

**Strategy:** 'More than/Less than' qns on the 'change' involving Fractions



Example:

Susan baked 36 more cookies than cakes. After she gave away  $\frac{4}{9}$  of the cookies and 50% of the cakes, she was left with 28 fewer cakes than cookies. How many cookies did she bake at first?

**Solution:**

At first

$$50\% = \frac{1}{2}$$

$$\text{Cookies} \rightarrow 18u + 36 \left(\frac{9}{9} \text{ Cookies}\right)$$

$$\text{Cakes} \rightarrow 18u \left(\frac{2}{2} \text{ Cakes}\right)$$

End (left)

$$\text{Cookies} \rightarrow \frac{5}{9} \times (18u + 36) = 10u + 20$$

$$\text{Cakes} \rightarrow \frac{1}{2} \times 18u = 9u$$

Using equation (there were 28 fewer cakes than cookies left, to make it equal):

$$\text{Cookies} = \text{Cakes}$$

$$10u + 20 = 9u + 28$$

$$1u = 28 - 20$$

$$= 8$$

Guides

Solve from 'At first'

**Step 1:** Find the **first common multiple** (F.C.M.) of the numerators 9 & 2 since they represent the units of the individual item 'At first'. Take the F.C.M. as the units for the 'Cakes'.

Note: Why finding the F.C.M.? This is for easy division since both 'Cookies' & 'Cakes' are to be divided by its fraction.

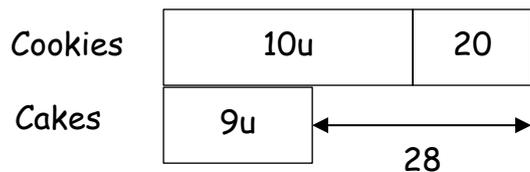
**Step 2:**

Since the next information given in the question is that there were **28 fewer cakes than cookies left**, we can find the units that were left for the cookies and cakes respectively.

**Step 3:**

To find the value of 1 unit, we can solve either by using equation or models whichever is easier for your understanding 😊

Using models (recommendation: to draw the models using units found in Step 2).



$$10u - 9u = 1u$$

$$1u = 28 - 20$$
$$= 8$$

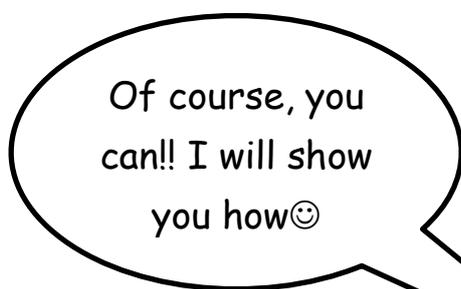
**Step 4:** Find the answer to the qn (i.e. find the number of cookies at first)

Cookies at first  $\rightarrow 18u + 36$

$$= 18 \times 8 + 36$$

$$= 180 \text{ (Ans)}$$

## Q&A





## Alternative Solution:

### End (Left)

Note: '..28 fewer cakes than cookies.' also means

'...28 more cookies than cakes.'

$$\text{Cookies} \rightarrow 5u + 28 \left( \frac{5}{9} \text{ Cookies} \right)$$

$$\text{Cakes} \rightarrow 5u \left( \frac{1}{2} \text{ Cakes} \right)$$

### At first

$$\text{Cookies} \rightarrow \frac{9}{5} \times (5u + 28) = 9u + 50.4$$

Or

$$\frac{5}{9} \text{ Cookies} \rightarrow 5u + 28$$

$$\frac{1}{9} \text{ Cookies} \rightarrow 1u + 5.6$$

$$\frac{9}{9} \text{ Cookies} \rightarrow 9u + 50.4$$

$$\text{Cakes} \rightarrow \frac{2}{1} \times 5u = 10u \quad \text{or} \quad \frac{1}{2} \text{ Cakes} \rightarrow 5u$$

$$\frac{2}{2} \text{ Cakes} \rightarrow 10u$$

Using equation (there were 36 more cookies than cakes at first, to make it equal):

$$\text{Cookies} = \text{Cakes}$$

$$9u + 50.4 = 10u + 36$$

$$1u = 50.4 - 36$$

$$= 14.4$$

### Guides:

Solve from 'In the end'

**Step 1:** Find the fractions 'in the end (Left)' for both of the items,

$$\text{Cookies left} \rightarrow \frac{5}{9}$$

$$\text{Cakes left} \rightarrow \frac{1}{2}$$

**Step 2:** Find the F.C.M of the numerators 5 & 1 since the units represent the 'left' for the cookies and cakes respectively. Take the F.C.M. as the units for the cakes.

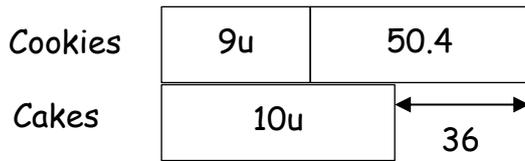
### **Step 3:**

Since the next information given in the question is that there were **36 more cookies than cakes at first**, we can find the units for the cookies and cakes at first respectively.

### **Step 4:**

To find the value of 1 unit, we can solve either by using equation or models whichever is easier for your understanding 😊

Using models (recommendation: to draw the models using units found in Step 3).



$$10u - 9u = 1u$$

$$1u = 50.4 - 36$$
$$= 14.4$$

**Step 5:** Find the answer to the qn (i.e. find the number of cookies at first)

Cookies at first  $\rightarrow 9u + 50.4$

$$= 9 \times 14.4 + 50.4$$

$$= 180 \text{ (Ans)}$$

Are you ready for more  
practise?

## More practices

Q1) Mrs Gan made 32 fewer balloons than kites. After she gave away  $\frac{3}{8}$  of the kites and  $\frac{2}{3}$  of the balloons, she was left with 69 more kites than balloons.

How many kites did she make at first?

(Recommendation: Try solving from 'At first', followed by solving from 'In the end' for more practice)

**Answer: 200**

Q2) There were 40 more boys than girls at a school function. After  $\frac{3}{4}$  of the boys and 60% of the girls left the function, there were 8 fewer boys than girls remaining behind.

How many girls were there at first?

(Recommendation: Try solving from 'At first', followed by solving from 'In the end' for more practice)

**Answer: 120**

Q3) A total of 325 boys and girls attended a performance in the school hall.  $\frac{4}{5}$  of the boys and 75% of the girls left the hall after the performance ended. There were 29 more boys than girls who remained in the hall. How many boys were there at first?

(Hint: Solve from 'In the End' where the 'more than/less than' is)

**Answer: 245**

For more queries, you may email to [mathsclinix@yahoo.com.sg](mailto:mathsclinix@yahoo.com.sg) or post your query in our facebook page @ <https://www.facebook.com/mathsclinix> where all can learn together 😊