

# Quick Test - Harder ratio problems



1. In a clothing shop the ratio of hats to ties is 4:3. The ratio of gloves to hats is 9:1. Find the ratio of ties to gloves. Give your answer in its simplest form. (3 marks)

$$\begin{array}{l}
 H : T \\
 4 : 3 \\
 \\
 H : G \\
 9 : 1 \\
 \times 4 \\
 36 : 4 \\
 \\
 H : T : G \\
 4 : 3 : 36 \\
 \\
 \therefore T : G \\
 3 : 36 \\
 1 : 12 \\
 \underline{\underline{\hspace{1cm}}}
 \end{array}$$

*make hats the same*

2. Alan, Ben and Dora share some marbles.  
 The amount of marbles Alan gets, to the amount of marbles Ben gets, is in the ratio 7:3.  
 The amount Alan gets, to the amount Dora gets, is in the ratio 3:5.  
 Given Dora gets 28 more marbles than Alan.  
 Work out how many marbles Ben gets. (4 marks)

$$\begin{array}{l}
 A : B \\
 7 : 3 \\
 \times 3 \\
 21 : 9 \\
 \\
 A : D \\
 3 : 5 \\
 \times 7 \\
 21 : 35 \\
 \\
 \text{make Alan the same} \\
 \\
 A : B : D \\
 21 : 9 : 35 \\
 \underbrace{\hspace{1.5cm}} \\
 +14 \\
 \\
 A : B : D \\
 42 : 18 : 70 \\
 \underbrace{\hspace{1.5cm}} \\
 +28 \\
 \\
 \therefore \text{Ben gets } \underline{\underline{18}} \text{ marbles}
 \end{array}$$

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3. There are red marbles, blue marbles and green marbles in a bag.  
 The ratio of red marbles to marbles that are not red is 3:7  
 The ratio of green marbles to marbles that are not green is 7:18 Work out the ratio of red marbles to blue marbles to green marbles. Give your answer in its simplest form.  
 (4 marks)

$$\begin{array}{l} R : NR \\ (10 \text{ parts}) \quad 3 : 7 \\ \times 5 \end{array}$$

$$(50) \quad 15 : 35$$

$$G : NG$$

$$7 : 18$$

$$(25 \text{ parts})$$

$$\times 2$$

$$14 : 36$$

$$(50)$$

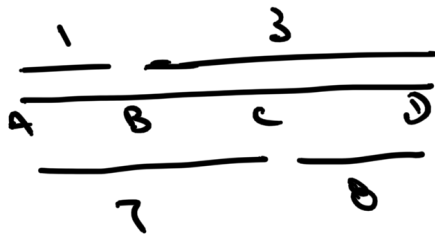
$$\begin{aligned} \text{Blue} &= 50 - 15 - 14 \\ &= 21 \end{aligned}$$

$$R : B : G$$

$$15 : 21 : 14$$

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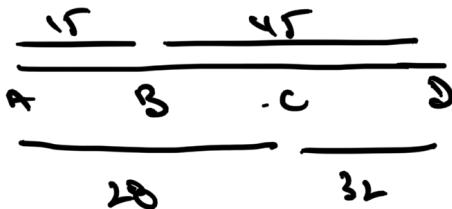
4. The points A, B, C and D lie in order on a straight line.  
 $AB:BD=1:3$  and  $AC:CD=7:8$ . Find  $AB:BC:CD$   
 (3 marks)



4 parts

Make ~~10~~ 60

15 parts



$\times 15$

$\times 4$

$$60 - 15 - 32 = 13 \text{ (BC)}$$

$$\therefore AB : BC : CD$$

$$15 : 13 : 32$$

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5. Some biscuits contain only three ingredients: flour, butter and sugar.

- The ratio of flour to butter is 5 : 4

- The ratio of butter to sugar is 2 : 1

The total weight of the flour, butter and sugar is 770 g .

Work out the weight of each of the ingredients.

(4 marks)

$$F : B$$

$$B : S$$

$$5 : 4$$

$$2 : 1$$

make butter the same

$$5 : 4$$

$$4 : 2$$

$$F : B : S$$

$$5 : 4 : 2$$

$$119 \times 70$$

$$\text{Flour } 350\text{g}$$

$$\text{Butter } 280\text{g}$$

$$\text{Sugar } 140\text{g}$$

$$350 : 280 : 140$$

6. A and B are in the ratio 4 : 3

C and D are in the ratio 1 : 5

Given:  $3(A + B) = C + D$

Find A : B : C : D

(4 marks)

$$A : B$$

$$C : D$$

(7 parts)

$$4 : 3$$

$$1 : 5$$

(6 parts)

$\times 6$

$$24 : 18$$

$$7 : 35$$

$\div 3$

$$8 : 6$$

$$A : B : C : D$$

$$8 : 6 : 7 : 35$$

$$3(A + B) = C + D$$

$$3(8 + 6) = 7 + 35$$

$$42 = 42$$

# Quick Test - Harder ratio problems



7. Josh and Carys won some money in their local lottery. They share the money in the ratio 3:4. Carys decides to give £40 to charity. The amount that Josh and Carys have is now in the ratio 6:7.

Calculate the total amount of money won by Josh and Carys. (4 marks)

$$\begin{array}{l}
 J : C \\
 3x : 4x \\
 \text{Then} \\
 3x : 4x - 40 = 6 : 7 \\
 \frac{3x}{4x - 40} = \frac{6}{7} \\
 21x = 24x - 240 \\
 240 = 3x \\
 80 = x \\
 J : C \\
 3x : 4x \\
 3(80) : 4(80) \\
 240 : 320 = \underline{\underline{£560}}
 \end{array}$$

8. Nate is saving for a new bike which will cost £480. Nate earns £1500 per month. Nate spends his money on bills, food and extras in the ratio 8:3:4. Of the money he spends on extras, he spends 80% and puts 20% into his savings account.

How long will it take Nate to save for his new bike? (3 marks)

$$\begin{array}{l}
 \text{Bills} : \text{Food} : \text{Extras} \\
 8 : 3 : 4 \\
 800 : 300 : 400 \\
 \text{20\%} = \underline{\underline{£80pm}} \\
 \begin{array}{r}
 15 \\
 1500 \end{array} \times 100 \\
 \frac{480}{80} = \underline{\underline{6 \text{ months}}}
 \end{array}$$