

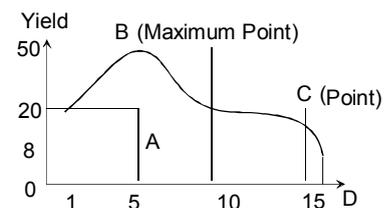


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OLYMPIAD PRACTICE WORKSHEET

1. The value of $\tan 5^\circ \tan 25^\circ \tan 30^\circ \tan 65^\circ \tan 85^\circ$ is
(A) $\sqrt{3}$ (B) $\frac{1}{\sqrt{3}}$ (C) $\frac{2}{\sqrt{3}}$ (D) $\frac{5}{\sqrt{3}}$
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2. A bag contains 5 red balls and some blue balls. If the probability of drawing a blue ball is double that of a red ball then the number of blue balls in the bag is
(A) 10 (B) 5 (C) 8 (D) 7
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3. A cylinder open at both ends has radius $\frac{5}{\text{cm}}$ and height 12 cm. If A and B are diametrically opposite points lying on the top and bottom rims. The shortest distance between A and B is
(A) 13 cm (B) 17 cm
(C) $12\sqrt{10}$ cm (D) $\sqrt{12^2 + 10^2}$ cm
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4. Which of the following equations have the same graph?
I. $y = x + 3$ II. $y = \frac{x^2 - 9}{x - 3}$ III. $(x - 3)y = x^2 - 9$
(A) I and II only (B) I and III only
(C) II and III only (D) All of these.
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5. The value of the real number x satisfying $\log_9 x \times \log_9 \frac{x}{10} = \frac{1}{9}$ is
(A) 3 (B) 4 (C) 9 (D) 10
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6. Two numbers are in the ratio of 3 : 5. If 8 is added to each number, the ratio becomes 2 : 3. What are the numbers?
(A) 24 and 40 (B) 20 and 30 (C) 32 and 42 (D) 35 and 45
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7. The sum of first 24 terms of the sequence whose n th term is $a_n = 3 + \frac{2}{3}n$, is
(A) 275 (B) 272 (C) 280 (D) 270.
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8. The ratio of the volume of a cube to that of a sphere which exactly fits inside the cube is
(A) 6 : (B) : 6 (C) : 12 (D) 12 :

L O G I C A L & A N A L Y T I C A L R E A S O N I N G

9. In a group of five people, K, L and M are ambitious, M, N and R are honest, L, M and N are intelligent and K, M and R are industrious. Among these, neither industrious nor ambitious person(s) would include (A) K alone (B) L and R (C) M and N (D) N alone
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10. On another planet, the local terminology for earth, water, light, air and sky are 'sky', 'light', 'air', 'water' and 'earth' respectively. If someone is thirsty there, what would he drink?
(A) Sky (B) Water (C) Air (D) Light.
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11. The yield versus fertilizer input is shown in the given graph:
Consider the following statements based on this graph:
1. Yield rate is zero at B and C.
 2. There is no yield with no fertilizer input.
 3. The yield is minimum at D.
 4. The yield is neither minimum nor maximum at C.
- Which of the above statements are correct?
(A) 1, 2 and 4 (B) 3 and 4 (C) 2 and 3 (D) 1, 3 and 4



12. **Step 1** : Multiply by 2
Step 2 : Subtract 1
Step 3 : If less than 10, jump to step 1 and continue from there; otherwise proceed to step 4
Step 4 : Add 7
Step 5 : Divide by 2
Step 6 : Add 2
Step 7 : Multiply by 2
 If you start with a value of 6 then calculate **how many times** you had to jump to step 1.
 (A) 4 (B) 5 (C) 3 (D) 0

13. A, B, C, D, E, F and G are members of a family consisting of four adults and three children, two of whom, F and G are girls. A and D are brothers and A is a doctor. E is an engineer married to one of the brothers and has two children. B is married to D and G is their child. Who is C?
 (A) G's brother (B) F's father
 (C) E's daughter (D) A's son

COMPUTERS & INFORMATION TECHNOLOGY

14. Which of the following high level language is NOT suitable for generating or developing a data file?
 (A) BASIC (B) FORTRAN
 (C) COBOL (D) PASCAL

15. The processing speed of a computer is measured in
 (A) Mega byte (B) 16 bit
 (C) Mega hertz (D) Milli seconds

16. Which of the following features distinguishes a database file from a mere collection of data
 (A) Database enables data to be organised for effective use much faster
 (B) It organises data in rows and columns
 (C) It gives reference name to each file created
 (D) It provides search facility

17. Each command is followed by a meaning, match them.

Command	Meaning
1. STEP	A. To branch unconditionally out of the normal program sequence to a specified line number.
2. SWAP	B. To terminate program execution and return to command level.
3. STOP	C. To exchange the values of two variables.
4. GOTO	D. To specify the counter increment for each loop in FOR-NEXT statement.
(A) 1B, 2C, 3D, 4A	(B) 1A, 2B, 3C, 4D
(C) 1D, 2A, 3B, 4C	(D) None of these.

18. If X represents "Shweta can read" and Y represents "Shweta can write", then write in terms of X, X, Y and Y the following statements:

(i) **Shweta can read but cannot write**

(ii) **Shweta cannot read or write**

- (A) XY, X Y (B) X Y, X Y
 (C) X Y, X Y (D) None of these.

19. Name the smallest addressable set of bits of the computer memory.

- (A) Byte (B) Word
 (C) Pixel (D) Digit

20. Which of the following is not a hardware component?

- (A) Mouse (B) LAN
 (C) Chip (D) Semiconductor memory.