1. WHAT IS THE VALUE OF 5 POWER 3-2×4 POWER2?

A) 63
B) 73
C) 93
D) 103
E) 113

2. A JACKET COSTS $144 AFTER A 20% DISCOUNT AND A 20% TAX. WHAT WAS ITS ORIGINAL PRICE BEFORE DISCOUNT AND TAX?

A) $120
B) $125
C) $130
D) $135
E) $150

3. WHAT IS THE NEXT NUMBER IN THE SEQUENCE: 1, 4, 9, 16, 25, _ _?

A) 30
B) 36
C) 42
D) 49
E) 64

4. A SQUARE'S DIAGONAL IS 10 CM. WHAT IS ITS AREA?

A) 40 CM²
B) 45 CM²
C) 50 CM²
D) 60 CM²
E) 72 CM²

5. IF IT'S 3:20 PM, HOW MANY HOURS AND MINUTES UNTIL 8:50 PM?

A) 5 HR 20 MIN
B) 5 HR 30 MIN
C) 5 HR 40 MIN
D) 5 HR 50 MIN
E) 6 HR

6. WHAT IS THE VALUE OF (33×22)÷9 (3^3 \TIMES 2^2) \DIV 9 (33×22)÷9?
A) 12
B) 18
C) 24
D) 36
E) 48

7. A BAG CONTAINS 3 RED, 4 BLUE, AND 5 YELLOW MARBLES. WHAT IS THE PROBABILITY OF PICKING A MARBLE THAT IS NOT YELLOW?
A) 5/12
B) 7/12
C) 2/3
D) 3/4
E) 5/6

8. SOLVE FOR X X X: X2−6X+9=0 X^2 − 6X + 9 = 0 X2−6X+9=0.
A) 3
B) ±3
C) 6
D) ±6
E) 9

9. WHAT IS THE SLOPE OF THE LINE PERPENDICULAR TO THE LINE PASSING THROUGH (1, 2) AND (4, 8)?
A) −2
B) −1/2
C) 1/2
D) 2
E) 3

10. A TRAIN TRAVELS 300 KM IN 4 HOURS. HOW LONG WILL IT TAKE TO TRAVEL 450 KM AT THE SAME SPEED?
A) 5 HR
B) 5.5 HR
C) 6 HR
D) 6.5 HR
E) 7 HR

11. WHICH NUMBER IS A PERFECT SQUARE AND DIVISIBLE BY 18?
A) 36
B) 72
C) 144
D) 324
E) 400

12. IN A RIGHT TRIANGLE, ONE ANGLE IS 30°, AND THE HYPOTENUSE IS 12 CM. WHAT IS THE LENGTH OF THE SIDE OPPOSITE THE 30° ANGLE?
A) 4 CM
B) 6 CM
C) 8 CM
D) 10 CM
E) 12 CM

13. A NUMBER IS DECREASED BY 40%, THEN INCREASED BY 50%, RESULTING IN 45. WHAT IS THE ORIGINAL NUMBER?
A) 50
B) 60
C) 70
D) 75
E) 80

14. HOW MANY POSITIVE INTEGERS FROM 1 TO 50 ARE DIVISIBLE BY 2 OR 3?
A) 30
B) 32
C) 33
D) 34
E) 36

15. IF $\log_2(x) = 3$ LOG2(X)=3, WHAT IS THE VALUE OF x X X?
A) 6
B) 8
C) 9
D) 12
E) 16

ANSWERS WITH EXPLANATIONS

1. C) 93, $5^3 = 125$, $4^2 = 16$, $2 \times 16 = 32$, $125 - 32 = 93$.

2. B) \$125, \$144 $\div$ 1.2 = \$120 (REMOVE 20% TAX), \$120 $\div$ 0.8 = \$125 (REMOVE 20% DISCOUNT).

3. B) 36, SEQUENCE IS SQUARES: $1^2 = 1$, $2^2 = 4$, $3^2 = 9$, $4^2 = 16$, $5^2 = 25$, $6^2 = 36$.

4. C) 50 CM², DIAGONAL $D = S\sqrt{2}$, $10 = S\sqrt{2}$, $S = 10/\sqrt{2} = 5\sqrt{2}$, AREA $= S^2 = (5\sqrt{2})^2 = 50$.

5. B) 5 HR 30 MIN, 3:20 PM TO 8:20 PM = 5 HR, PLUS 30 MIN TO 8:50 PM = 5 HR 30 MIN.

6. A) 12, $3^3 = 27$, $2^2 = 4$, $27 \times 4 = 108$, $108 \div 9 = 12$.

7. B) 7/12, TOTAL MARBLES = $3 + 4 + 5 = 12$, NOT YELLOW = $3 + 4 = 7$, PROBABILITY = $7/12$.

8. A) 3, $X^2 - 6X + 9 = (X - 3)^2 = 0$, $X = 3$ (DOUBLE ROOT).

9. B) –1/2, SLOPE = $(8 - 2)/(4 - 1) = 6/3 = 2$, PERPENDICULAR SLOPE = NEGATIVE RECIPROCAL = $-1/2$.

10. C) 6 HR, SPEED = $300 \div 4 = 75$ KM/H, TIME = $450 \div 75 = 6$ HR.

11. D) 324, $324 = 18^2$ (PERFECT SQUARE), $324 \div 18 = 18$ (DIVISIBLE BY 18).

12. B) 6 CM, OPPOSITE 30° = $\text{HYPOTENUSE} \times \sin(30°) = 12 \times 1/2 = 6$.

13. A) 50, $X \times 0.6 \times 1.5 = 45$, $X \times 0.9 = 45$, $X = 45 \div 0.9 = 50$.

14. C) 33, DIVISIBLE BY 2: $50 \div 2 = 25$, BY 3: $\lfloor 50 \div 3 \rfloor = 16$, BY 6: $\lfloor 50 \div 6 \rfloor = 8$, $25 + 16 - 8 = 33$ (INCLUSION-EXCLUSION).

15. B) 8, $\log_2(X) = 3$, $X = 2^3 = 8$.