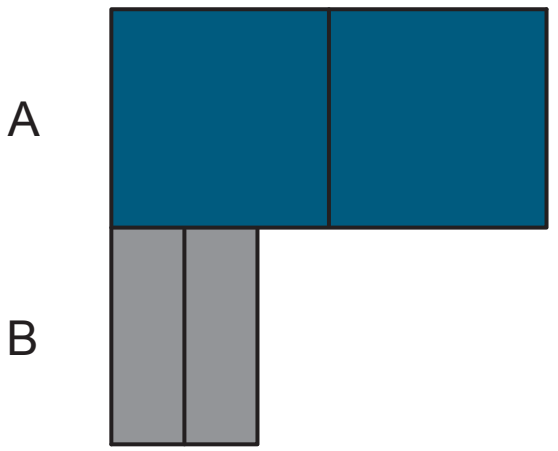
Big And Small

BAS Introduction



In **Big And Small (BAS)**, the aim is to draw models with units of different sizes (big and small), forming two sentences that describe the model, and using the technique of Cancel Same Parts (CSP) to eliminate one of the units.

Tip: Draw the big units as wide as possible and the small units as narrow as possible. Although the units in the models are **intentionally not drawn to scale**, they can actually help us to construct the two mathematical sentences more accurately without mistakenly assuming that there are any size relations between the big and small units.

Adapted:
Score A* in Singapore Mathematics Problem Sums Level 6 (Advanced Edition)

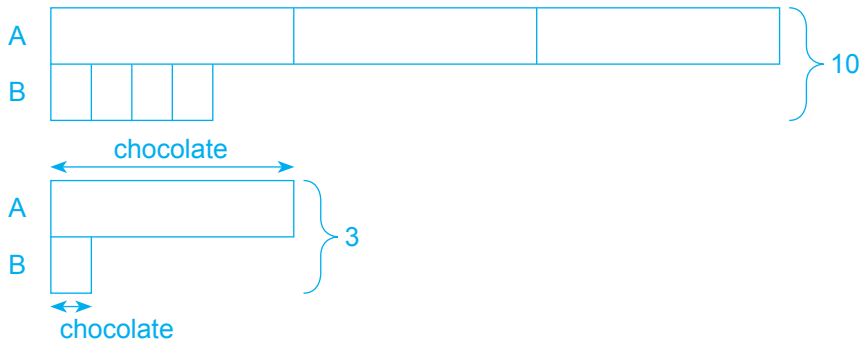
BAS Example

A and B have 10 cookies.

$\frac{1}{3}$ of A's cookies are chocolate cookies.

$\frac{1}{4}$ of B's cookies are chocolate cookies.

There are 3 chocolate cookies.
How many cookies does A have?



3 big units + 4 small units → 10 cookies

×4 ↓

1 big unit + 1 small unit → 3 cookies

4 big units + 4 small units → 12 cookies

4 big units – 3 big units → (12 – 10) cookies

1 big unit → 2 cookies

3 big units → 3 × 2 = 6 cookies

A → 6 cookies

Ans: 6 cookies

Adapted:
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BAS

Question 1

The ratio of A's cookies to B's cookies was 2 : 5. After A bought 36 cookies and B ate 12 cookies, the ratio became 5 : 4. How many cookies were there at first?

Ans: _____

BAS

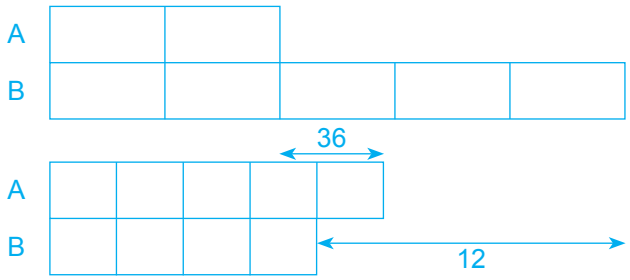
Question 2

The ratio of A's cookies to B's cookies was 3 : 2. After A bought 20 cookies and B bought 160 cookies, the ratio became 1 : 2. How many cookies did B have in the end?

Ans: _____

BAS

Question 1



The small units are intentionally drawn as narrow as possible, hence the difference of 12 cookies appears wider than the difference of 36 cookies.

×4 (5 small units – 2 big units → 36
×4 (20 small units – 8 big units → 144

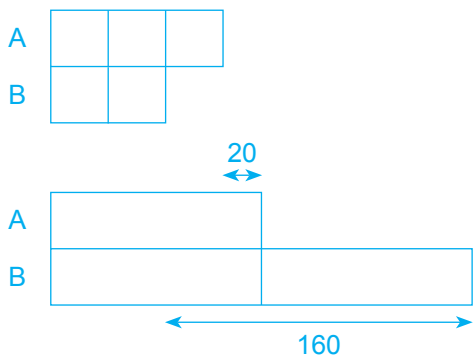
×5 (5 big units – 4 small units → 12
×5 (25 big units – 20 small units → 60

20 small units – 8 big units + 25 big units – 20 small units → 144 + 60
25 big units – 8 big units → 204 cookies
17 big units → 204 cookies
1 big unit → 204 ÷ 17 = 12 cookies
7 big units → 7 × 12 = 84 cookies
At first → 84 cookies

Ans: 84 cookies

BAS

Question 2



×2 (1 big unit – 3 small units → 20
×2 (2 big units – 6 small units → 40

×3 (2 big units – 2 small units → 160
×3 (6 big units – 6 small units → 480

6 big units – 2 big units → 480 – 40
4 big units → 440 cookies
1 big unit → 440 ÷ 4 = 110 cookies
2 big units → 2 × 110 = 220 cookies
B (end) → 220 cookies

Ans: 220 cookies