

Ratio Problem Solving - Worksheet

Skill

Group A - Ratio problems in the form 1 : n

Simplify each ratio into the form requested. Give your answers in their simplest form:

1) 5: 3 into 1: n

2) 5: 3 into n : 1

3) 7: 3 into 1: n

4) 7: 3 into n : 1

5) 10: 2: 3 into 1: n : m

6) 10: 2: 3 into n : 1: m

7) 10: 2: 3 into n : m : 1

8) $\frac{2}{5}$: 4 into 1: n

9) $\frac{2}{5}$: 4 into n : 1

10) $\frac{3}{4}$: $\frac{2}{5}$ into 1: n

11) $\frac{3}{4}$: $\frac{2}{5}$ into n : 1

12) $\frac{4}{3}$: $\frac{2}{5}$ into n : 1

Group B - Mixed ratio problems

Solve the ratio problems below:

1) $M : S = 3 : 4$, $S = 40$,
work out the value of M .

2) $G : H = 1 : 3$, $H = 15$,
work out the value of G .

3) $T : S = 2 : 3$, $T = 14$,
work out the value of S .

4) $C : D = 7 : 3$, $C = 28$,
work out the value of D .

5) $U : V = 8 : 7$, $V = 28$,
work out the value of U .

6) $A : B = 5 : 6$. $A = 20$,
work out the value of B .

7) $A : B = 7 : 9$, $B : C = 3 : 5$
Find $A : C$.

8) $A : B = 7 : 6$, $B : C = 2 : 3$
Find $A : C$.

9) $A : B = 3 : 2$, $B : C = 5 : 4$
Find $A : C$.

10) $A : B = 4 : 9$, $B : C = 3 : 1$
Given $A = 16$, work out the value of C .

11) $A : B = 4 : 5$, $B : C = 4 : 1$
Given $A = 64$, work out the value of C .

12) $A : B = 5 : 2$, $B : C = 8 : 3$
Given $A = 100$, work out the value of C .

Ratio Problem Solving - Worksheet

Group C - Algebraic ratio problems

Find the possible values of x given the information below:

1) $4 : 8 = x : 6$

2) $7 : 5 = 6 : x$

3) $x : 10 = 9 : 6$

4) $(x + 2) : 7 = 4 : 9$

5) $3 : 7 = 5 : (x - 8)$

6) $8 : 3 = 7 : (x - 2)$

7) $(x + 1) : 4 = x : 3$

8) $(x + 4) : 4x = 3 : 2$

9) $10 : x = 8 : (x - 10)$

10) $(x + 10) : x = 1 : 2$

11) $(x - 8) : 8 = (x - 9) : 2$

12) $(x + 7) : (x + 2) = 7 : 4$

Ratio Problem Solving - Worksheet

Applied

- 1) (a) Luke, David and Sam save their money in the ratio 2 : 5 : 8.
David saves £45 a week.
How much does Sam save?
- (b) How much do they save in total?
- 2) The ratio of red and blue sweets in a bag is 3 : 1.
8 red sweets are added, now the ratio of red to blue is 7 : 1.
How many sweets were in the bag originally?
- 3) There are between 30 and 40 counters in a bag.
Andy and ben share the counters in the ratio 4 : 5.
There are no counters remaining in the bag.
How many counters were in the bag to begin with?
- 4) (a) The points A, B, C and D lie in order on a straight line.
- $$AB : BD = 2 : 5$$
- $$AC : CD = 4 : 7$$
- Find $AB : BC : CD$
- (b) The distance from A to B is 44.
Find the distance from C to D.
- (c) What is the total length of the line?

Ratio Problem Solving - Exam Questions

- 1) Given that $a : b = 4 : 5$ and $b : c = 3 : 2$,

Find the ratio $a : b : c$.

Give your answer in its simplest form.

.....
(2 marks)

-
- 2) Alex, Betty and Claire share £66.

The amount Alex and Betty get is in the ratio 9 : 5

The amount Betty and Claire get is in the ratio 2 : 1

How much does Alex get?

.....
(4 marks)

Ratio Problem Solving - Exam Questions

- 3) Laura and Michelle share a sum of money in the ratio 2 : 7.
Michelle gets £30 more than Laura.

Calculate how much money was shared in total.

.....
(3 marks)

-
- 4) At the theatre the ratio of men to women is 5 : 3
The ratio of women to children is 7 : 4

Show that more than half the people at the concert are men.

.....
(3 marks)

-
- 5) The points A, B, C and D lie in order on a straight line.
 $AB:BD = 2:7$ and $AC:CD = 5:3$

Find $AB:BC:CD$

.....
(3 marks)

Ratio Problem Solving - Answers

	Question	Answer
	Skill Questions	
Group A	Simplify each ratio into the form requested. Give your answers in their simplest form: 1) 5: 3 into 1: n 2) 5: 3 into n: 1 3) 7: 3 into 1: n 4) 7: 3 into n: 1 5) 10: 2: 3 into 1: n: m 6) 10: 2: 3 into n: 1: m 7) 10: 2: 3 into n: m: 1 8) $\frac{2}{5}$: 4 into 1: n 9) $\frac{2}{5}$: 4 into n: 1 10) $\frac{3}{4}$: $\frac{2}{5}$ into 1: n 11) $\frac{3}{4}$: $\frac{2}{5}$ into n: 1 12) $\frac{4}{3}$: $\frac{2}{5}$ into n: 1	1) $1 : \frac{3}{5}$ 2) $\frac{5}{3} : 1$ 3) $1 : \frac{3}{7}$ 4) $\frac{7}{3} : 1$ 5) $1 : \frac{1}{5} : \frac{3}{10}$ or 1: 0.2: 0.3 6) $5 : 1 : \frac{3}{2}$ or 5: 1: 1.5 7) $\frac{10}{3} : \frac{2}{3} : 1$ 8) 1: 10 9) $\frac{1}{10} : 1$ 10) $1 : \frac{8}{15}$ 11) $\frac{15}{8} : 1$ 12) $\frac{10}{3} : 1$

Ratio Problem Solving - Answers

Group B	Solve the ratio problems below:	
	1) $M : S = 3 : 4$, $s = 40$, work out the value of M .	1) 30
	2) $G : H = 1 : 3$, $H = 15$, work out the value of G .	2) 5
	3) $T : S = 2 : 3$, $T = 14$, work out the value of S .	3) 21
	4) $C : D = 7 : 3$, $C = 28$, work out the value of D .	4) 12
	5) $U : V = 8 : 7$, $V = 28$, work out the value of U .	5) 32
	6) $A : B = 5 : 6$. $A = 20$, work out the value of B .	6) 24
	7) $A : B = 7 : 9$, $B : C = 3 : 5$. Find $A : C$.	7) 7:15
	8) $A : B = 7 : 6$, $B : C = 2 : 3$. Find $A : C$.	8) 7:9
	9) $A : B = 3 : 2$, $B : C = 5 : 4$. Find $A : C$.	9) 15:8
	10) $A : B = 4 : 9$, $B : C = 3 : 1$. Given $A = 16$, work out the value of C .	10) 12
	11) $A : B = 4 : 5$, $B : C = 4 : 1$. Given $A = 64$, work out the value of C .	11) 20
	12) $A : B = 5 : 2$, $B : C = 8 : 3$. Given $A = 100$, work out the value of C .	12) 15

Ratio Problem Solving - Answers

Group C	Find the possible values of x given the information below:	
	1) $4 : 8 = x : 6$	1) 3
	2) $7 : 5 = 6 : x$	2) $\frac{30}{7}$ or $4\frac{2}{7}$
	3) $x : 10 = 9 : 6$	3) 15
	4) $(x + 2) : 7 = 4 : 9$	4) $\frac{10}{9}$ or $1\frac{1}{9}$
	5) $3 : 7 = 5 : (x - 8)$	5) $\frac{59}{3}$ or $19\frac{2}{3}$
	6) $8 : 3 = 7 : (x - 2)$	6) $\frac{37}{8}$ or 4.625
	7) $(x + 1) : 4 = x : 3$	7) 3
	8) $(x + 4) : 4x = 3 : 2$	8) $\frac{4}{5}$ or 0.8
	9) $10 : x = 8 : (x - 10)$	9) 50
	10) $(x + 10) : x = 1 : 2$	10) - 20
	11) $(x - 8) : 8 = (x - 9) : 2$	11) $\frac{28}{3}$ or $9\frac{1}{3}$
	12) $(x + 7) : (x + 2) = 7 : 4$	12) $\frac{14}{3}$ or $4\frac{2}{3}$

Ratio Problem Solving - Answers

	Question	Answer
	Applied Questions	
1)	Luke, David and Sam save their money in the ratio 2 : 5 : 8. David saves £45 a week. a) How much does Sam save? b) How much do they save in total?	a) $8 \times 9 = 72$ £72 b) $18 + 45 + 72 = 135$ £135
2)	The ratio of red and blue sweets in a bag is 3 : 1. 8 red sweets are added, now the ratio of red to blue is 7 : 1. How many sweets were in the bag originally?	Original ratio $R: B = 3x: x$ $3x + 8: x = 7: 1$ 8
3)	There are between 30 and 40 counters in a bag. Andy and ben share the counters in the ratio 4 : 5. There are no counters remaining in the bag. How many counters were in the bag to begin with?	$4 + 5 = 9$ Multiples of 9: 9, 18, 27, 36, 45, ... Between 30 and 40 - number of counters will be 36
4)	The points A, B, C and D lie in order on a straight line. $AB: BD = 2: 5$ $AC: CD = 4: 7$ a) Find $AB: BC: CD$ b) The distance from A to B is 44. Find the distance from C to D. c) What is the total length of the line?	a) $AB: BD = 2: 5 = 22: 55$ $AC: CD = 4: 7 = 28: 49$ So $BC = 55 - 49 = 6$ Therefore $AB: BC: CD = 22: 6: 49$ b) $AB: BC: CD = 22: 6: 49$ $= 44: 12: 98$ $CD = 98$ c) $44 + 12 + 98 = 154$

Ratio Problem Solving - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	Given that $a : b = 4 : 5$ and $b : c = 3 : 2$, Find the ratio $a : b : c$. Give your answer in its simplest form.	$a : b = 12 : 15$ or $b : c = 15 : 10$ $12 : 15 : 10$	(1) (1)
2)	Alex, Betty and Claire share £66. The amount Alex and Betty get is in the ratio 9 : 5. The amount Betty and Claire get is in the ratio 2 : 1. How much does Alex get?	$Alex : Betty = 18 : 10$ or $Betty : Claire = 10 : 5$ $18 + 10 + 5 = 33$ $66 \div 3 = 22$ or 18×2 £36	(1) (1) (1) (1)
3)	Laura and Michelle share a sum of money in the ratio 2 : 7. Michelle gets £30 more than Laura. Calculate how much money was shared in total.	5 parts = £30 12 : 42 £54	(1) (1) (1)
4)	At the theatre the ratio of men to women is 5 : 3. The ratio of women to children is 7 : 4. Show that more than half the people at the concert are men.	$men : women : children = 35 : 21 : 12$ $35 + 21 + 12 = 68$ $68 \div 2 = 34$	(1) (1) (1)
5)	The points A, B, C and D lie in order on a straight line. $AB : BD = 2 : 7$ and $AC : CD = 5 : 3$. Find $AB : BC : CD$	$2 + 7 = 9$ and $5 + 3 = 8$ $AB = 2 \times 8 = 16$ and $CD = 3 \times 9 = 27$ $AB : BC : CD = 16 : 29 : 27$	(1) (1) (1)

Do you have KS4 students who need additional support in maths?

Our specialist tutors will help them develop the skills they need to succeed at GCSE in weekly one to one online revision lessons. Trusted by secondary schools across the UK.

Visit thirdspacelearning.com to find out more.