

VIII Homework-3

- 1) In square numbers, the digit at the units place is either of the whole numbers $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$ or 9.
- 2) A square number cannot have $\underline{\quad}$, $\underline{\quad}$, $\underline{\quad}$ or $\underline{\quad}$ at the units place.
- 3) The number of zeroes at the end of the number in a perfect square is always $\underline{\quad}$ (even/odd)
- 4) A number which ends with an odd number of zeroes is never a $\underline{\quad}$
- 5) The number of non-perfect square numbers between the squares of two consecutive numbers n and $n+1$ is $\underline{\quad}$
- 6) For any natural number n , $\underline{\quad}$ is equal to the sum of the first n odd natural numbers.
- 7) Number of natural numbers between 21^2 and 22^2 is $\underline{\quad}$
- 8) $1+3+5+7+9+11 = \underline{\quad} = \underline{\quad}$
- 9) Which of the following numbers would end with digit 1?
(a) 609^2 (b) 327^2 (c) 325^2 (d) 341^2 (e) 546^2
- 10) Which of the following numbers would end with digit 6?
(a) 73^2 (b) 324^2 (c) 276^2 (d) 732^2 (e) 294^2
- 11) What will be the units digits in the square of the following numbers?
(a) 64^2 (b) 93^2 (c) 206^2 (d) 135^2 (e) 499^2 (f) 238^2
- 12) What will be the number of zeroes in the square of
(a) 40 (b) 400 (c) 8000 (d) 60000
- 13) How many natural numbers lie between (a) 49^2 and 50^2 (b) 75^2 and 76^2
- 14) How many non-square numbers lie between (a) 500^2 and 501^2
- 15) Express as the sum of two consecutive natural numbers
(a) 25^2 (b) 19^2 (c) 17^2
- 16) Using property of square numbers, find $75^2 - 74^2$
- 17) Without adding, find the sum of
(a) $1+3+5+5+7+9+11+13+15$ (b) $1+3+5+7+9$
- 18) A man reads $\frac{3}{8}$ of a book on a day and $\frac{4}{5}$ of the remainder on the second day. If the number of pages

Still unread are 40, then how many pages did the book contain?

- 19) $\frac{4}{7}$ of a pole is in the mud. When $\frac{1}{3}$ of it is pulled out, 250 cm of the pole is still in the mud. Find the full length of the pole?
- 20) Out of a certain sum of money a boy spends $\frac{3}{5}$ and then $\frac{1}{4}$ of the remainder. He has ₹15 left. How much amount had he at first?
- 21) An oxygen tank contained $219\frac{2}{3}$ L of oxygen, before $32\frac{1}{3}$ L were used. If the tank can hold $245\frac{3}{8}$ L, how much space in the tank is unused?
- 22) Priya completes $\frac{1}{20}$ of her painting each day. How much of her painting does she complete in 5 days?
- 23) Ms. Joshi walks her dog $\frac{4}{5}$ km each day. What is the total distance that Ms. Joshi walks her dog in 6 days?
- 24) A group of friends hike $5\frac{3}{4}$ km, stop for lunch and then hike another $3\frac{1}{4}$ km. How far did they hike?
- 25) $7\frac{1}{2}$ m long rope is cut into 10 equal pieces. What is the length of each piece?

VIII Homework - 3 (answers)

- 1) 0, 1, 4, 5, 6
- 2) 2, 3, 7, 8
- 3) even
- 4) perfect square
- 5) $2n$
- 6) n^2
- 7) $2 \times 21 = 42$
- 8) $6^2 = 36$

number	unit digit
(a) 609^2	1
(b) 327^2	9
(c) 325^2	5
(d) 341^2	1
(e) 546^2	6

Hence 609^2 and 341^2 end with digit 1.

number	unit digit
(a) 73^2	9
(b) 324^2	6
(c) 276^2	6
(d) 732^2	4
(e) 294^2	6

Hence 324^2 , 276^2 and 294^2 end with digit 6.

number	unit digit
(a) 64^2	6
(b) 93^2	9
(c) 206^2	6
(d) 135^2	5
(e) 499^2	1
(f) 238^2	4

number	no. of zeroes
(a) $40^2 = 1600$	2 zeroes
(b) $400^2 = 160000$	4 zeroes
(c) $8000 = 64000000$	6 zeroes
(d) $60000 = 3600000000$	8 zeroes

13) We know that there are $2n$ natural numbers lie between n^2 and $(n+1)^2$

(a) $2n = 2 \times 49 = 98$ natural numbers lie between 49^2 and 50^2 .

(b) $2n = 2 \times 75 = 150$ natural numbers lie between 75^2 and 76^2 .

14) We know that there are $2n$ non-square numbers lie between n^2 and $(n+1)^2$

$2n = 2 \times 500 = 1000$ non-square numbers lie between 500^2 and 501^2

15) (a) $25^2 = \frac{25^2+1}{2} + \frac{25^2-1}{2}$

$$= \frac{625+1}{2} + \frac{625-1}{2} = \frac{626}{2} + \frac{624}{2}$$

$$= \underline{\underline{313+312}}$$

(b) $19^2 = \frac{19^2+1}{2} + \frac{19^2-1}{2}$

$$= \frac{361+1}{2} + \frac{361-1}{2} = \frac{362}{2} + \frac{360}{2}$$

$$= \underline{\underline{181+180}}$$

(c) $17^2 = \frac{17^2+1}{2} + \frac{17^2-1}{2}$

$$= \frac{289+1}{2} + \frac{289-1}{2} = \frac{290}{2} + \frac{288}{2}$$

$$= \underline{\underline{145+144}}$$

16) $a^2 - b^2 = (a+b)(a-b)$

$$75^2 - 74^2 = (75+74)(75-74)$$

$$= 149 \times 1 = \underline{\underline{149}}$$

17) (a) $1+3+5+7+9+11+13+15 = 8^2 = \underline{\underline{64}}$

(b) $1+3+5+7+9 = 5^2 = \underline{\underline{25}}$

18) Let the no. of pages in the book be x .

$$\text{No. of pages read on day 1} = \frac{3}{8}x$$

$$\text{Remaining pages} = x - \frac{3}{8}x$$

$$\text{No. of pages read on day 2} = \frac{4}{5} \left(x - \frac{3}{8}x \right)$$

$$\text{No. of pages unread} = 40$$

$$\therefore \frac{3}{8}x + \frac{4}{5} \left(x - \frac{3}{8}x \right) + 40 = x$$

$$\Rightarrow \frac{3}{8}x + \frac{4x}{5} \left(1 - \frac{3}{8} \right) + 40 = x$$

$$\Rightarrow \frac{3}{8}x + \frac{4x}{5} \times \frac{5}{8} + 40 = x$$

$$\Rightarrow \frac{3}{8}x + \frac{x}{2} + 40 = x$$

$$\Rightarrow \frac{3x + 4x + 320}{8} = x$$

$$\Rightarrow 7x + 320 = 8x$$

$$\Rightarrow 8x - 7x = 320$$

$$\therefore x = 320 //$$

Hence total no. of pages in the book = 320 pages.

19) Let the full length of the pole be x cm.

$$\text{length of pole inside mud} = \frac{4}{7}x$$

$$\text{length of pole pulled out} = \frac{1}{3}x$$

$$\therefore \text{length of pole still inside mud} = \frac{4}{7}x - \frac{1}{3}x$$

$$\therefore \frac{5x}{21} = 250 \Rightarrow x = \frac{250 \times 21}{5}$$

$$\begin{aligned} &= \frac{12-7}{21} \times x \\ &= \frac{5x}{21} \end{aligned}$$

Hence the full length of the pole is 1050 cm //

20) Let the ^{total} amount with the boy be Rs x .
 Amount he spent = $\frac{3}{5}x$

$$\text{Amount remains} = x - \frac{3}{5}x = \frac{2x}{5}$$

$$\text{Amount he spent again} = \frac{1}{4} \times \frac{2x}{5} = \frac{x}{10}$$

$$\therefore \text{Total money spent} = \frac{3x}{5} + \frac{x}{10} = \frac{7x}{10}$$

$$\therefore x - \frac{7x}{10} = 15 \Rightarrow \frac{3x}{10} = 15 \Rightarrow x = \frac{150}{3} = 50 //$$

Hence he had ₹150 at first | Hence he had ₹50 at first.

21) Total Capacity of the tank = $245 \frac{3}{8} = \frac{1963}{8} \text{ L}$

$$\text{Amount of oxygen contained in tank} = 219 \frac{2}{3} = \frac{659}{3} \text{ L}$$

$$\text{Amount of oxygen used} = 32 \frac{1}{3} = \frac{97}{3} \text{ L}$$

$$\text{Amount of oxygen still present} = \frac{659}{3} - \frac{97}{3} = \frac{562}{3} \text{ L}$$

$$\therefore \text{Space unused in tank} = \frac{1963 \times 3}{8 \times 3} - \frac{562 \times 8}{3 \times 8}$$

$$= \frac{5889 - 4496}{24}$$

$$= \frac{1393}{24} = 58 \frac{1}{24} \text{ L}$$

22) Part of painting she completes in 1 day = $\frac{1}{20}$

$$\therefore \text{Part of painting completed in 5 days} = 5 \times \frac{1}{20} = \frac{1}{4}$$

23) Distance covered by dog in 1 day = $\frac{4}{5} \text{ km}$

$$\therefore \text{Total distance covered in 6 days} = \frac{4}{5} \times 6 = \frac{24}{5} = 4 \frac{4}{5} \text{ km}$$

24) distance covered initially = $5 \frac{3}{4} \text{ km}$

distance covered after lunch = $3 \frac{1}{5} \text{ km}$

$$\therefore \text{Total distance travelled} = 5 \frac{3}{4} + 3 \frac{1}{5} = \frac{23 \times 5}{4 \times 5} + \frac{16 \times 4}{5 \times 4} = \frac{115 + 64}{20}$$

$$= \frac{179}{20} = 8 \frac{19}{20} \text{ km}$$

$$25) \text{ Total length of rope} = 7\frac{1}{2} \text{ m}$$

$$\text{No. of equal pieces} = 10$$

$$\therefore \text{length of each piece} = 7\frac{1}{2} \div 10$$

$$= \frac{15}{2} \div 10$$

$$= \frac{15}{2} \times \frac{1}{10} = \frac{3}{4} \text{ m}$$