



FOCAL LENGTH COMPARISON

This is the normal way this is expressed; As equivalent field of view at a given Full Frame length

Focal Length Equivalent Comparison			
Full Frame Length in mm	Crop Factor / Length in mm		
	1.5x	1.6x	2x
12	18	19	24
16	24	26	32
24	36	38	48
32	48	51	64
50	75	80	100
70	105	112	140
90	135	144	180
125	188	200	250
150	225	240	300
200	300	320	400
300	450	480	600
400	600	640	800
500	750	800	1000

This is due to the sensor size so you are only seeing a reducing part of the full frame sensor size, similar to cropping a full frame sensor image in post processing

Looking at this the other way round to have the same size image in the view finder it would be

Focal Length Equivalent Comparison			
Full Frame Length in mm	Crop Factor / Length in mm		
	1.5x	1.6x	2x
12	8	8	6
16	11	10	8
24	16	15	12
32	21	20	16
50	33	31	25
70	47	44	35
90	60	56	45
125	83	78	63
150	100	94	75
200	133	125	100
300	200	188	150
400	267	250	200
500	333	313	250

If a full frame camera sees a scene at 24mm a Micro 4/3rds camera would need to be at 12mm for the same view of the scene



APERTURE COMPARISON

To have the similar background blur of items at a similar distance behind the subject as with full frame cameras the suggested f-stops are as follows: -

Aperture / Depth of Field Equivalent Comparison using best fit 1/3rd stops			
Full Frame	Crop Factor f-stops		
f-Stop	1.5x	1.6x	2x
2.8	1.8	1.8	1.4
3.2	2.2	2.0	1.6
3.5	2.5	2.2	1.8
4.0	2.8	2.5	2.0
4.5	3.2	2.8	2.2
5.0	3.5	3.2	2.5
5.6	3.5	3.5	2.8
6.3	4.0	4.0	3.2
7.1	4.5	4.5	3.5
8.0	5.0	5.0	4.0
9.0	6.3	5.6	4.5
10.0	7.1	6.3	5.0
11.0	7.1	7.1	5.6
13.0	9.0	8.0	6.3
14.0	9.0	9.0	7.1
16.0	11.0	10.0	8.0
18.0	13.0	11.0	9.0
20.0	13.0	13.0	10.0
22.0	16.0	14.0	11.0
25.0	18.0	16.0	13.0
32.0	22.0	20.0	16.0

Crop factor does not affect exposure so f2.8 is f2.8 as far as exposure is concerned on all cameras / lenses

Crop factor does affect the depth of field so the Bokeh behind the subject will not be as out of focus at the same rear distance to the background depending on the crop factor, therefore if the full frame camera is at f5.6 the micro 4/3rds camera needs to be at f2.8 but as a lot more light will be passing through the larger aperture the shutter speed will have to be increased (i.e. less time for the light to pass) to compensate.