



3. (a) At what rate of simple interest will Rs.1,600 becomes Rs.2,832 in  $\frac{1}{2}$  years?

???? ?? ??? 1,600 ???  $\frac{1}{2}$  ??? 2,832 ??? ? ? ???? ???

(b) The average age of a class of 40 students is 16.95 years, but with the admission of new student, the average age rises to 17 years. Find the age of the new student.

?? ????? 40 ????? -????? ??? ?? 16.95 ??? ?? ????? ?????? ?????? ???  
?? 17 ????? ?????? ? ?? ?????? ?????? ??? ?????? ?? ?????? ???

4. (a) Pointing to a photograph of a girl, Rohit said, “She has no sister or daughter, but her mother is the only daughter of my mother.” How is the girl in the photograph related to Rohit?

????? ?? ????? ?????? ?? ?????? ? ? — “???? ???? ????? ? ???? ??, ????? ???? ????  
??? ?????? ??????” ????? ?? ?????????? ?????? ????? ???

(b) If the first and second digits in the sequence 5981327438 are interchanged, also the third and the fourth digits, the fifth and sixth digit and so on, then which digit would be the seventh counting from the right?

5981327438 ???????? ????? ?? ?????? ?????? ?????? ??? ?????? ??? ??, ?? ???? ?????  
????? ?? ?????? ??????, ????? ?? ???? ?????? ?????? ?????? ??? ?? ???? ???? ?????? ???  
?? ?? ?????????? ?????? ?? ?????? ?????? ?????????? ? ? ? ?????? ???

5. (a) If  $\frac{2+4+6+\dots+2n}{1+3+5+\dots+(2n-1)} = \frac{2013}{2012}$  then what is the value of n?

??  $\frac{2+4+6+\dots+2n}{1+3+5+\dots+(2n-1)} = \frac{2013}{2012}$  ????? ? ? n ? ? ? ? ? ?

(b) If it is 11 a.m. now then what will be the time after 239995 hours?

?????????, ????? 11 ????? 239995 ????? ???? ? ? ????? ? ? ? ????? ? ? ?

6. (a) Age of X is six times that of Y. After 4 years, X is four times older to Y. What is the present age of X?

X? ?? Y? ???? ? ? ???? ???? ? ? ???? X? ?? Y? ???? ???? ? ? ? ? X? ?????????? ? ? ? ? ? ?

(b) Simplify (?? ?):

$$\frac{(0.05)^2+(0.41)^2+(0.073)^2+(0.2)^2}{(0.005)^2+(0.041)^2+(0.0073)^2+(0.02)^2}$$

7. (a) In a month of 31 days, the third Wednesday falls on the 15<sup>th</sup> day. What will be the last day of the month?

31 ?????? ??? ????? ?????? ?????? ??? 15???? ??? ??, ???????? ??????? ????? ?????? ?? ??? ?'??

(b) How many triangles are there in the figure?

?????? ??? ??????? ??????? ??? ?????? ????

8. (a) A 23X23 square is completely tiled by 1X1, 2X2 and 3X3 tiles. What minimum number of 1X1 tiles are needed?

??? 23X23 ???? ??????????? 1X1, 2X2 ??? 3X3 ??????? ??????? ??? ??? ?????? 1X1 ?????? ??????? ?? ??????? ??????? ??????? ?? ? ??????? ??????

(b) In a certain code, COMPUTER is written as RFUVQNPC. How is MEDICINE written in the same code?

COMPUTER ????? RFUVQNPC ? ?????? ??????, MEDICINE ?????? ?????? ?????? ??????

9. (a) Write the following number in decreasing order:

??? ???? ?????????? ?????????? ??????

$$2^{32}, 4^{15}, 8^{11}, 16^8, 32^6$$

(b) How many integers from 1 to 1200 are not divisible by 2,3 or 6.

1 ? ??? 1200 ?? ??????? ??????? 2, 3 ?? 6 ?? ??????? ??? ??????? ?????

10. (a) Find the remainder when  $2^{31}$  is divisible by 5.

$2^{31} \text{ ? } 5 \text{ ? } ? \text{ ? } ? \text{ ? } ? \text{ ? } ? \text{ ? } ? \text{ ? } ? \text{ ? } ? \text{ ? } ? \text{ ? } ?$

(b) A triangle of area 1 has sides  $a,b,c$  where  $a \geq b \geq c$ . Prove that  $b \geq \sqrt{2}$ .

??? ???????? 1 ??? ??? ?????? \$\$a,b,c (age bge c)\$\$ ? ?????? ?? ?? \$\$bge \sqrt{2}\$\$ ?

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