

ADDING FRACTIONS

BE CAREFUL !!
THINK ABOUT IT !!

WE CAN ONLY ADD/SUBTRACT FRACTIONS IF THE NUMBERS ON THE BOTTOM ARE THE SAME.

eg $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$

(DENOMINATORS)

IF THE NUMBERS ON THE BOTTOM ARE NOT THE SAME:

- WE NEED TO MAKE THEM THE SAME.
- TO DO THIS, RE-WRITE THE QUESTION AS A SINGLE FRACTION.

STEP 1:
WORK OUT THE BOTTOM LINE

$$\frac{1}{5} + \frac{2}{3}$$

??????

15

3	5
6	10
9	15
12	
15	

SNAP!

THIS IS THE LOWEST COMMON DENOMINATOR (L.C.D.)

STEP 2: WORK OUT THE TOP LINE

SO WHAT GOES ON TOP?

DIVIDE THE NEW BOTTOM NUMBER BY THE BOTTOM OF EACH OF THE ORIGINAL FRACTIONS, AND PUT THAT ANSWER OUTSIDE A BRACKET ON THE TOP LINE

5 into 15 goes 3 times

$$\frac{1}{5} + \frac{2}{3}$$

$$= \frac{3(\) + 5(\)}{15}$$

Q. WHAT GOES INSIDE THE BRACKETS??

A. THE TOP LINE OF EACH OF THE ORIGINAL FRACTIONS.

STEP 3:

$$\left(\frac{1}{5} + \frac{2}{3} \right)$$

$$= \frac{3(1) + 5(2)}{15}$$

$$\rightarrow \frac{3 + 10}{15} = \frac{13}{15}$$

WHAT IF THERE ARE LETTERS AS WELL AS NUMBERS ??

IT'S THE SAME METHOD!

USE THE STEPS + INSTRUCTIONS FROM THE PREVIOUS PAGE TO FOLLOW THESE EXAMPLES.

eg ① $\frac{x}{2} + \frac{x}{5}$
L.C.D = 10

$$= \frac{5(x) + 2(x)}{10}$$

$$= \frac{5x + 2x}{10} = \boxed{\frac{7x}{10}}$$

eg ② $\frac{3x-2}{4} + \frac{2x+1}{3}$
L.C.D = 12

$$= \frac{3(3x-2) + 4(2x+1)}{12}$$

$$= \frac{9x-6 + 8x+4}{12}$$

$$= \boxed{\frac{17x-2}{12}}$$

ALGEBRAIC FRACTIONS

(UGH - EVEN WORSE THAN FRACTIONS!)

Q. WHAT HAPPENS WHEN THE LETTERS ARE ON THE BOTTOM?
A. EXACTLY THE SAME.

IF IT'S JUST ONE FRACTION:

- FACTORISE IF YOU CAN
- DIVIDE TOP AND THE BOTTOM BY SAME THING
- OR DIVIDE TOP BY THE BOTTOM.

eg ① $\frac{a^7}{a^3} = a^4$

② $\frac{20a^5}{15a^3} = \frac{4a^5}{3a^3} = \frac{4a^2}{3}$

← DIVIDE TOP + BOT BY 5

← DIVIDE a^5 by a^3

→ SEE NOTES ON FACTORISING

FACTORISING

③ $\frac{x^2 + 6x + 8}{x + 4}$

$\frac{(x+4)(x+2)}{(x+4)}$

= $x+2$

A POWER TO A POWER (BRACKETS)

eg $(2^3)^4$

MEANS

$(2 \times 2 \times 2)^4$

SO

$(2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2) \times (2 \times 2 \times 2)$

$(2^3)^4$

$= 2^{12}$

③

RULE
MULTIPLY THE POWERS

WITH ALL INDICES, IT IS USUALLY A GOOD IDEA
TO WRITE DOWN THE FULL METHOD
INSTEAD OF JUST LEARNING THE

RULES / LAWS OF INDICES