VIII H.W-9

1) 196 is the square of (a) 11 (b) 12 (c) 14 (d) 16

2) Which of the following is a square of an even number?
(a) 144 (b) 169 (c) 441 (d) 625

3) A number ending in 9 will have the units place of its square as (a) 3 (b) 9 (c) 1 (d) 6

4) Which of the following will have 4 at the unit's place?
(a) 14^2 (b) 62^2 (c) 27^2 (d) 35^2

5) How many natural numbers lie between 5^2 and 6^2?
(a) 9 (b) 10 (c) 11 (d) 12

6) Which of the following cannot be a perfect square?
(a) 841 (b) 529 (c) 198 (d) all of the above

7) The one's digit of the cube of 23 is (a) 6 (b) 7 (c) 3 (d) 9

8) A square board has an area of 144 square units. How long is each side of the board?
(a) 11 units (b) 12 units (c) 13 units (d) 14 units

9) If one member of a Pythagorean triplet is 2m, then the other two members are (a) m, m^2+1 (b) m^2+1, m^2-1 (c) m^2, m^2-1 (d) $m^2, m+1$

10) The sum of successive odd numbers 1, 3, 5, 7, 9, 11, 13 and 15 is (a) 81 (b) 64 (c) 49 (d) 36

11) The sum of first n odd natural numbers is
(a) $2n+1$ (b) n^2 (c) n^2-1 (d) n^2+1

12) Which of the following numbers is a perfect cube?
(a) 243 (b) 216 (c) 392 (d) 8640

13) ~~Which of the~~ The hypotenuse of a right triangle with its legs of lengths $3x \times 4x$ is
(a) $5x$ (b) $7x$ (c) $16x$ (d) $25x$

14) The next two numbers in the number pattern 1, 4, 9, 16, 25, ... are (a) 35, 48 (b) 36, 49 (c) 36, 48 (d) 35, 49

15) Which among $43^2, 67^2, 52^2, 59^2$ would end with digit 1?
(a) 43^2 (b) 67^2 (c) 52^2 (d) 59^2

16) A perfect square can never have the following digit in its ones place (a) 1 (b) 8 (c) 0 (d) 6

17) A perfect square can never have the following digit in its ones place (a) 1 (b) 8 (c) 0 (d) 6

18) Which of the following numbers is not a perfect cube
(a) 216 (b) 567 (c) 125 (d) 343

19) $\sqrt[3]{1000}$ is equal to (a) 10 (b) 1000 (c) 1 (d) none of these

20) If m is the square of a natural number n, then n is
(a) the square of m (b) greater than m (c) equal to m
(d) $\sqrt{m}$

21) A perfect square number having n digits where n is even will have square root with
(a) $(n+1)$ digit (b) $\frac{n}{2}$ digit (c) $\frac{n}{3}$ digit (d) $\frac{n+1}{2}$ digit

22) If m is the cube root of n, then n is
(a) m^2 (b) $\sqrt{m}$ (c) $\frac{m}{3}$ (d) $\sqrt[3]{m}$

23) The value of $\sqrt{248+\sqrt{52+\sqrt{144}}}$ is

(a) 14 (b) 12 (c) 16 (d) 13

24) Given that $\sqrt{4096} = 64$, the value of $\sqrt{4096}+\sqrt{40.96}$ is
(a) 74 (b) 60.4 (c) 64.4 (d) 70.4

25) $\left[6^2+(8^2)^{\frac{1}{2}}\right]^3 =$ ____

26) Evaluate : $\sqrt[3]{27}+\sqrt[3]{0.008}+\sqrt[3]{0.064}$

27) Three numbers are in the ratio 2:3:4. The sum of their cubes is 0.334125. Find the numbers.

28) The area of a square plot is $101\frac{1}{400}\ m^2$. Find the side length.

29) Find the smallest square number divisible by each one of the numbers 8, 9 and 10

30) Find the square of 43 using distributive law.

VIII H.W-9 (Answers)

1) $14 \times 14 = 14^2 = 196$ (c)

2) $12 \times 12 = 144$

Square of an even number is always even (a)

3) 1 (c)

eg:- $19 \times 19 = 361$

4) 62^2 will have 4 at the unit place. (b)

62 ends with 2. Thus square of 2 is 4.

5) There are $2n$ natural numbers between n^2 and $(n+1)^2$

Thus $2 \times 5 = 10$ (b)

6) $29 \times 29 = 841$

$23 \times 23 = 529$

$198 = 3 \times 3 \times 2 \times 11$

2	198
11	99
3	9
	3

Since the factors 2 and 11 do not form pairs, 198 is not a perfect square. (c)

7) 23 ends with 3.

Hence the one's digit of 23^2 will be $3 \times 3 = 9$ (d)

8) Area of square = Side × Side = Side^2

$\text{Side}^2 = 144$

$\therefore$ Side $= \sqrt{144} = 12$ units (b)

9) The three members of a Pythagorean Triplet are $2m$, m^2-1 and m^2+1 (b)

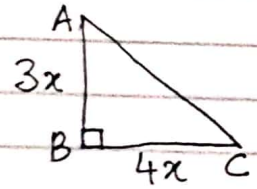
10) $1+3+5+7+9+11+13+15 = 8^2 = 64$. (b)

The sum of successive first n odd numbers $= n^2$

11) n^2 (b)

12) $6^3 = 216$ (b)

13)



Using Pythagoras Theorem,

$AC^2 = AB^2 + BC^2$

$= (4x)^2 + (3x)^2$

$= 16x^2 + 9x^2 = 25x^2$

$\therefore AC = \sqrt{25x^2} = 5x$ (a)

14) 1, 4, 9, 16, 25, 36, 49, ... (b)

$1^2 = 1$	$4^2 = 16$	$7^2 = 49$
$2^2 = 4$	$5^2 = 25$	and so on
$3^2 = 9$	$6^2 = 36$	

15) 59^2 will end with digit 1 (d)
Since $9^2 = 9 \times 9 = 81$

16) 8 (b)

17) 8 (b)

18) $6^3 = 216$
$5^3 = 125$
$7^3 = 343$
$567 = 3 \times 3 \times 3 \times 3 \times 7$
567 is not a perfect Cube since the factors 3 and 7 do not form triplets (b)

3	567
3	189
3	63
3	21
	7

19) $\sqrt[3]{1000} = 10$ (a)

20) $n^2 = m$
Then $n = \sqrt{m}$ (d)
eg:- $5^2 = 25$
Then $5 = \sqrt{25}$

21) $\frac{n}{2}$ digits (b)

22) $\sqrt[3]{n} = m$
$n = m^3$ (a)

23) $\sqrt{248 + \sqrt{52 + \sqrt{144}}} = \sqrt{248 + \sqrt{52+12}} = \sqrt{248+8} = \sqrt{256}$
$= 16$ (c)

24) $\sqrt{4096} = 64$
$\sqrt{40.96} = 6.4$

$\therefore \sqrt{4096} + \sqrt{40.96} = 64 + 6.4 = 70.4$ (d)

25) $\left[6^2 + (8^2)^{\frac{1}{2}}\right]^3 = \left(6^2 + 8\right)^3 = (36+8)^3 = (44)^3 = 44 \times 44 \times 44$
$= 85184$ //

26) $\sqrt[3]{27} = 3$
$\sqrt[3]{0.008} = 0.2$
$\sqrt[3]{0.064} = 0.4$

$\therefore \sqrt[3]{27} + \sqrt[3]{0.008} + \sqrt[3]{0.064} = 3.6$ //

27) Let the numbers be $2x, 3x$ and $4x$

Then $(2x)^3 + (3x)^3 + (4x)^3 = 0.334125$

$8x^3 + 27x^3 + 64x^3 = 0.334125$

$99x^3 = 0.334125$

$x^3 = \frac{0.334125}{99}$

$= \frac{334125}{99000000}$ ~~3375 / 37125~~

~~1000000~~

1000000

$= 0.003375$

$x = \sqrt[3]{0.003375}$

$= \frac{\sqrt[3]{3375}}{\sqrt[3]{1000000}}$

5	3375
5	675
5	135
3	27
3	9
	3

$= \frac{15}{1000} = 0.015$

∴ The numbers are $2x = 2 \times 0.015$

$= 0.03$//

$3x = 3 \times 0.015$

$= 0.045$//

$4x = 4 \times 0.015$

$= 0.06$//

28) Area of square plot = Side × Side = Side^2

∴ Side^2 = $101\frac{1}{400} = \frac{40401}{400}$

Side = $\sqrt{\frac{40401}{400}} = \frac{\sqrt{40401}}{\sqrt{400}}$

	201
2	40401
	4
401	0401
	401

$= \frac{201}{20} = 10\frac{1}{20}$ m //

Hence the length of each side = $10\frac{1}{20}$ m

29) LCM(8, 9, 10) = 2 × 2 × 3 × 3 × 2 × 5

= 360

$360 = \underline{2\times2}\times\underline{3\times3}\times(2)\times(5)$

Thus 360 must be multiplied by 2 and 5 to make it a perfect square.

$360\times2\times5 = 3600$

Hence, the smallest square number divisible by each of 8, 9, 10 is $\underline{\underline{3600}}$

2	8, 9, 10
2	4, 9, 5
3	2, 9, 5
3	2, 3, 5
2	2, 1, 5
5	1, 1, 5
	1, 1, 1

30) $43^2 = (40+3)^2 = (40+3)(40+3)$

$= 40(40+3)+3(40+3)$

$= 1600+120+120+9$

$= \underline{\underline{1849}}$

1600
120
120
9
1849