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1. The sum of denominator and numerator of a fraction is 3 less than twice denominator. If each of the numerator is decreased by 1, the fraction becomes $\frac{1}{2}$. find the fraction.

$$N+d = 2d-3. \quad \text{Eq.1}$$

$$N-1/d-1 = \frac{1}{2} \quad \text{Eq.2}$$

$$N+d = 2d - 3$$

$$N = 2d - 3 - d$$

Put N in Eq.2

$$N - 1/d - 1 = \frac{1}{2}$$

$$2d - 3 - d - 1/d - 1 = \frac{1}{2}$$

$$2(2d - 3 - d - 1) = 1(d - 1)$$

$$4d - 6 - 2d - 1 = d - 1$$

$$2d - 7 = d - 1$$

$$2d - d - 7 + 1 = 0$$

$$D - 6 = 0$$

$$D = 6$$

Put in eq.1

$$N + d = 2d - 3$$

$$N + 6 = 2(6) - 3$$

$$N = 12 - 3 - 6$$

$$N = 12 - 9$$

$$N = 3$$

So the fraction is $\frac{3}{6}$

2. **ANS:**

$$1 \text{ man's 1-day work} = 1/x$$

And

$$1 \text{ boy's 1-day work} = 1/y$$

$$4 \text{ men's 1-day work} + 6 \text{ boys 1-day's work} = 1/5$$

$$4/x + 6/y = 1/5$$

$$\text{Let } 1/x = u$$

$$1/y = v$$

$$4u + 6v = 1/5. \quad \text{Eq.1}$$

Now again;

$$3 \text{ men's 1-day work} + 4 \text{ boys 1-day work} = 1/7$$

$$3u + 4v = 1/7. \quad \text{Eq.2}$$

Multiply eq.1 by 3 and eq.2 by 4

$$12u + 18v = 3/5. \quad \text{Eq. 3}$$

$$12u + 16v = 4/7. \quad \text{Eq. 4}$$

Subtract eq.3 and eq. 4

$$2v = 1/35$$

$$\text{As } v = 1/y$$

$$2(1/y) = 1/35$$

$$1/y = 1/70$$

$$Y = 70$$

Put values in eq. 1

$$4u + 6v = 1/5$$

$$4u = 1/5 - 6v$$

$$4u = 1/5 - 6(1/70)$$

$$4u = 4/35$$

$$U = 1/35$$

$$U = 1/x$$

$$1/x = 1/35$$

$$X = 35$$

Men : day

$$1. : 70$$

Boy:day

$$1. : 35$$

3. **ANS:**

$$\text{Price} = \$150$$

$$\text{Discount} = 20\%$$

$$\text{Net cost} = \text{price} - \text{discount.}$$

$$\text{Net cost} = 150 - 20\%$$

Net cost = 120

4. **ANS:**

Price = \$150

Discount = 20%/10%

Net cost = price – discount

Net cost = 150 – 20%

Net cost = 120

Net cost = 120 – 10%

Net cost = 119.9

5. **ANS:**

Price = 120

Discount = 10/15/10

Net cost = 120 – 10%

Net cost = 119.9 – 15%

Net cost = 119.75 – 10%

Total net cost = 119.65

Now

Discount = 20/10

Net cost = 120 – 20%

Net cost = 119.8 – 10%

Total net cost = 119.7

Difference = 119.65 – 119.7

Difference = 0.05

