25 and 30 is 5

so, A/B=105/5=21

Q.2) Evaluate: 5 × (2 × 34) ÷ 6 + 7 – 8

**Solution:**

5 × (2 × 34) ÷ 6 + 7 – 8

= 5 × (2 × 81) ÷ 6 + 7 – 8

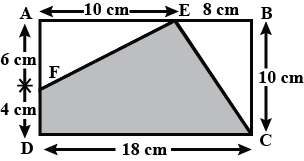
= 5 × 162 ÷ 6 + 7 – 8

= 5 × 27 + 7 – 8

= 135 + 7 – 8

= 142 – 8 = 134.

Q. 3) Area of shaded portion of \_\_\_\_\_\_\_\_\_\_\_.



Options:

Solution:

Area of shaded portion = Area of rectangle  
ABCD−{Sum of area of△EAF and△EBC}  
=[(18×10)−{12×6×10+12×10×8}]  
=[180−(30+40)]=(180−70)=110 cm2.

Q.4) **2. Calculate the radius of a circle if its area is 25π m2.**

**Solution:**

Given: Area = 25π m2

We know that area of a circle = πr2

Hence, we can write,

25π = πr2

25 = r2

Hence, r = 5 m

Therefore, the radius of the circle is 5 m.

Q.5) The value of (0.625 \* 0.0729 \* 28.9)/(0.0017 \* 0.025 \* 8.1) is

a) 0.3825

b) 3.825

c) 38.25

d) 382.5

Solution: The sum of decimal places in numerator and denominator being the same, decimal point can be removed

(625\*729\*289) / (17\*25\*81) = 3825

Q.) The number of coins 1.5 cm in diameter and 0.2cm thick to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm is:

a) 380

b) 450

c) 472

d) 540

Solution: Volume of 1 coin = 22/7 \*(1.5)/2\*(1.5)/2 \* 0.2 = 99/280 cm3

Volume of large cylinder = 22/7 \*(4.5)/2\*(4.5)/2 \* 10 = (99\*45)/28cm3

Number of coins = (99\*45)/28 \* 280/99 = 450

Q,) Find x if sin(x+36^) = cos x

Solution:

sin(x+36^) = cos x

cos(90^ - (x+36^)) = cos x

90^ - (x+36^) = x

2x = 54^

x= 27^

Ratio and Proportion

### **Ratio:**

A ratio can be defined as the relationship between two numbers by the division of the same kind. i.e., Ratio of x and y is written as x: y = x/y. In x: y, we can say that x is the numerator and y is the denominator, or in other words, x as the antecedent, and y the consequent.

**For example**, the ratio of 7:3 can be represented as 7/3, so the numerator = 7, and denominator = 3 or we can say the antecedent = 7, and the consequent = 3

### **Rule of ratio:**

* Each and every term of the ratio should be multiplied or divided by the same non-zero number so that it does not affect the ratio.

### **Proportion:**

A proportion refers to two ratios that are equivalent to each other.

**For example:** 7 /9 = 35/45. These two ratios form a proportion as they are equivalent to each other.

Q.1) A,B,C and D divide a sum of money among themselves in the ratio of 7:4:3:2. If D gets Rs.500 less than A, Find total amount

Solution: Total of ratio is 7+4+3+2=16

If D gets Rs.500 less than A which is equal A-D ratio i. e 5 (Rs.500)

So for 1 ratio amount is Rs. 100

Therefore Total Amount is 16\*100=Rs.1600

Q.2) A bag contains 50p, 25p and 10p coins in the ratio 5:9:4, amounting to Rs.206.Find total no of coins in the bag

Solution: let ‘x’ will be number of coins

(0.50) (5x) + (0.25) (9x)+(0.10)(4x)=206

2.5x + 2.25x + 0.4x=206

X=206/5.15 Therefore x=40

So, Total Coins in the bag is = 5 (no.of 50p coins) \*40 + 9 (no. of 25 coins)\*40 + 4 (no. of 10p coins)\*40 = 720 coins

Q.3) If A:B=3:4 and sum of their square is 225. Find A & B

Sol: 9x2 + 16 x2 =225

25 x2 =225

x = 3

So, A=3\*3=9 and B=4\*3=12

Q.4) In mixture of acid and water , acid and water are in the ratio of 2:5, if total solution is 91 liters . What is the quantity of water

Sol: let x will be one ratio

Per ratio quantity is = (Total Solution) / (sum of ratio) = 91/7= 13

So, Water quantity =5\*13= 65 Liters

Q. 5) Find the Mean Proportion of 4, 25

Sol: Mean Proportion b2= a\*c

b=4\*25

b= 10

Time-Distance-Speed

Speed, distance, and time are essential concepts of mathematics that are used in calculating rates and distances

* Time is directly proportional to distance. It means that speed remains constant, if we have two vehicles moving two distances for two different time duration then the time is directly proportional to the distance.
* Speed is [directly proportional](https://testbook.com/maths/directly-proportional) to distance. It means that time remains constant if we have two vehicles moving two distances at two different speeds respectively.
* Speed is [Inversely Proportional](https://testbook.com/maths/inversely-proportional) to time. It means that distance remains constant if we have two vehicles moving at two different speeds and taking times respectively.

Formula for speed calculation is **Speed = Distance/Time**

### **Units of Speed Time and Distance**

* Time can be generally expressed in terms of seconds(s), minutes (min) and hours (hr).
* Whereas the distance is generally expressed in meters (m), kilometres (km), centimetres, miles, feet, etc.
* Speed is commonly expressed in m/s, km/hr.

**Q.1** How many seconds does Aditya take to cover a distance of 400 m, if he runs at a speed of 20 km/hr?

Speed=20 km/hr=5.55 m/sec.

Distance=400m

Speed=distance/time

5.55=400/time in sec

Time=72.05 sec

Therefore 72.05 seconds need Aditya to cover a distance of 400 m

**Q.2** A cyclist covers a distance of 750 m in 2 min 30 sec. What is the speed in km/hr of the cyclist?

Distance=750 m=750/1000=0.75 km

Time=2 min 30 sec=2.5 min=2.5/60 hr

Speed=distance/time

Speed=0.75/(2.5/60)=18 km/hr

Therefore, the speed of cyclist= 18km/hr

Q.3 A thief moving with the speed of 10 km/hr followed by police one with speed 19 km/hr. If they are separated by 150 meter, after How many minutes police will capture him

Sol:

Same direction > S1 - S2

Opposite direction > S1 + S2

let S1 be the speed of police =19 km/hr

let S2 be the speed of thief =10 km/hr

So Speed = 19-10 = 9 km/hr =150 m/minute , Distance=150 m, Time=? Minutes

Speed=Distance/Time

150=150/Time so, time=1 minute

Therefore In one minute police will capture thief.

Q.4) A car cover a certain distance going at a speed of 60 km/hr and returns to the starting point at a speed of 40 km/hr. Find the average speed for whole journey?

S1=60 km/hr

S2=40 km/hr

Average speed=2\*S1\*S2/S1+S2

Average speed=2\*60\*40/60+40=48 km/hr

Therefore Average speed for whole journey=48 km/hr

Q.5) A man travelled from the village to the post-office at the rate of 25 km/hr and walked back at the rate of 4 km/ph. If the whole journey took 5 hours 48 minutes, find the distance of the post-office from the village?

S1=25 km/hr

S2=4 km/hr

Time=5 hr 48 minutes=5.8 hr

Average speed=2\*S1\*S2/S1+S

= 2 x 25 x 4/(25+4) = 200/29 km/hr.

Speed=distance/time

200/29=distance/5.8

Distance covered in 5 hours 48 minutes= Speed x time

= (200/29) x 5.8

Therefore, Distance of the post office from the village = (40/2) = 20 km.

Profit and Loss

Q.1) A man buys and an article for Rs. 100, and sells it for 110. Then the profit percent is ?

Sol:

Cost price= Rs.100

Selling price= Rs.110

Profit=Selling price - Cost price=110-100=10

Profit percent=(profit x 100)/cost price

=(10 x 100)/100

= 10%

Therefore profit percent is 10%

Q.2) A loss of 5% was suffered by selling a plot for Rs. 4,085. The cost price of the plot was?

Selling price= Rs.4,085

Loss=Cost price-selling price

Cost Price=Loss + selling price

Loss percent=(Loss x 95)/selling price

5=(Loss x 95)/4085

Loss=215

So, Cost price=Loss + selling price

=215+4085

=4300……it was cost price

Q.3) A bought a calculator for Rs. 520 and sold it with 15% profit on the price he bought. At what price did he sell the calculator?

Cost price= Rs.520, profit percent=15%

Selling price=?

Profit=selling price-cost price

Selling price=profit + cost price

Now, we have formula Profit percent=(profit x 100)/cost price

15 = (profit x 100)/520

Profit = 78

So, Selling price=78+520= Rs.598

Q.4) A dealer sold a mixer for Rs. 420 at a loss of 10%. At what price should he have sold it to gain 10% ?

Selling price= Rs.420

Loss=Cost price-selling price

Cost Price=Loss + selling price

Loss percent=(Loss x 90)/selling price

10=(Loss x 90)/420

Loss=46.67

So, Cost price=Loss + selling price

=46.67+420

=466.67……it was cost price

To gain 10% profit=466.67+10%= Rs.513.337

Therefore at Rs.513.337 he have to sold to gain 10%

Q.5) A man buys pencils at 10 for Rs. 3 and sells at 8 for Rs. 3. His gain percent is ?

Cost price=Rs.3 for 10 pencils so, per pencil=0.3

Sell price=Rs. 3 for 8 pencils so, Out of 10 he sold 8, so remaining pencils are 2

Gain=2 x per pencil price = Rs 0.6

Gain percent=(gain x 100)/cost price

=(0.6 x 100)/ 3

=20%

Train Problem

Train problems form an integral part of the time and speed questions which are frequently asked in the quantitative aptitude section of various Competitive Exams . These questions are different from the basic speed, distance and time questions and require a different approach to be answered.

Some important terms that one should know before attempting problems on a train are:

* Length of a train.
* Speed of a train.
* Distance covered by a train.
* Time is taken to cover some distance by train.
* The relative speed of trains.
* The direction of the moving train.

Speed = Distance/Time

## Important formulas for moving trains

* If two trains are moving in same direction with train speed ‘a’ and ‘b’, then relative speed=a-b (a>b)
* If two trains are moving in opposite direction with train speed ‘p’ and ‘q’, then relative speed=a+b
* Distance travelled when a train crosses a stationary object or man =Length of Train
* Distance travelled when a train crosses a platform or bridge =Length of train+ Length of bridge/platform

Q.1) Trains Leaving stations A & B respectively at 8:30 am. If speeds of trains are 25 kmph and 35 kmph at what time they will meet other. If distance between 2 stations is 260 kms.

Sol:

Same direction speed= 25 + 35= 60 kmph

Speed=distance/time

60=260/time

Time=4.33 it means 4 hr 20 minutes

So, A and B will reach at = 8:30 am ( start time ) + 4 hr 30 minutes (time required to meet each other) = 12.50 pm

Q.2) Two trains 100 m and 200 m long at S1=60 kmph and S2=30 kmph in opposite direction on parallel tracks. What time to cross each other?

Sol:

L1=100 m, L2=200 m, S1=60 kmph, S2=30 kmph

Speed=distance/time

Speed=60+30=90 kmph

So, 90=(100+200)/time

Therefore Time to cross each other= 12 sec

Q.3) A train passes a station platform in 36 seconds and a man standing on the platform in 20 seconds. If the speed of the train is 54 km/hr, what is the length of the platform?

Sol:

Speed=15m/sec

Length of the train = (15 x 20) m = 300 m.

Let the length of the platform be X metres.

Then, (X+300)/36=15

X+300=540

X=240 m.

Q.4) A train running with speed of 82 km/hr crosses a 250 m long platform in 27 sec. Find the length of train

distance= length of platform (Lp) + length of train (Lt)

speed=distance/time

82= (250 + Lt)/27

Therefore, Length of Train Lt= 365 m

Age

Q.1) A person age is 2/5 of his age of his mother after 6 years he will be one half of age of his mother. How old is mother at present

Present age of person and his mother in the ratio of 2/5

And, after 8 years their age ratio is ½

So, (2x+8)/(5x+8)=1/2

4x+16=5x+8

X=8

Therefore, present age of mother is 8\*5=40 Years

Q.2) Sachin is 7 Years younger than Rahul and their ages are in the ratio 7:9, What is age of Sachin

Sol:

9x-7x=7

X=3.5

Therefore, Sachin’s Age is 7\*3.5=24.5 Years

Q.3) If sum of age of Sachin and Rahul is 50, after 5 years what is sum of ages

After 5 years sum of their age will be 50 +10 (2\*5) =60 Years

Q.4) Krishna age after 15 years will be 5 times his age of 5 years back, what is the present age of Krishna

Let, present age of Krishna be X

X+15=5(X-5)

40=5X-X

X=10 Years

Q.5) A is two years old than B who is twice as old as C. The tptal ages of A, B, C be 27. How old is B ?

A=2+B which is equal to 2+2X

B=2C which is equal to 2X

C=X

Total of age= A+B+C=27

2+2X+2X+X=27

X=5

Now, B’s age =2X=10 Years

Time & Work

The time and work is the basis of how work gets done at a particular time. The problems with time and work give us the exact relationship between those who are working and the number of days and time it takes to fulfill the work.

**Things to keep in Mind:**

**The relation between Work & Person is directly proportional.**

**The relation between Time and work is directly proportional.**

**The relation between Time & Person is Inversely proportional.**

**Work completed is always regarded as being equal to 1.**

**Work and Time Formula**

**In the context of work and time problems, the formulas involve calculating the amount of work done or the time taken to complete a task, often when multiple workers are involved. Here are some common formulas used in work and time calculations:**

* **Work Formula: Work (W) is calculated as the product of the rate of work (R) and the time (T) taken to complete the task:W=R×T**
* **Rate of Work Formula: The rate of work (R) is the amount of work done per unit of time:R=TW​**
* **Time Formula: The time (T) required to complete a task is calculated by dividing the work (W) by the rate of work (R):T=RW**

**Q.1.**A can do a piece of work in 12 days. B can do this work in 16 days. A started the work alone. After how many days should B join him, so that the work is finished in 9 days?

1. 2 days

2. 3 days

3. 4 days

4. 5 days

5. 1 days

**Sol : Option 4**  
**Explanation:**

A's work in 9 days = 9/12 = 3/4. Remaining work = 1/4.  
This work was done by B in 1/4 × 16 = 4 days.  
∴ B would have joined A after 9 – 4 = 5 days.

**Q.2.**A and B can do a piece of work in 4 days, while C and D can do the same work in 12 days. In how many days will A, B, C and D do it together?

1. 12 days

2. 4 days

3. 3 days

4. 2 days

**Sol : Option 3**  
**Explanation:**A, B, C and D will together take ¼ + 1/12 = 4/12 = 1/3 ⇒ 3 days to complete the work.

Q.3) 20 People working 8 hours a day complete a certain work in 10 days, In how many days 10 people working 10 hours a day can complete the same work

Sol:

M=people, D=days, H= time in hours, W=work is same

So, (M1 D1 H1)/W1=(M2 D2 H2)/W2

(20\*1\*8)/20=(10\*D2\*10)

Therefore, In 16 days can complete the same work

Q.4) If 4 mens or 8 women can do a piece of work in 15 days, in how many days can 6 men and 12 women do the same piece of work

Sol:

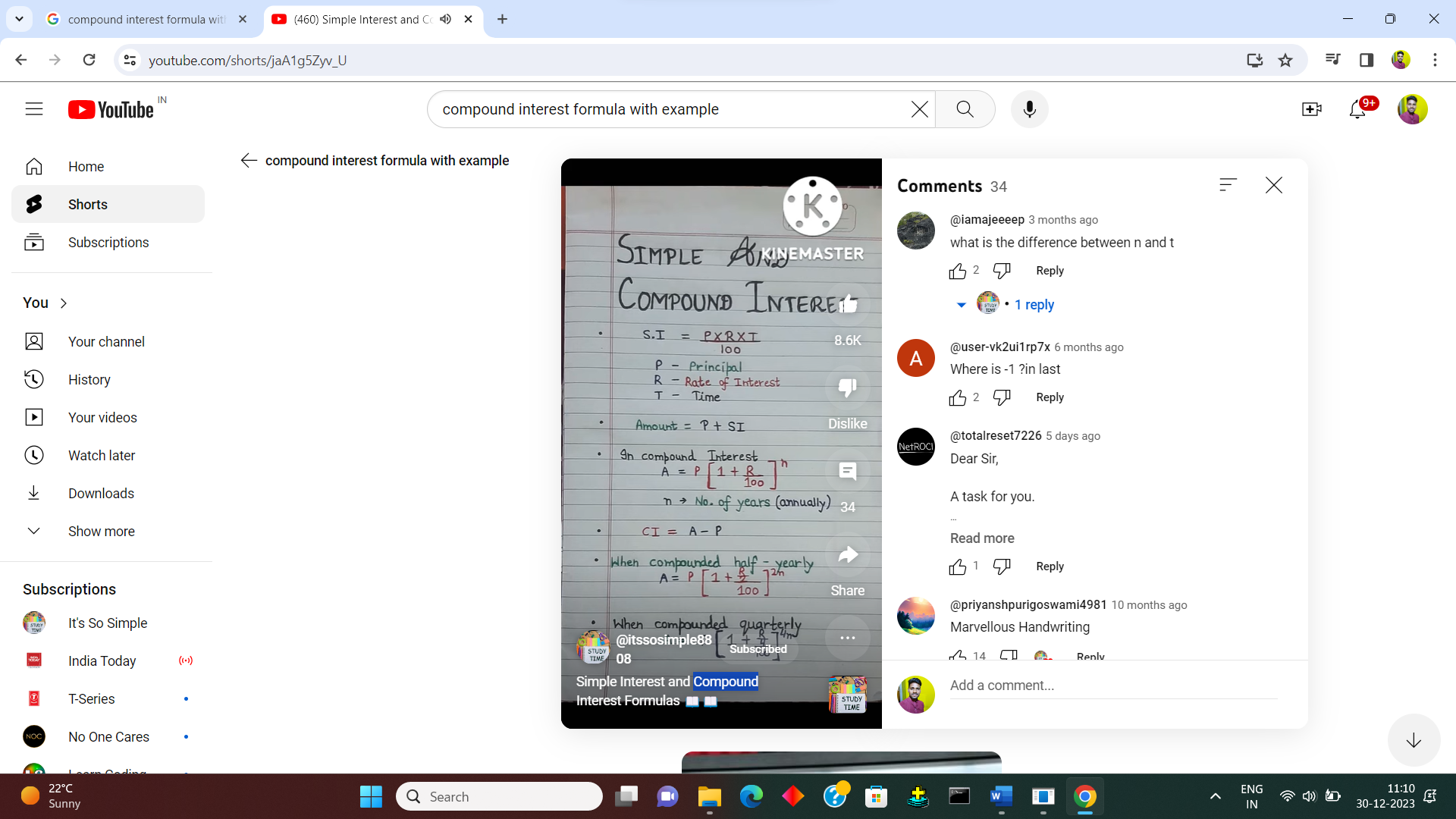
1 men=2 women So, M1=8 , D1=15, M2=24

Now, M1 D1= M2 D2

8\*15= 24\*D2

Therefore, In 5 days can complete the same work

Simple Interest



## Simple Interest is the method to calculate the interest where we only take the principal amount each time without changing it with respect to the interest earned in the previous cycle. In simple terms, we can say that simple interest is the interest earned only because of the principal amount

## Simple Interest Formula

The formula for simple interest helps you find the interest amount if the principal amount, rate of interest and time periods are given.

Simple interest formula is given as:

SI=(PxRxT)/100

Where SI = simple interest

P = principal

R = interest rate (in percentage)

T = time duration (in years)

In order to calculate the total amount, the following formula is used:

**Amount (A) = Principal (P) + Interest (I)**

Q.1) The rate at which sum becomes four times of itself in 25 years at simple Interest will be

Let, p=100, T=25 years, 4 times in 25 years=400

So Interest amount =400-100=300

Simple Interest=[p(principal)\*T\*R(Interest rate)]/100

300=(100\*25\*R)/100

Therefore, The rate at which sum becomes four times of itself in 25 years at simple Interest will be 12%

Q.2) If certain sum of money at simple interest amounts to Rs.3250 in 5 years then the rate of interest per annum will be

Principal+interest=2800……2nd year

Principal+interest=3250……3rd year

Now, three years simple interest amount=3250-2800=450

Therefore, rate of interest per annum will be=450/time=450/3= Rs.150

Q.3) A sum of money becomes 5 times of itself in 3 years. From simple interest in how many years it will becomes 13 times?

In 3 years principal becomes 5 times at simple interest

consider principal is 100, so five times of principal amount is 500

after x years principal becomes 13 times, so principal amount is 1300

now, interest amount 3 years=500-100=400

and interest amount in x years=1300-100=1200

if, to get 400 interest amount need 3 years

then to get 1200 interest amount it needs 9 years

Q.4) In how many years Rs 150 will produce the same interest at 8% as Rs. 800 produce in 3 years at 9/2%

sol:

for time T

150 x (78/100) x T=800x(9/2)x100x3

  T=100x(9/2)x50

  T= 9 Years

Q.5) A sum becomes five times of itself in 20 years. It will become 7 times itself in how many years?

sol:

Interest earned =P×r×t

P= Principal amount

r= Rate of interest

t= Time period

Here, sum becomes 5 times in 20 years,

⇒ Interest earned 4 times the principal amount.

4P = P×r×20100

r = (420)×100     = 20%

here we need to calculate for 7 times of the principalinterest should be 600%

i.e P+6P = 7P

Time = (600%)/(20%)

Time = 30 years

Compound Interest

Compound Interest is the interest calculated on the cumulative amount, rather than being calculated on the principal amount only.

Formula:

Amount, A = P [1 + (R / 100)]n,

where P is the principal

R is the rate of interest per unit time period

n is the time period.

Compound Interest, CI = Amount – Principal.

>If interest is compounded daily, the rate of interest = R / 365 and A = P [ 1 + ( {R / 365} / 100 ) ]T, where ‘T’ is the time period. For example, if we have to calculate the interest for 1 year, then T = 365. For 2 years, T = 730.

>If interest is compounded monthly, the rate of interest = R / 12 and A = P [ 1 + ( {R / 12} / 100 ) ]T, where ‘T’ is the time period. For example, if we have to calculate the interest for 1 year, then T = 12. For 2 years, T = 24.

>If interest is compounded half-yearly, rate of interest = R / 2 and A = P [ 1 + ( {R / 2} / 100 ) ]T, where ‘T’ is the time period. For example, if we have to calculate the interest for 1 year, then T = 2. For 2 years, T = 4.

Q.1) A man deposits 10,000 in a saving account an interest rate of 4% per annum. How much money will be have after 3 years if the interest is compounded annually

10,000+4% interest=10400….1st year

10,400+4% interest=10816….2nd year

10,816+4% interest=11248.64….3rd year

Therefore, A man will have Rs.11248.64 after 3 years

OR…..Using formula

A=P[1+(R/100)]n

A=10000[1+(4/100)]3

A=Rs.11248.64

Q.2) The compound interest on Rs.30,000 at 7% per annum is Rs.4347. Calculate The period in years

1st year compound interest amount

at 7% rate of interest with principal 30,000 is equal to 2100

2nd year compound interest amount=2247

So compound interest amount in two years=2100+2247=4347

Therefore, period is 2 years

Q.3) What is the difference between the compound interests on Rs. 5000 for 1 1/2  years at 4% per annum compounded yearly and half-yearly?

|  |  |
| --- | --- |
| A) 2.04 | B) 3.04 |
| C) 4.04 | D) 5.04 |

[Answer & Explanation](javascript:showans('3747','Compound%20Interest'))**Answer:** A) 2.04  
  
**Explanation:**

C.I. when interest  
compounded yearly=rs.[5000\*(1+4/100)(1+1/2\*4/100)]

= Rs. 5304.

C.I. when interest is  
compounded half-yearly=rs.5000(1+2/100)^3

= Rs. 5306.04  
Difference = Rs. (5306.04 - 5304) = Rs. 2.04

Q.4) Find the compound interest on Rs. 16,000 at 20% per annum for 9 months, compounded quarterly

|  |  |
| --- | --- |
| A) 2422 | B) 2522 |
| C) 2622 | D) 2722 |

[Answer & Explanation](javascript:showans('3798','Compound%20Interest'))**Answer:** B) 2522  
  
**Explanation:**

Principal = Rs. 16000; Time = 9 months =3 quarters;  
Rate = 20% per annum = 5% per quarter.  
Amount = Rs. [16000 x (1+(5/100))3] = Rs. 18522.

 CJ. = Rs. (18522 - 16000) = Rs. 2522

Q.5) If the simple interest on a sum of money at 5% per annum for 3 years is Rs. 1200, find the compound interest on the same sum for the same period at the same rate.

|  |  |
| --- | --- |
| A) 1261 | B) 1271 |
| C) 1281 | D) 1291 |

[Answer & Explanation](javascript:showans('3799','Compound%20Interest'))**Answer:** A) 1261  
  
**Explanation:**

Clearly, Rate = 5% p.a., Time = 3 years, S.I.= Rs. 1200. . .  
So principal=RS [100\*1200]/3\*5=RS 8000  
Amount = Rs. 8000 x [1 +5/100]^3 - = Rs. 9261.  
.. C.I. = Rs. (9261 - 8000) = Rs. 1261.