Ratio: Simplifying & Sharing

Practice Worksheet (Foundation · Target Grade 5)

I Do

(a) Write the ratio $24 : 36$ in its simplest form.

..... *(1 mark)*

(b) Sam and Maia share £360 in the ratio $4 : 5$.
Work out how much more money Maia gets than Sam.

£ ..... *(3 marks)*

(Total for Question is 4 marks)

We Do

(a) Write the ratio $18 : 30$ in its simplest form.

..... *(1 mark)*

(b) Tom and Emma share £420 in the ratio $2 : 5$.
Work out how much more money Emma gets than Tom.

£ ..... *(3 marks)*

(Total for Question is 4 marks)

You Do 1

(a) Write the ratio $45 : 60$ in its simplest form.

..... *(1 mark)*

(b) John and Zoe share £540 in the ratio $5 : 4$.
Work out how much more money John gets than Zoe.

£ ..... *(3 marks)*

(Total for Question is 4 marks)

You Do 2

(a) Write the ratio $28 : 42 : 56$ in its simplest form.

..... *(1 mark)*

(b) Fin and Paige share £650 in the ratio $3 : 7$.
Work out how much more money Paige gets than Fin.

£ ..... *(3 marks)*

(Total for Question is 4 marks)

You Do 3

(a) Write the ratio $750\,\text{g} : 1.2\,\text{kg}$ in its simplest form.

..... *(2 marks)*

(b) Ryan and Arabella share some money in the ratio $3 : 8$.
Arabella gets £125 more than Ryan.
Work out the total amount of money they shared.

£ ..... *(3 marks)*

(Total for Question is 5 marks)

Challenge 1

Ash, Michelle, and Mark share £480 in the ratio $2 : 5 : 3$.

Michelle then gives 20% of her share to Ash.

Work out the new ratio of Ash's money to Michelle's money to Mark's money.
Give your answer in its simplest form.
Show all of your working clearly.

.....

(Total for Question is 4 marks)

Challenge 2

Catherine, Emily, and Rob share some money.

- The ratio of Catherine's share to Emily's share is $2 : 3$.
- The ratio of Emily's share to Rob's share is $4 : 5$.

Given that Rob receives £210 more than Catherine, work out the total amount of money shared between the three people.
Show all of your working clearly.

£ .....

(Total for Question is 4 marks)

Extreme Challenge

Sophie and Paul have some money in the ratio $7 : 3$.

Sophie gives £45 to Paul.
The ratio of Sophie's money to Paul's money is now $11 : 9$.

Work out how much money Sophie had originally, and the total amount of money they have altogether.
You must show all of your algebraic or ratio working clearly.

Sophie originally: £ ..... Total: £ .....

(Total for Question is 5 marks)

Worked Answers

I Do (Sam & Maia)
(a) Divide both sides by 12: **2** : **3**.
(b) Total parts $= 4 + 5 = 9$.
1 part $=$ £$360 \div 9 =$ £40.
Difference in parts $= 5 - 4 = 1$ part $=$ £**40**.

We Do (Tom & Emma)
(a) Divide both sides by 6: **3** : **5**.
(b) Total parts $= 2 + 5 = 7$.
1 part $=$ £$420 \div 7 =$ £60.
Difference in parts $= 5 - 2 = 3$ parts $= 3 \times$ £$60 =$ £**180**.

You Do 1 (John & Zoe)
(a) Divide both sides by 15: **3** : **4**.
(b) Total parts $= 5 + 4 = 9$.
1 part $=$ £$540 \div 9 =$ £60.
Difference in parts $= 5 - 4 = 1$ part $=$ £**60**.

You Do 2 (Fin & Paige)
(a) Divide all three terms by 14: **2** : **3** : **4**.
(b) Total parts $= 3 + 7 = 10$.
1 part $=$ £$650 \div 10 =$ £65.
Difference in parts $= 7 - 3 = 4$ parts $= 4 \times$ £$65 =$ £**260**.

You Do 3 (Ryan & Arabella)
(a) Convert to the same units: $1.2\,\text{kg} = 1200\,\text{g}$.
$750 : 1200 \xrightarrow{\div 150}$ **5** : **8**.
(b) Difference in parts $= 8 - 3 = 5$ parts $=$ £125.
1 part $=$ £$125 \div 5 =$ £25.
Total parts $= 3 + 8 = 11$ parts $= 11 \times$ £$25 =$ £**275**.

Challenge 1 (Ash, Michelle & Mark)
1. Find initial shares ($2 + 5 + 3 = 10$ parts; 1 part $= £480 \div 10 = £48$):
Ash $= 2 \times £48 = £96$, Michelle $= 5 \times £48 = £240$, Mark $= 3 \times £48 = £144$.
2. Find 20% of Michelle's share: $0.20 \times £240 = £48$.
3. Update shares after the transfer:
Ash $= £96 + £48 = £144$, Michelle $= £240 - £48 = £192$, Mark $= £144$.
4. Simplify the new ratio $144 : 192 : 144$ by dividing by 48: **3** : **4** : **3**.

Challenge 2 (Catherine, Emily & Rob)
1. Combine the two ratios by making Emily's parts equal (LCM of 3 and $4 = 12$):
Catherine : Emily $= 2 : 3 = 8 : 12$.
Emily : Rob $= 4 : 5 = 12 : 15$.
So Catherine : Emily : Rob $= 8 : 12 : 15$.
2. Difference between Rob and Catherine $= 15 - 8 = 7$ parts $= £210$.
1 part $= £210 \div 7 = £30$.
3. Total parts $= 8 + 12 + 15 = 35$ parts.
Total money $= 35 \times £30 = £$**1050**.

Extreme Challenge (Sophie & Paul)
1. The total amount of money does not change when Sophie gives money to Paul.
- Original ratio: $7 : 3$ (total $= 10$ parts).
- New ratio: $11 : 9$ (total $= 20$ parts).
2. Scale the original ratio so both ratios have the same total of 20 parts:
$7 : 3 \xrightarrow{\times 2} 14 : 6$.
3. Compare Sophie's parts before and after:
She drops from 14 parts to 11 parts, a decrease of 3 parts.
Therefore, 3 parts $= £45 \implies 1$ part $= £15$.
4. Calculate the required amounts:
Sophie originally had $14 \times £15 = £$**210**.
Total money altogether $= 20 \times £15 = £$**300**.