Combining Ratios

Example 1

The ratio of men to women members of a gym is 8 : 5. The ratio of women to children is 7 : 3. Find a ratio relating men, women, children. What is the minimum number of members?

Men		Women		Children
8	:	5		
56	:	35		
		7	:	3
		35	:	15
56	:	35	:	15

Minimum members = 56 + 35 + 15 = 106

Ex 2

$A : B = 2 : 3$

$B : D = 5 : 2$

$C : D = 3 : 1$

Find $A : B : C : D$ in its simplest form.

A	:	B	:	C	:	D
2	:	3				
10	:	15				
		5			:	2
		15			:	6
				3	:	1
				18	:	6

10	:	15	:	18	:	6
A	:	B	:	C	:	D

Ratio: Two Ratios

Video 271a on www.corbettmaths.com

Examples

Workout

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Question 1: In a bag there are blue, green and yellow counters.

The ratio of blue counters to green counters is 3:2
The ratio of green counters to yellow counters is 2:5

(a) Write down the ratio of blue to green to yellow counters in the bag.
(b) What percentage of the beads are green?

B : G : Y
3 : 2
2 : 5
3 : 2 : 5

$\frac{2}{10}$ green
so 20%

Question 2: Archie made some cupcakes for a charity coffee morning.

The ratio of chocolate cupcakes to strawberry cupcakes was 3:1
The ratio of strawberry cupcakes to lemon cupcakes was 2:3

(a) Write down the ratio of chocolate to strawberry to lemon cupcakes.
(b) Work out the smallest possible number of cupcakes that Archie could have made.

C : S : L
3 : 1
6 : 2
2 : 3
6 : 2 : 3

Smallest Number
6 + 2 + 3
= 11

Question 3: At a safari park, the ratio of lions to tigers is 7:4.
The ratio of elephants to tigers is 1:2

Write down the ratio of lions to tigers to elephants in the safari park.

L : T : E
7 : 4
2 : 1
4 : 2
7 : 4 : 2

Question 4: A bag contains three different shaped pieces of card.

The ratio of circles to triangles is 2:3
The ratio of triangles to rectangles is 2:5

Find the ratio of circles to triangles to rectangles.

C : T : R
2 : 3
4 : 6
2 : 5
6 : 15
4 : 6 : 15

Question 5: In a school, all students are taught either French, German or Spanish.

The ratio of the number of students taught French to those taught German is 3:4
The ratio of the number of students taught French to taught Spanish is 12:11

Find the ratio of the number of students taught Spanish to taught German.

F : G : S
3 : 4
12 : 16
12 : 11
12 : 16 : 11

S : G
= 11 : 16

Question 6: In a box there are white chocolates, milk chocolates and dark chocolates.

The ratio of white chocolates to milk chocolates is 3:5
The ratio of milk chocolates to dark chocolates is 8:1

What fraction of the chocolates are white chocolate?

W : M : D
3 : 5
24 : 40
8 : 1
40 : 5
24 : 40 : 5

white fraction = $\frac{24}{24+40+5}$ = $\frac{24}{69}$

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Ratio: Two Ratios
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Apply

Question 1: In a drawer, there are white, black and grey socks.
The ratio of white socks to black socks is 3:2
The ratio of white socks to grey socks is 9:4

(a) Write down the ratio of white socks to black socks to grey socks.

Elsie says there is an odd white sock.

(b) Explain why Elsie might be wrong.

Question 2: The ratio of red pens to black pens is 2:9
The ratio of black pens to blue pens is 5:4

Show less than 50% of the pens are black.

Question 3: A quadrilateral, ABCD, is drawn.

The ratio of the size of angle A to angle B is 1:3
The ratio of the size of angle B to angle D is 5:3
The ratio of the size of angle C to angle A is 7:5

Find the difference in size between the largest and smallest angles in quadrilateral ABCD.

Question 4: The ratio of Scott's age to Georgia's age to Fiona's age is 11:6:7
The ratio of Oscar's age to Georgia's age is 3:4

Find the ratio of Fiona's age to Oscar's age.

Question 5: Given $4x = 3y$ and $y : z = 1 : 2$

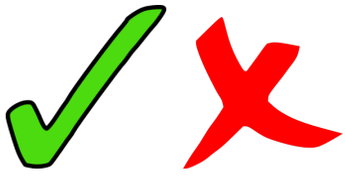
Find x in terms of z

Question 6: w is 15% of x

y is $\frac{3}{5}$ of x

Find the ratio w:x:y

Answers



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