



Ratio (3): Changing Ratios

06-10-13-K6

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) $28\frac{1}{12}$ l (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) $\left(\frac{N}{5} - 100\right)$ 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) $14\frac{1}{2}$ kg (12) 900 m^2

Exercise 6

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