

1. (c) No. of students = HCF of  $(132 - 62)$ ,  $(237 - 132)$  and  $(237 - 62)$ .
2. (d) Neither a nor b can be zero
3. (d)  $20 + (10 + 10) + (5 + 5) + (2.5 + 2.5) + \dots$   
 $= 20 + 2(10 + 5 + 2.5 + 1.25 + \dots)$  a GP with common ratio  $1/2$
4. (d) Possible values of expression  $E = |x - 4| + |y - 2|$  are 0, 1 and 2.  $E = 0$  has 1 sol viz.  $x = 4$ ,  $y = 2$ .  
 $E = 1$  has 3 sol viz.  $(4, 3)$ ,  $(3, 2)$  and  $(5, 2)$ .  
 $E = 2$  also has 5 sol viz.  $(4, 4)$ ,  $(5, 3)$ ,  $(3, 3)$ ,  $(2, 2)$  and  $(6, 2)$ . in all 9 sol.
5. (a)  $\angle ACB = 130^\circ$ . reflex angle  $AOB = 2 * 130 = 260$
6. (b) Let  $4x$  children were invited,  $3x$  came to party.  
15 boys and, say  $y$  girls.  
Then  $15 + y = 3x$ .  
 $30 + 3(3x - 15) = 8x$  (No. of apples =  $8x$ ).  
Solving  $x = 15$ .  
Hence, total 60 children were invited, Riju bought 120 apples.
7. (d) Not known whether the angle between hands is decreasing or increasing.
8. (c)  $s_1 + s_2 = 170/10 = 17$  and  $s_1 - s_2 = 170/170 = 1$
9. (c) Five yrs. age avg age = 20 years.  
Total present age =  $20 * 6 + 30 = 150$ .  
Current average age of 7 members = 22 years.  
Total age = 154. Childs age = 4 years.
10. (c) In correct clock, the minute hand gains 55 minutes space over the hour hand in 60 minutes. To be together again, the minute hand must gain 60 min over the hour hand.  
60 minutes are gained in  $(60/55) * 60 = 65 \frac{5}{11}$  minutes. But they are together after 63 min.  
Therefore, gain in 63 min =  $65 \frac{5}{11} - 63 = 27/11$  min.
11. (b) E is a digit whose square has same digit ('E') at units place. E can therefore only be 6 (else, square of 1 & 0 are unit digit only). Hence  $E = 6$  and  $S = 3$ .  
 $S + E$  should be one of 'S', or 'T' (as given in options). Hence  $T = 9.9633 + 366 = 9999$ .

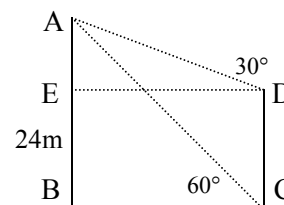
12. (a) The min hand gains 55 min over the hour hand in 60 min. Therefore the hands of correct clock coincide every  $65 \frac{5}{11}$  min. Hence in 66 min the clock loses  $6/11$  min. Therefore in  $60 * 24$  min it loses  $(6 * 60 * 24) / (11 * 26)$  min.

13. (b)

14. (a) A news paper is organized as a bunch of 4 page sheets, with the outermost sheet being of page no. 1, 2, 27 and 28 in this case. 21 will be the right hand page, on its back side will be page number 22. For each 4 page sheet, the sum of the inside pair of pages as also the sum of first and last pages is 29. So the two other missing pages will be  $29 - 21 = 8$  and  $29 - 22 = 7$ .

15. (a and b both)

16. AB is a flagstaff and CD is tree. Let  $BC = x$  and  $AE = y$ .  
 $x = 24 / \tan 60 = 24 / \sqrt{3}$   
 $y = x * \tan 30$ .  
 $CD = AB - AE$



17. (c)  $n$  is co-prime to 7. By Fermet theorem  $n^{7-1} - 1$  is a multiple of 7.  $n^6 - 1$  is divisible by  $n^2 - 1 = (n - 1)(n + 1)$ , i.e. product of two consecutive even integers.  $N^2 - 1$ , (and hence  $n^6 - 1$ ) is divisible by 8.

18. (d)  $f[g(x)] = g[f(x)]$

$$\Rightarrow \text{if } f(x) = x \text{ then } g(x) = 1/x.$$

$$\text{or if } g(x) = x \text{ then } f(x) = 1/x$$

$$\text{in (a) LHS} = 1/x \quad \text{RHS} = x$$

$$\text{in (b) LHS} = x \quad \text{RHS} = 1/x$$

$$\text{in (c) LHS} = x \quad \text{RHS} = 1/x$$

19. (b)  $a_{200} = 3^{199} - 1$ , in (c) the number is created by writing side by side the natural numbers.

$$\text{In a } f(x) + f(-x) = 0$$

20. (c) Side of the square formed by four lines =  $(7^2 + 7^2)^{1/2}$ .

Dotted area =  $14^2 -$  area of one circle (four quarters form one complete circle).

21. (c) GOTO(4, 2) + WALK X(2) + WALK Y(4)  $\Rightarrow$  (6, 6)

22. (a)  $[x(1+0.2)^2 - x] - [2x(1+0.1)^2 - 2x]$   
 $= x[0.44] - 2x[0.21] = 0.02x = 2\% \text{ of } x$

23. (a) Side of hexagon = radius of circle =  $r$

$$\text{Area of hexagon} = 3\sqrt{3}r^2 / 2$$

$$\text{Side of octagon (a)} = r(2/(\sqrt{2} + 1))$$

$$\text{Area of octagon} = 2a^2(\sqrt{2} + 1)$$

Where  $a$  is side of octagon.

$$\text{Ratio} = \pi r^2 : 3\sqrt{3}r^2 / 2 : 8r^2 / (\sqrt{2} + 1)$$

24. (c)

25. (a)