

NUMBER SENSE TIPS (DECEMBER 2018)

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1. $\frac{1}{3} + \frac{2}{3} = 1 + \dots + \frac{14}{3} = \underline{\hspace{2cm}}$.

$\frac{1+2+3+\dots+14}{3}$; The numerator can be found using

$$\frac{n(n+1)}{2} = \frac{14(15)}{2} = \frac{105}{1} = 105$$
$$\frac{105}{3} = 35$$

2. The axis of symmetry of $f(x) = (x - 2)(x - 5)$ is $x = \underline{\hspace{2cm}}$.

Find one-half of the roots of the equation.

$$x - 2 = 0 \text{ and } x - 5 = 0 ; x = 2 \text{ and } x = 5.$$

$$(2 + 5)/2 = 7/2$$

3 Estimate ${}_{24}C_4 = \underline{\hspace{2cm}}$.

$$\frac{24!}{20!4!} = \frac{(24)(23)(22)(21)}{(4)(3)(2)(1)} = 23(22)(21)$$

$$\text{Approximate answer is } 22^3 \text{ which is } (11 \times 2)^3 \\ = 11^3 \times 2^3 = 8(1331) = 10,648$$

$$\text{Range : } 10,095 - 11,157$$

4. The sum of the roots of $f(x) = (3x - 2)(x - 4)$ is _____ (mixed number).

Find the sum of the roots.

$$3x - 2 = 0 \text{ and } x - 4 = 0$$

$$x = 2/3 \text{ and } x = 4 ; 2/3 + 4 = 4 \frac{2}{3}$$

5 The sum of the solutions of $|x + 3| + 5 = 11$ is _____.

$|x + 3| = 6$; Note : The sum of the roots of $|ax + b| = c$ is $-2b/a$.

$$\text{Answer : } -2(3)/1 = -6$$