NUMBER SENSE TIPS (AUGUST 2017)

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1. 21 ÷ 1.5 = _____.

   Solution : Double both numbers, then simplify.

   (2)(21) ÷ 2(1.5) = 42 ÷ 3 = 14

2. 15 x $\frac{15}{19}$ = _____ (Mixed Number).

   Notice that the numerator and the whole number are the same. This shortcut works when the numerator is smaller than the denominator.

   Step #1 : Square the difference of the numerator and the denominator and write it over the denominator.

   $\frac{(19-15)^2}{19} = \frac{16}{19}$

   Step #2 : Subtract the difference of the numerator and denominator from the whole number.

   15 - (19 - 15) = 15 - 4 = 11

Answer : $11\ \frac{16}{19}$

Notice that the numerator and the whole number are the same. This shortcut works when the numerator is larger than the denominator.

$23\ x\ \frac{23}{20}$

Step #1 : Square the difference of the numerator and the denominator and write it over the denominator.

$\frac{(23-20)^2}{20} = \frac{9}{20}$

Step #2 : Subtract the difference of the numerator and denominator from the whole number.

$23 - (23 - 20) = 23 - 3 = 20$

Answer : $20\ \frac{9}{20}$

3. The positive geometric mean of 5 and 20 is _____.

Rule : Find the square root of the product of the numbers.

$\sqrt{(5)(20)} = \sqrt{100} = 10$

4. The number of positive integral divisors of 18 is _____.

Step #1 : Prime factor the number.

$18 = 2^1 \times 3^2$

Step #2 : Add 1 to each exponent and multiply.

$(1 + 1)(2 + 1) = (2)(3) = 6$

Note : The positive integral divisors of 18 are the whole numbers that can divide 18 without a remainder.

1, 2, 3, 6, 9, 18

5. $63^2 + 24^2 =$ _____.

This shortcut will work if the inner digits differ by 1 and the other digits add up to 10.

Step #1 : Find the sum of the squares of the digits of the number on the left.

$6^2 + 3^2 = 36 + 9 = 45$

Step #2 : Write the results of Step #1 twice.

Answer : 4545