THE ASSOCIATION OF MATHEMATICS TEACHERS OF INDIA
Screening Test – Gauss Contest
NMTC PRIMARY LEVEL - V & VI GRADES
Saturday, the 07 October 2023

ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	c	d	b	c	d	c	a	d	b	d	c	c	b	b	d
Ques.	16	17	18	19	20	21	22	23	24	25					
Ans.	125%	0	84	9	24	125º	3	5	36	95					

HINTS & SOLUTION

SECTION-A

1. $\dfrac{999\times 999\times 999}{(999+999)\times 111\times 111}=\dfrac{81}{2}$

2. $\dfrac{9}{2}\div\dfrac{13}{4}=x$

$\dfrac{9}{2}\times\dfrac{4}{13}=\dfrac{18}{13}=x$ ... (1)

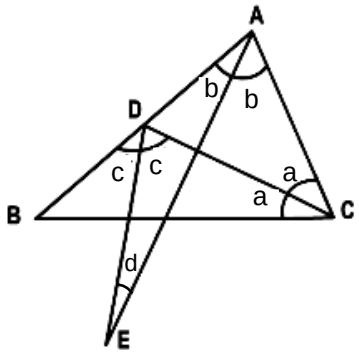
$\dfrac{15}{4}\div\dfrac{17}{8}=y$

$\dfrac{15}{4}\times\dfrac{8}{17}=\dfrac{30}{17}=y$ ... (2)

$13x + 17y = 18 + 30 = 48$

3. Card = 1, 2, 3, 7, 8
Number of ways to choose 3 cards = 1 (1,3,7)
Number of ways to chose 2 card = 3 (1,3) (1,7)(3,7)
Number of ways to chose 1 card = 3 (1) (3)(7)
Total = 7

4.



In ΔADC

$a + 2b = 2c$ ... (1)

$\angle ADC = 180 - (a + 2b)$ ... (2)

In ΔAD

$b + d + \angle ADC = 180^o$

$b + d + 180 - (a + 2b) + c = 180^o$

$d = a + b - c$

from (1) $b - c = -\frac{a}{2}$

so $d = a - \frac{a}{2} = \frac{a}{2}$

$= d = \frac{1}{2}\left(\frac{c}{2}\right) = \frac{c}{4}$

5. Passing marks = 20% of x + 30

Now according to question

32% of x = (20% of x + 30) + 42

$\frac{32}{100}x = \frac{20}{100}x + 72$

$\frac{12}{100}x = 72$

x = 600

6. Number = 25,73,97

73 – 25 = 48

97 – 73 = 24

97 – 25 = 72

HCF (48,24,72) = 24

7. $\frac{19}{7} = a + \frac{2}{a + \frac{b}{c}}$

If a = 1

$1 + \frac{2}{1 + \frac{b}{c}} = 1 + \frac{12}{7}$

so $\frac{2}{1 + \frac{b}{c}} = \frac{12}{7}$

$\frac{1}{1 + \frac{b}{c}} = \frac{6}{7} = \frac{1}{\frac{7}{6}}$

$\Rightarrow \quad 1 + \frac{b}{c} = \frac{7}{6} = 1 + \frac{1}{6}$

$\frac{b}{c} = \frac{1}{6}$

b = 1 and c = 6

So a = 1, b = 1 & c = 6

a + b + c = 8

8. Area = $\frac{1}{2} \times (3+1) \times \left(\frac{3\sqrt{3}}{2} + \frac{\sqrt{3}}{2}\right) = \frac{1}{2} \times 4 \times 2\sqrt{3} = 4\sqrt{3}$

9. Let number = a, b , c, d , e

Correct average = $\frac{a+b+c+d+e}{5}$

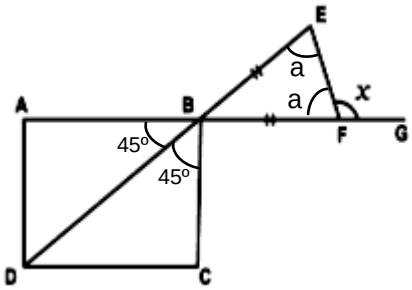
Let siva by mistake read a (43) $\rightarrow$ 48

So, $\dfrac{b+c+d+e+(a+5)}{5}=40$

$\dfrac{a+b+c+d+e}{5}+1=40$

Correct average = 40 – 1 = 39

10.



45 + a + a = 180°

2a = 135°

$a=\dfrac{135}{2}$

Now x = 45 + a (Exterior angle equal to sum of interior opposite angle)

so, 2x = 2(45 + a)

= 90 + 2a

= 90 + 135

2x = 225°

11. Original fraction = $\dfrac{p}{q}$

Now according to question = $\dfrac{120\%\text{ of }p}{130\%\text{ of }q}=\dfrac{9}{13}$

$\dfrac{1.2\,p}{1.3\,q}=\dfrac{9}{13}$

$\dfrac{p}{q}=\dfrac{9\times13}{13\times12}=\dfrac{3}{4}$

p + q = 7

12. 360 is divided in 4 part = a, b, c, d

so according to question

2a = 3b = 5c = 6d

$\dfrac{a}{15}=\dfrac{b}{10}=\dfrac{c}{6}=\dfrac{d}{5}$

a : b : c : d = 15 : 10 : 6 : 5

so $c=\dfrac{6}{36}\times360$

c = 60

and $d=\dfrac{5}{36}\times360=50$

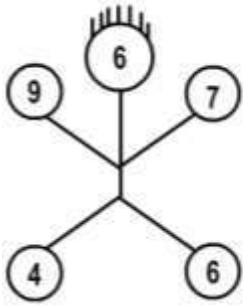
c – d = 60 – 50 = 10

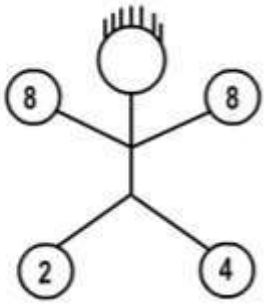
14. {1,3,5,7,9,7,5,3} = 8

So $\frac{2023}{8} = 252\frac{7}{8}$

So, 7th number is this series will be 2023th number = 5

15.





(9 – 6) + (7 – 4)
3 + 3 = 6

(8 – 4) + (8 – 2)
4 + 6 = 10

Fill in the blanks

16. Let speed of $C_2 = \upsilon$

so speed of C1 = 80% of $\upsilon = .8\ \upsilon$

they have to travel equal distance

so $d_1 = d_2$

$.8\ \upsilon \times t = \upsilon \times t_2$

$\frac{t_1}{t_2} = \frac{10}{8} = \frac{5}{4}$

$\%\frac{t_1}{t_2} = \frac{5}{4} \times 100 = 125\%$

17. Side = 1

$P_1 = 10$

$P_2 = 12$

$P_3 = 14$

$P_4 = 16$

$(P_1 + P4) – (P_2 + P3)$

(10 + 16) – (12 + 14)

26 – 26 = 0

18. Let number = a b

according to question $\rightarrow$ a = 2b ... (1)

Now , if we swap the digits $\rightarrow$ ba

so

ab + ba = 132

(10a + b) + (10 b + a) = 132

11a + 11b = 132

a + b = 12

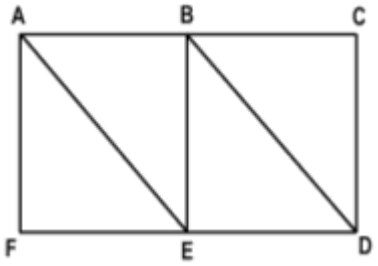
2b + b = 12 {from equation (1)}

b = 4

So a = 8

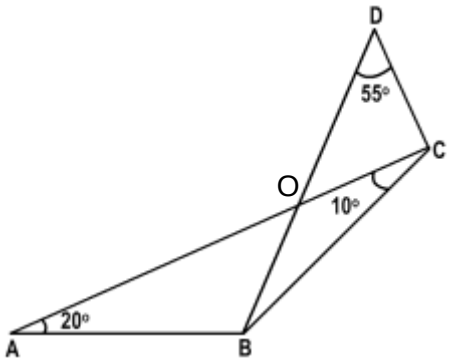
Number = 84

19. Total ways = 3 + 3 + 3 = 9



20. Number = 1,2,3,4,5,6
Consecutive number pair = $(1,2,3) \rightarrow 6$
$(2,3,4) \rightarrow 6$
$(3,4,5) \rightarrow 6$
$(4,5,6) \rightarrow 6$
Total = 24

21.



In ΔOCD
$\angle COD + \angle ODC + \angle OCD = 180^o$
$\angle COD + 55^o + 90^o = 180^o$
$\angle COD = 180 - 145 = 35^o$
$\angle COD = \angle AOB$ (vertically opposite angle)

In ΔAOB
$\angle AOB + \angle OAB + \angle ABO = 180^o$
$35^o + 20^o + x^o = 180^o$
$x^o = 180^o - 55^o = 125^o$

22. 34a5b ÷ 36
3 4 a 5 b must be divisible by 9 & 4
to be divisible by 9
3 + 4 + a + 5 + b = 12 + a + b
Also 5b must be divisible by 4
so b = 2, 6
If b = 2
then 12 + a + 2 has to be divisible by 9
14 + a
14 + 4 = 18 Divisible by 9
So a = 4

If b = 6
then 12 + a + 6 = 18 + a
So a = 0 and 9

So total number = $3\begin{Bmatrix}34056\\34956\\34452\end{Bmatrix}$

23. Each digit from 0 to 9 comes 9 time at unit digit so

Sum = 9(1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9)

= 9 (45)

= 9 × 45

= 405

Unit digit = 5

24. Let natural number = x

$$\left\{\left(x-\frac{x}{6}\right)\times\frac{1}{2}\right\}\frac{1}{5}=3$$

$$\frac{5}{6}x\times\frac{1}{2}\times\frac{1}{5}=3$$

$$\frac{x}{12}=3$$

x = 36

25. $\frac{2716321}{3456}=785\frac{3361}{3456}$

3361 + x = 3456

$\Rightarrow$ x = 95