BENFIELDSIDE PRIMARY

ARITHMETIC GUIDANCE DOCUMENT

NOVEMBER 2022

BODMAS

The order is: Brackets - Division - Multiplication - Addition - Subtraction
(Remember DM and AS are equally important)

Examples:

$6 + \underline{4 \times 3} = 18$

$6 + \quad 12$

$24 - \underline{8 \div 2} = 20$

$24 \quad - \quad 4 \quad = 20$

MULTIPLYING AND DIVIDING BY MULTIPLES OF 10

Remember to apply your knowledge of place value

$35 \times 2\underline{0} = 35 \times 2 \times 1\underline{0} = 700$

$480\cancel{0} \div 4\cancel{0} = 480 \div 4 = 48 \div 4 \times 1\underline{0} = 12\underline{0}$

$6\underline{0} \times 2\underline{0} \times 2\underline{0} = \underline{6 \times 2 \times 2} \times 1,\mathbf{000} = 24,000$

$\uparrow$

24

MULTIPLYING AND DIVIDING BY 10, 100 or 1000

Remember to apply your rules of place value

$3.5 \times 100 = 350$

<u>tips</u>: 3 x 100 = 300 so answer must be close to 300
digits at the start go 3 then 5, so answer must go 3 then 5
3.5 x 1<u>00</u> , 2 zeroes so you move the digits two columns and put

zeroes in the empty gaps

3 . 5 **0**

ADDING AND SUBTRACTING FRACTIONS

RHYME: ADDING FRACTIONS DON'T BE LAME
MAKE SURE THE DENOMINATORS ARE THE SAME
IF YOU DON'T WANT YOUR WORK TO HAVE A WHIFFY SCENT
MAKE THE FRACTIONS EQUIVALLENT

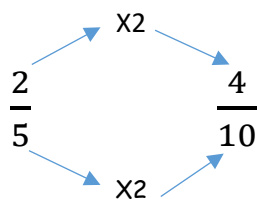1) If the denominator (bottom value) is the same, you just add or subtract the numerator.

$$\frac{3}{10} + \frac{4}{10} = \frac{7}{10}$$

$$\frac{7}{5} - \frac{3}{5} = \frac{4}{5}$$

2) If the denominators aren't the same, you have to find a common denominator and make equivalent fractions.

$$\frac{2}{5} + \frac{7}{10}$$ (10 is a common multiple for 5 and 10)

$$\frac{2}{5} + \frac{7}{10} \text{ becomes } \frac{4}{10} + \frac{7}{10} = \frac{11}{10} = 1\frac{1}{10}$$

3) If the question involves adding mixed numbers (whole numbers and a fraction) add the whole number then the fraction

$$2\frac{2}{5} \quad + \quad 3\frac{1}{3} \quad = \quad 5\frac{11}{15}$$

$$2 + 3 = 5 \qquad\qquad \frac{6}{15} \quad + \quad \frac{5}{15} = \frac{11}{15}$$

$$\frac{2}{5} = \frac{6}{15} \qquad \frac{1}{3} = \frac{5}{15}$$

4) If the question involves subtracting mixed numbers,
   Start by subtracting the fraction and exchange from the whole if you need to

$$2\ \cancel{3}\frac{5}{9} \quad - \quad 1\frac{2}{3} \quad = \quad 1\frac{8}{9}$$

$$\frac{5}{9} \quad - \quad \frac{2}{3} \quad = \quad \text{(make equivalent fractions with the}$$

$$\text{same denominator)}$$

$$\frac{5}{9} \quad - \quad \frac{6}{9} \quad = \quad \text{(would give a negative so exchange}$$

$$\text{by adding on 1 – 9/9)}$$

$$\frac{14}{9} \quad - \quad \frac{6}{9} \quad = \quad \frac{8}{9}$$

$$2 \quad - \quad 1 \quad = 1$$

MULTIPLYING FRACTIONS

RHYME: *MULTIPLYING FRACTIONS NOT A PROBLEM*

TOP X TOP   OVER   BOTTOM X BOTTOM

$$\frac{3}{5} \quad X \quad \frac{2}{3} \quad = \quad \frac{6}{15}$$

If a question involves a combination of improper fractions and mixed numbers, change them both into fractions then do as above.

$$2\tfrac{1}{2} \text{ X } \frac{5}{3} \quad = \quad \frac{5}{2} \text{ X } \frac{5}{3} \quad = \quad \frac{25}{6}$$

If multiplying fractions by whole numbers, remember it is just the same as getting the fraction of the number

$$\frac{2}{3} \text{ x } 120 = \frac{2}{3} \text{ of } 120 = 80$$

$$120 \div 3 \text{ x } 2$$

DIVIDING FRACTIONS

$$\frac{8}{4} \div 4 = \frac{2}{4}$$

look to see if the numerator is a multiple of the whole number you're dividing by

e.g. 8 ÷ 4 = 2, so $\frac{8}{4} \div 4 = \frac{2}{4}$

RHYME: DIVIDING FRACTIONS IS AS EASY AS PIE

FLIP THE SECOND FRACTION THEN MULTIPLY

$$\frac{7}{8} \div 3 = \frac{7}{8} \times \frac{1}{3} = \frac{7}{24}$$

Remember every **whole number has 1 as a denominator**

CALCULATING PERCENTAGES

You only have to think about place value and remember percentage is parts of a 100

To get 10% you divide by 10
To get 1% you divide by 100
To get 25% you divide by 4 (half and half again)
To get 50% you divide by 2

1) 21% x 230 = 48.3

10% -> 230 ÷ 10 = 23
20% -> 23 x 2 = 46 (double 10%)
1% -> 230 ÷ 100 = 2.3
21% -> **20% + 1% = 46 + 2.3 = 48.3**

2) 99% of 350 = 346.5

100% - 1% = 99%   350 – 3.5 = 346.5

100% -> the starting value
1% -> 350 ÷ 100 = 3.5