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(Affiliated to CBSE up to +2 Level)

CLASS: X **DATE: 25 -06-2020** **SUB.: MATHEMATICS**

Do Your Self

1. Customers are asked to stand in the lines. If one customer is extra in a line, then there would be two less lines. If one customer is less in line, there would be three more lines. Find the number of students in the class.

(a) 40 (b) 50 (c) 60 (d) 70

Solution: Let say There are x customers in a Line and total y number of lines
Total number of customers = (customers in a line) * (number of Lines)
=>Total number of customers = xy
If one customer is extra in a line, then there would be two less lines
=> Total number of customers = (x + 1) (y -2)
(x + 1) (y -2) = xy
=> xy + y – 2x - 2 = xy
=> y – 2x = 2 _____ eq 1
If one customer is less in line, there would be three more lines.
=> Total number of customers = (x - 1) (y +3)
(x - 1) (y +3) = xy
=> xy - y + 3x - 3 = xy
=> - y + 3x = 3 _____ eq 2
Adding eq 1 & eq 2
=> x = 5
y - 2(5) = 2
=>y= 12
5 customers in a Line
Total Number of customers = xy = 5*12 = 60

2. 8 girls and 12 boys can finish work in 10 days while 6 girls and 8 boys can finish it in 14 days. Find the time taken by the one girl alone that by one boy alone to finish the work.

(a) 120, 130 (b) 140,280 (c) 240,280 (d) 100,120

Solution: Let the time taken by girls be “x” days and the time taken by boys be “y” days.
So,
Work done by 1 girl in 1 day = 1/x
work done by 1 boy in 1 day = 1/y
According to the question, we can write the eq. as,
8/x + 12/y = 1/10 ..... (i)
and

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6/x + 8/y = 1/14 ..... (ii)
Let's consider u = 1/x & v = 1/y, so we can rewrite the eq, as,
8u + 12v = 1/10 ..... (iii)
and
6u + 8v = 1/14 ..... (iv)
Now, on multiplying eq. (iii) by 2 & eq. (iv) by 3 and subtracting the equations we get,
18u + 24v = 3/14
16u + 24v = 2/10
- - -

2u = 1/70
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u = 1/140
Substituting the value of u = 1/140 in eq. (iii), we get
(8*1/140) + 12v = 1/10
⇒ 2/35 + 12v = 1/10
⇒ 12v = 1/10 – 2/35
⇒ 12v = [35 - 20] / [35*10]
⇒ v = 15 / [35*10*12]
⇒ v = 1/280
Since we have,
u = 1/x
⇒ 1/140 = 1
⇒ x = 140
and,
v = 1/y
⇒ 1/280 = 1/y
⇒ y = 280
Thus, one girl can alone complete the work in 140 days and one boy can alone complete the work in 280 days.

3. The sum of two digits and the number formed by interchanging its digit is 110. If ten is subtracted from the first number, the new number is 4 more than 5 times of the sum of the digits in the first number. Find the first number.

(a) 46 (b) 48 (c) 64 (d) 84

Solution: Let the unit digit be y & tens digit be x.
Original number = (10x+y)
After interchanging the digits
New number = (10y+x)
(10x+y) + (10y+x) = 110
⇒ 11x +11y = 110
⇒ 11(x+y)= 110

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⇒ x+y = 110/11
⇒ x+y= 10……..(1)
⇒ x= 10-y……..(2)
⇒ (10x+y) - 10 = 4+ 5(x+y)
⇒ (10x+y) - 10 = 4+ 5(10)
⇒ (10x+y) = 4+ 50+10
⇒ (10x+y) = 64
⇒10(10-y) +y = 64
⇒100-10y +y= 64
⇒100 -9y = 64
⇒ -9y = 64-100
⇒-9y = -36
⇒y= 36/9= 4
y= 4
putting the value of y in eqn 2
⇒x= 10-y
⇒x= 10-4
x= 6
Hence , the first number is 6 & second number is 4.
Original Number is 10x+y = 10× 6+4= 60+4= 64

4. A fraction becomes. when subtracted from the numerator and it becomes. when 8 is added to its denominator. Find the fraction.

(a) 4/12 (b) 3/13 (c) 5/12 (d) 11/7

5. Five years ago, A was thrice as old as B and ten years later, A shall be twice as old as B. What is the present age of A.

(a) 20 (b) 50 (c) 60 (d) 40

6. What will be the solution of these equations ax+by=a-b, bx-ay=a+b

(a) x=1, y=2 (b) x=2,y=- 2 (c) x=-2, y=-2 (d) x=1, y=-1

7. If x=a, y=b is the solution of the pair of equation x-y=2 and x+y=4 then what will be value of a and b

(a) 2,1 (b) 3,1 (c) 4,6 (d) 1,2

8. Rozly can row downstream 20km in 2 hours, and the upstream 4km in 2 hours. What will be the speed of rowing in still water?

(a) 6km/hr (b) 4km/hr (c) 3km/hr (d) 7km/hr

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