

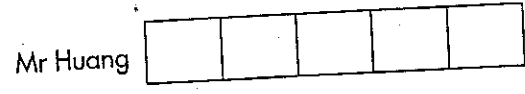
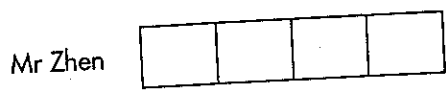


Ratio (1): Ratio and Fraction

Do these sums. Show all your working clearly.

- (1) There are 32 local stamps and 48 Malaysian stamps in a stamp album.
- (a) Find the ratio of the number of local stamps to the number of Malaysian stamps.
- (b) Find the ratio of the number of Malaysian stamps to the number of local stamps.
- (2) There are 350 pages in book A, 500 pages in book B and 200 pages in book C.
- (a) What is the ratio of the number of pages in book A to the number of pages in book B to the number of pages in book C?
- (b) What is the ratio of the number of pages in book B to the total number of pages in books A, B and C?

(3) The income of Mr Zhen and Mr Huang are in the ratio 4 : 5.



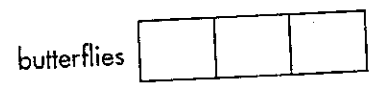
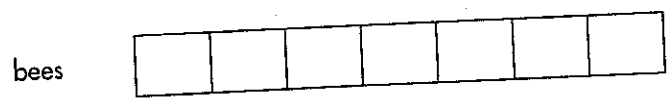
(a) What fraction of Mr Huang's income is Mr Zhen's income?

Mr Zhen's income is of Mr Huang's income.

(b) What fraction of the total income of Mr Zhen and Mr Huang is Mr Huang's income?

Mr Huang's income is of the total income of Mr Zhen and Mr Huang.

(4) The ratio of the number of bees to the number of butterflies in a picture is 7 : 3.



(a) Express the number of bees as a fraction of the number of butterflies.

(b) Express the number of butterflies as a fraction of the number of bees.

(c) Express the number of bees as a fraction of the total number of bees and butterflies.

- (5) The ratio of the number of orchids to the number of roses to the number of lilies is 3 : 2 : 6.

orchids

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roses

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lilies

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- (a) What is the ratio of the total number of orchids and roses to the number of lilies?

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- (b) How many times as many lilies as roses are there?

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- (c) Express the number of orchids as a fraction of the number of lilies.

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- (6) Ali's age is $\frac{2}{3}$ of his father's age.

Ali's age

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Ali's father's age

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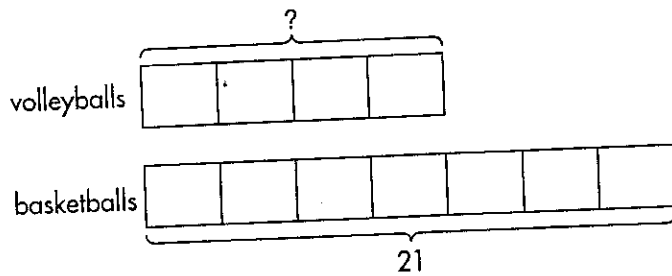
- (a) What is the ratio of Ali's age to his father's age?

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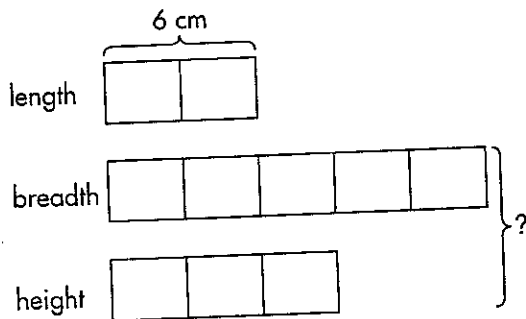
- (b) Express Ali's father's age as a fraction of Ali's age.

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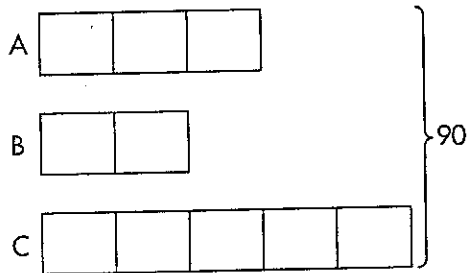
- (7) The ratio of the number of volleyballs to the number of basketballs in the P.E. room is $4 : 7$. There are 21 basketballs. How many volleyballs are there?



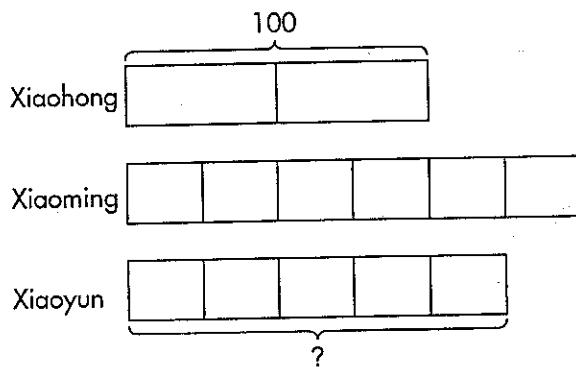
- (8) The length, breadth and height of a box are in the ratio $2 : 5 : 3$. The length of the box is 6 cm. Find the sum of the breadth and the height of the box.



- (9) The total of 3 numbers A, B, C is 90. The ratio of A to B is 3 : 2. The ratio of B to C is 2 : 5. What are the 3 numbers?



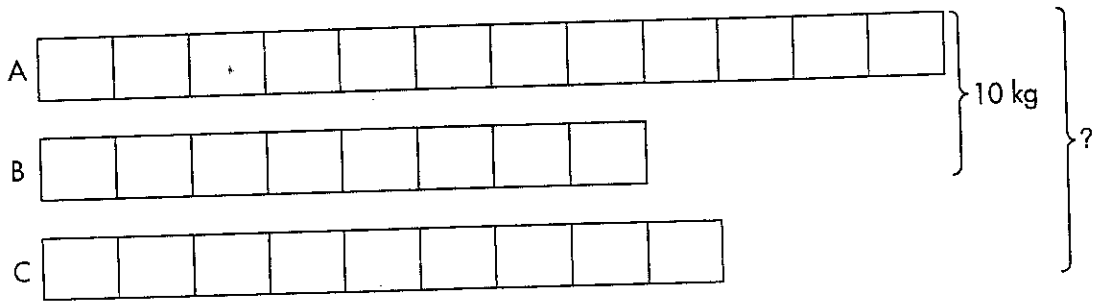
- (10) The ratio of the number of times Xiaohong skips to the number of times Xiaoming skips is 2 : 3. The ratio of the number of times Xiaoming skips to the number of times Xiaoyun skips is 6 : 5.



- (a) Find the ratio of the number of times Xiaohong skips to the number of times Xiaoyun skips.

- (b) If Xiaohong skips 100 times, how many times does Xiaoyun skip?

- (11) The ratio of the number of apples in identical baskets A, B and C is $12 : 8 : 9$. Basket A and basket B weigh 10 kg altogether. Find the total weight of the 3 baskets of apples.

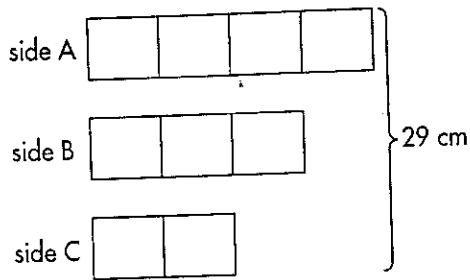


- (12) A rectangular plot of land measures 90 m by 50 m. A farmer plants cucumbers and tomatoes on it, the land areas used for the crops being $2 : 3$ respectively. How much more land do the cucumbers take up than the tomatoes?

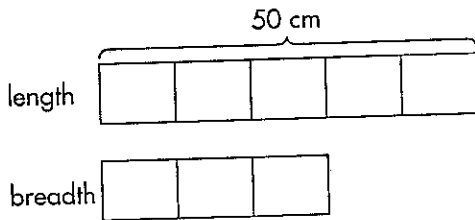
cucumbers 

tomatoes 

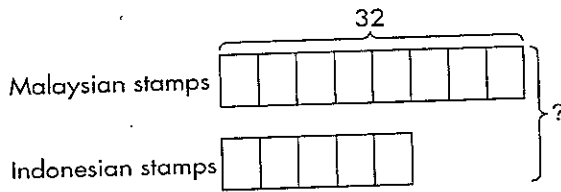
- (3) The sides of a triangle are in the ratio $4 : 3 : 2$. If the perimeter is 29 cm, find the lengths of its sides.



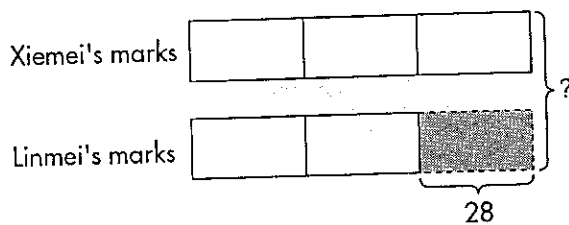
- (4) The ratio of the length of a rectangular piece of paper to its breadth is $5 : 3$. Find the perimeter of the piece of paper if its length is 50 cm.



- (5) In my stamp album, there are 8 Malaysian stamps to every 5 Indonesian stamps. If there are 32 Malaysian stamps, find the total number of stamps in my stamp album.



- (6) The ratio of Xiemei's test marks to Linmei's test marks is 3 : 2. If Linmei's score is lower than Xiemei's by 28 marks, what is their total score?





Ratio (3): Changing Ratios

Do these sums. Show all your working carefully.

- (1) The ratio of the number of Shuzhen's books to Limei's is $3 : 4$. Limei has 60 books. If Limei gives 30 books to Shuzhen, what will the new ratio of the number of Shuzhen's books to Limei's be?
- (2) Ahmad and Devi had an equal amount of money each. After Ahmad earned \$15 more and Devi earned \$10 more, the ratio of Ahmad's money to Devi's money became $8 : 7$. How much money did each boy have at first?

(3) In a 'use-your-hands' campaign, $\frac{1}{5}$ of a class originally had to clean the tables and chairs. However, 2 more students in the class were added to the job later, causing the ratio of the number of participating students to that of non-participating students in the class to be 1 : 3. How many students were there in the class?

(4) The ratio of the number of sweets in Tin A to that in Tin B was 8 : 5. After $\frac{1}{4}$ of the sweets in Tin A were sold, there were 120 more sweets in Tin A than Tin B. How many sweets were there in Tin B?

(5) Some workers are digging a drain. The ratio of the length that has already been dug to that which has not been dug is $3 : 4$. After another 20 m of the drain has been dug, this ratio becomes $4 : 3$. What is the total length of the drain to be dug?

(6) The ratio of the number of people in Team A to that in Team B is $7 : 3$. If 30 people from Team A join Team B, the ratio of the number of people in Team A to that in Team B will become $3 : 2$. How many people are there in each team?

ANSWERS

Exercise 1

- (1) 42 (2) \$516 (3) 31 (4) 3.2 kg
 (5) $28\frac{1}{12} \ell$ (6) 56 (7) 200
 (8) 9 kg (9) \$2500 (10) $\frac{1}{11}$

Exercise 2

- (1) (a) $\$(x + 53)$ (b) \$58 (c) \$63
 (2) (a) $\frac{24}{y}$ (b) 8 (c) 6
 (3) (a) $\$(m - 2.50)$ (b) \$7.50 (c) \$3
 (4) (a) $5L \text{ cm}^2$ (b) 40 cm^2 (c) 60 cm^2
 (5) (a) $\$12(S - 1500)$ (b) \$9600 (c) \$15600
 (6) (a) $\left(\frac{N}{5} - 100\right) \text{ g}$ (b) 1200 g (c) 1700 g

Exercise 3

- A (1) 7 (2) 28 (3) 100 (4) 5
 (5) 4 (6) 9 (7) 80 (8) 25
 B (1) 45 (2) 35 (3) 1 (4) 3
 (5) 105 (6) 192 (7) 11 (8) 10
 C (1) $2m$ (2) $3N$ (3) $6p$ (4) $9q$
 (5) $5b$ (6) $12a$ (7) $7g$ (8) $8e$
 (9) $10z - 5$ (10) $5t - 6$ (11) $f - 6$
 (12) $8d + 1$ (13) $3 + 2a$ (14) $2h + 2$
 (15) $8k$ (16) $15 - r$

Exercise 4

- (1) (a) 6 (b) 5 (c) 3 (d) 5
 (2) b, c (3) a, d (4) b (5) b

Exercise 5

- (1) (a) 2 : 3 (b) 3 : 2
 (2) (a) 7 : 10 : 4 (b) 10 : 21
 (3) (a) $\frac{4}{5}$ (b) $\frac{5}{9}$
 (4) (a) $\frac{7}{3}$ (b) $\frac{3}{7}$ (c) $\frac{7}{10}$
 (5) (a) 5 : 6 (b) 3 (c) $\frac{1}{2}$
 (6) (a) 2 : 3 (b) $\frac{3}{2}$
 (7) 12 (8) 24 cm (9) 27, 18, 45
 (10) (a) 4 : 5 (b) 125
 (11) $14\frac{1}{2} \text{ kg}$ (12) 900 m^2

Exercise 6

- (1) 30 (2) 50 g
 (3) $12\frac{8}{9} \text{ cm}$, $9\frac{2}{3} \text{ cm}$, $6\frac{4}{9} \text{ cm}$
 (4) 160 cm (5) 52 (6) 140

Exercise 7

- (1) 5 : 2 (2) \$25 (3) 40 (4) 600
 (5) 140 m (6) Team A: 210, Team B: 90

Exercise 8

- A (1) $37\frac{1}{2}\%$ (2) 44% (3) 38% (4) 60%
 B (1) 25% (2) 40% (3) $62\frac{1}{2}\%$
 C (1) 32% (2) 10% (3) 20% (4) $37\frac{1}{2}\%$
 (5) 80% (6) $12\frac{1}{2}\%$ (7) 40% (8) 60%
 D (1) $\frac{1}{25}$ (2) $\frac{2}{25}$ (3) $\frac{17}{100}$ (4) $\frac{3}{10}$
 (5) $\frac{73}{100}$ (6) $\frac{4}{5}$ (7) $\frac{99}{100}$ (8) 1
 E (1) 50% (2) 1% (3) 26% (4) 48%
 (5) 1.2% (6) 0.7% (7) 40.3% (8) 39.1%
 F (1) 0.03 (2) 0.06 (3) 0.07 (4) 0.29
 (5) 0.33 (6) 0.56 (7) 0.7 (8) 0.9

Exercise 9

- (1) 20% (2) 40% (3) 50% (4) 75%
 (5) 60% (6) 25% (7) 18% (8) 8%
 (9) 16% (10) 49% (11) 20% (12) 15%

Exercise 10

- (1) 8% (2) 52% (3) 30% (4) 32%
 (5) 25% (6) 160% (7) 20% (8) 120%
 (9) 270% (10) 150%

Exercise 11

- (1) \$15.60 (2) \$646 (3) 36
 (4) 94.5 kg (5) $9\frac{1}{11}\%$ (6) \$2662.50
 (7) 1750 (8) \$40 (9) 300
 (10) \$1050 (11) 60 (12) 24