

RATIO

ROB OLLIS

Edition 1

Ratio

(The unitary method)

Note : $a : b = 3 : 5$ means



a has 3 equal parts



b has 5 parts, all parts the same size as the parts in **a**

To solve examples of the type

$a : b : c = 4 : 7 : 8$ Find a and c given $b = 42$

From the ratios it is known that $a = 4$ parts, $b = 7$ parts, and $c = 8$ parts. To solve the problem use the known value ($b = 42$) to find the value of one part. Setting out, as shown below, is critical for the student's full understanding of the method.

$$\begin{array}{l}
 a = 4 \text{ parts,} \\
 = 4 \times 6 \\
 = 24
 \end{array}
 \qquad
 \begin{array}{l}
 b = \frac{7}{7} \text{ parts} = \frac{42}{7} \\
 \mathbf{1 \text{ part} = 6}
 \end{array}
 \quad \Bigg| \quad \div 7
 \qquad
 \begin{array}{l}
 c = 8 \text{ parts} \\
 = 8 \times 6 \\
 = 48
 \end{array}$$

The problems of the above type are simple once one part is known

examples of the more difficult types such as

$a : b : c = 6 : 5 : 10$. Find a , b , c , given that $2c - 3b = 40$

$$\begin{array}{l}
 a = 6 \text{ pts} \\
 = 6 \times 8 \\
 = 48
 \end{array}
 \qquad
 \begin{array}{l}
 b = 5 \text{ pts} \\
 = 5 \times 8 \\
 = 40
 \end{array}
 \qquad
 \begin{array}{l}
 c = 10 \text{ pts} \\
 = 10 \times 8 \\
 = 80
 \end{array}
 \qquad
 \begin{array}{l}
 2c - 3b = \frac{5 \text{ pts}}{5} = \frac{40}{5} \\
 \mathbf{1 \text{ pt} = 8}
 \end{array}
 \quad \Bigg| \quad \div 5$$

If one part works out to be an improper or proper fraction, the students should use the fraction button on their calculator if they are using calculators. This gives an exact answer.

Set 1

Simplify these ratios:

a $4 : 8$

b $5 : 10$

c $9 : 12$

d $16 : 10$

e $10 : 15$

f $1 : \frac{1}{2}$

g $\frac{1}{2} : \frac{1}{3}$

h $\frac{3}{4} : \frac{5}{8}$

Ratio: Answers to Exercises

Set 1

a 1 : 2	b 1 : 2	c 3 : 4	d 8 : 5
e 2 : 3	f 2 : 1	g 3 : 2	h 6 : 5
i 63 : 50	j 1 : 2	k 3 : 5	l 8 : 5
m 5 : 8	n 4 : 5	o 2 : 3	p $3x : 2$
q 25 : 46 : 100	r $m : 3$	s 17 : 27	t 144 : 7

Set 2

a 35 : 54	b 9 : 1000	c $x = 35, y = 42$
d 35 : 6	e $t = 81$	f 5 : 48
g 4 : 3	h $1 : 2m$	i 1:600
j $m = 20, n = 25, p = 35$		k \$175

Set 3

a $a = 15$	b $y = 20$	c $b = 12, c = 21$
d $x = 49, z = 56$	e $a = 77, b = 35$	f $a = 28, b = 20$
g $x = 64, y = 24, z = 56$		

Set 4

a 3 : 4	b 7 : 8	c 7 : 5	d 4 : 3
e 7 : 4	f 3 : 4	g $3x : 4$	h 1 : 8
i 3 : 2	j 15 : 26	k 22 : 15	l 2 : 1
m 8 : 9	n 9 : 14	o 2 : 1	p $4x^{48} : 1$
q 5 : 16	r 3 : 14		

Set 5

a 1 part = 4, $b = 28$	b 1 part = 6, $m = 48, n = 30$
c 1 part = 7, $a = 63, c = 42$	d 1 part = 6, $x = 42, y = 30$
e 1 part = 4, $a = 36, b = 28, c = 20$	f 1 part = 8, $x = 80, y = 56, z = 40$
g \$240 : \$140	h \$21 000 : \$12 000 : \$15 000

Set 6

a 40 hours	b 9 hours	c 200 minutes = 3 hours 20 min
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Master Coaching Pledge

Master Coaching Keys to Learning:

The following charter has been produced to prepare you the pursuit of excellence that leads to a life-time of rewards and fulfillment. This is a partnership agreement that allows both parties to mutually benefit from your time at Master Coaching

At the coaching session:

1. Smile, relax, you are focused and in control
2. Concentrate, visualize, execute: claim the reward
3. Assume success. Our members should approach each test in life enthusiastically; every challenge presents an opportunity to demonstrate your prowess. Relish but don't underestimate the magnitude of the test, instead focus your thoughts towards a positive outcome, a chance to excel; a time to enjoy your moment in the sun.

Master Coaching Pledge

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- that your welfare is the paramount consideration in everything that we do
- to be diligent in our preparations which directs our actions in support of you
- show care and give encouragement to you in your striving for excellence
- to personalise all our efforts to your specific needs in all areas
- to encourage you to dare to dream, and to expect that dreams do come true

Christian Avent

CHRISTIAN AVENT

B.Ed. NCAS Principal

My Commitment to Master Coaching

- to be honest in all my dealings and
- to accept their accolades and focus my efforts on achieving the zenith in all my endeavours
- to appreciate my cohorts and support them in any way possible
- to live the dream, strive for excellence in everything that I do
- visualise my ultimate success

Robert A Ollis

ROBERT A. OLLIS

B.Sc., Dip.Ed., M.Sc.
Founder, Master Coaching

Your complete satisfaction is the focus of everything we do.