RATIO: WHEN THE DIFFERENCE IS KNOWN

BUILDING BLOCKS

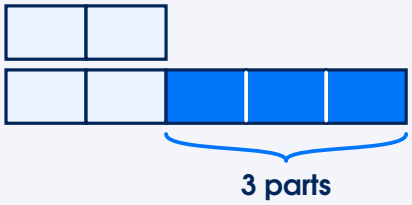
NAME _____ CLASS _____ DATE _____

KEY IDEA

The difference is how many more one has than the other.

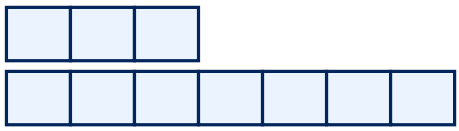
Bottom bar: 5 parts. Top bar: 2 parts.

Difference: 5 – 2 = 3 parts



1 Count the parts in each bar. Find the difference.

a)



Difference = ☐ parts

b)



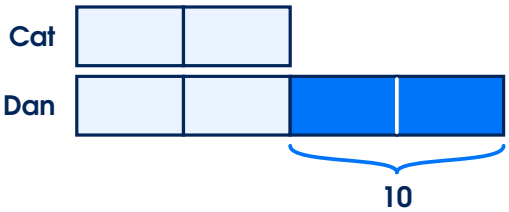
Difference = ☐ parts

2 Here are Ali's cubes and Ben's cubes.



How many more cubes does Ali have? ☐

3 Dan has 10 more sweets than Cat.



2 parts = 10, so 1 part = ☐

Cat has ☐ Dan has ☐

4 Each part is worth 4.

Eve	4	4	4		
Finn	4	4	4	4	4

a) How much does Finn have? ☐

b) How much more than Eve? ☐

RATIO: WHEN THE DIFFERENCE IS KNOWN

SUPPORT

NAME _____ CLASS _____ DATE _____

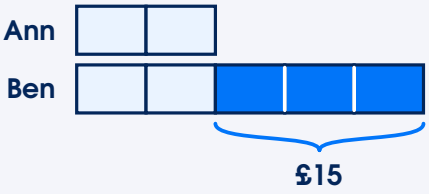
KEY IDEA

Ann and Ben share money in the ratio 2 : 5. Ben gets £15 more than Ann.

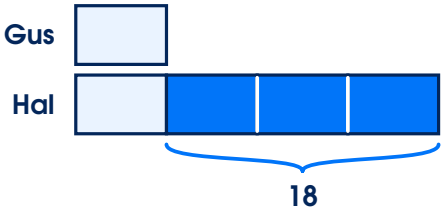
Difference: 5 – 2 = 3 parts

3 parts = £15, so 1 part = £5

Ann: 2 × £5 = £10 Ben: 5 × £5 = £25



1 Gus and Hal share some marbles in the ratio 1 : 4. Hal has 18 more than Gus.

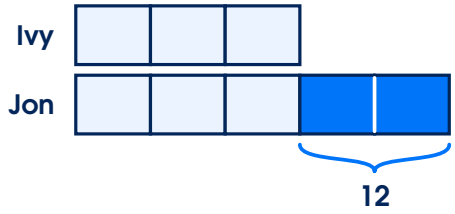


a) One part is worth ☐

b) Gus has ☐

c) Hal has ☐

2 Ivy and Jon share some cards in the ratio 3 : 5. Jon has 12 more than Ivy.



a) One part is worth ☐

b) Ivy has ☐ Jon has ☐

c) Total ☐

3 The ratio of cats to dogs at a show is 7 : 3. There are 20 more cats than dogs.

Draw your bar model here.

One part ☐

Cats ☐ Dogs ☐

4 Jo and Kim share money in the ratio 3 : 4. Answer each problem.

A Kim gets £20. Jo gets £ ☐

B Kim gets £20 more than Jo. Jo gets £ ☐

RATIO: WHEN THE DIFFERENCE IS KNOWN

CORE

NAME _____ CLASS _____ DATE _____

KEY IDEA

When the difference is given, work out how many parts the difference is worth by subtracting the numbers in the ratio. Divide the difference by this to find one part. The difference is between amounts, not between the ratio numbers.

FLUENCY

1 Each pair of amounts is in the ratio given, with the difference shown. Find both amounts.

a) 2 : 7, difference 35

☐ and ☐

b) 5 : 8, difference 24

☐ and ☐

c) 9 : 4, difference 45

☐ and ☐

d) 3 : 5, difference 7

☐ and ☐

2 The ratio of fiction to non-fiction books in a library is 8 : 3. There are 400 more fiction books.

a) Number of non-fiction books ☐

b) Total books ☐

REASONING

3 A, B and C share some money in the ratio 1 : 3 : 4. C has £21 more than A.

Bar model

A has ☐ B has ☐ C has ☐

How does the bar model help?

.....

4 Two amounts are in the ratio 2 : 5. Their difference is 30. Meg writes,

2 + 5 = 7 and 30 ÷ 7 = 4.28..., so 1 part is 4.28...

Explain Meg's mistake. .....

The correct amounts are ☐ and ☐

RATIO: WHEN THE DIFFERENCE IS KNOWN

GREATER DEPTH

NAME _____ CLASS _____ DATE _____

REASONING

1 Is each statement always, sometimes or never true? Circle your answer.

If it is sometimes true, give an example of when it is true and when it is not.

a) In 2 : 7, the difference is worth 5 parts. ALWAYS SOMETIMES NEVER

b) Two amounts in the ratio 1 : 1 differ by 6. ALWAYS SOMETIMES NEVER

c) If the difference is whole, so are both amounts. ALWAYS SOMETIMES NEVER

d) In 3 : 7, the difference is more than the smaller. ALWAYS SOMETIMES NEVER

PROBLEM SOLVING

2 The ratio of Ali's age to his gran's age is 2 : 9. Gran is 56 years older than Ali.

a) How old is Ali? ☐

b) Write the ratio of their ages 4 years ago in its simplest form. ☐ : ☐

3 Two numbers are in the ratio 4 : 9. The difference between them is 60.

What is the sum of the two numbers? ☐

★ CHALLENGE FOR ALL

4 A bag has red and blue counters in the ratio 3 : 5. Then 8 blue counters are added. Now the ratio of red to blue is 1 : 3.

a) How many red counters are there? ☐

b) How many blue counters were there at the start? ☐

c) How many red counters must be added now to make the ratio 1 : 1? ☐

STEP 4 ANSWERS ? RATIO: WHEN THE DIFFERENCE IS KNOWN

ANSWERS

BUILDING BLOCKS

1. a) 7 – 3 = 4 parts · b) 4 – 1 = 3 parts
2. 5 more cubes
3. 1 part = 5 · Cat has 10, Dan has 20
4. a) 20 · b) 8 more

SUPPORT

1. 3 parts = 18 · a) 6 · b) Gus 6 · c) Hal 24
2. 2 parts = 12 · a) 6 · b) Ivy 18, Jon 30 · c) 48
3. Difference = 4 parts = 20 · one part 5 · cats 35, dogs 15
4. A: 4 parts = £20, so 1 part = £5 and Jo gets £15 · B: 1 part = £20, so Jo gets £60

CORE

1. a) 14 and 49 · b) 40 and 64 · c) 81 and 36 · d) 10.5 and 17.5
2. a) 240 non-fiction (5 parts = 400, 1 part = 80) · b) 880 books (11 parts × 80)
3. C – A = 3 parts = £21, so 1 part = £7 · A £7, B £21, C £28. The bar model shows the difference covers 3 parts.
4. The difference of 30 is 5 – 2 = 3 parts, not 7 parts; Meg treated it as the total. 1 part = 10, so the amounts are 20 and 50.

GREATER DEPTH

1. a) Always · b) Never – equal amounts have no difference · c) Sometimes – 1 : 3 with difference 8 gives 4 and 12; with difference 7 gives 3.5 and 10.5 · d) Always (4 parts vs 3 parts)
2. a) 16 (7 parts = 56, so 1 part = 8; Gran is 72) · b) 12 : 68 = 3 : 17
3. 5 parts = 60, 1 part = 12; numbers 48 and 108; sum 156
4. 3k : 5k + 8 = 1 : 3 gives 9k = 5k + 8, so k = 2. a) 6 red · b) 10 blue · c) now 6 red and 18 blue, so add 12 red.