

**TB(2A) Ch. 1 Rate and Ratio
Conventional Questions**

1. [13-14 S.2 S.Test 1 #3]

- (a) In a typing test, Angel types 280 words in 5 minutes. Find her typing speed in words/min. (1 mark)
- (b) Hence, find the time required for her to type an essay of 1,400 words. (2 marks)

2. [13-14 S.2 S.Test 1#4]

Figure 1 shows the floor plan of a rectangular room with a scale 1:80 and dimensions 10.5 cm × 9 cm. Find the actual area of the room in m². (2 marks)

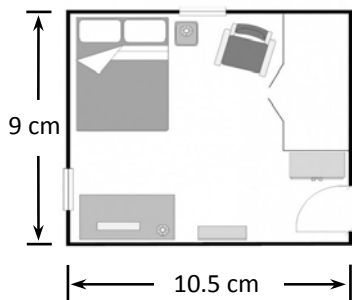


Figure 1

3. [13-14 S.2 S.Test 1#5]

It is given that $a = 2b$ and $\frac{6}{a} : \frac{3}{c} = \frac{1}{2} : \frac{1}{5}$, find $b : c$. (2 marks)

4. [13-14 S.2 S.Test 1 #8]

Athena, Ben and Chloe shared a bag of 216 candies yesterday. Chloe got twice as many as Ben. The number of candies Ben got is $\frac{2}{3}$ that of Athena.

- (a) Find the ratio of Athena’s share : Ben’s share : Chloe’s share. (2 marks)
- (b) Today, after Chloe has eaten some of her candies, the ratio of Athena’s share to Ben’s share to Chloe’s share becomes 9:6:10. How many candies has Chloe eaten today? (3 marks)

5. [13-14 S.2 Mid-year Exam #5]

It is given that $2x + 3y = 2(3x - 4y)$.

- (a) Find $x : y$. (2 marks)
- (b) Hence find $x : y : z$ if $x : z = 5 : 4$. (2 marks)

6. [13-14 S.2 Mid-year Exam #6]

Figure 1 shows a line segment AD of length 56 cm with points B and C lying on it. It is given that AB is shorter than CD by 6 cm and $AB : CD = 3 : 4$.

- (a) Find the length of AB. (2 marks)
- (b) If $AB : BC : CD = 9 : x : 12$, find the value of x . (2 marks)

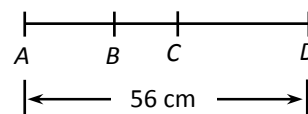


Figure 1

7. [13-14 S.2 Mid-year Exam #12]

Mr Lee drives at the same speed of 80 km/h on a highway which is 110 km long. He fills his car with 20 L of petrol before the journey. In the first 10 km of his journey, his car consumes 2 L of petrol. Assume that the petrol consumption rate is the same throughout the journey.

- (a) Find the petrol consumption rate in L/km. **(2 marks)**
 (b) Can he complete the whole journey within 1.5 hours without refilling petrol to his car? Explain your answer. **(3 marks)**

8. [13-14 S.2 Final Exam #4]

The distance between Mongkok and Tai Po on a map with scale 1 : 100 000 is 22 cm. If the speed of a red van is 88 km/h, what is the time required (in min) for the red van to travel from Mongkok to Tai Po? **(3 marks)**

9. [14-15 S.2 Mid-Year Exam #5]

It is given that $a : b = 3 : 8$ and $11b = 20c$.

- (a) Find $a : b : c$. **(3 marks)**
 (b) Find the value of $\frac{3a - 2c}{6a + 5c}$. **(2 marks)**

10. [14-15 S.2 Mid-Year Exam #11]

On the map as shown in Figure 2, the road from town P to town Q, which is a straight line, is 7 cm long. It is given that a length of 4 cm on the map represents an actual distance of 18 km.

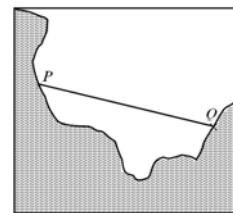


Figure 2

- (a) (i) Express the scale of the map in the form of 1 : n . **(1 mark)**
 (ii) Find the actual distance between town P and town Q. **(2 marks)**
 (b) Raymond starts driving from town P to town Q along the road first. 15 minutes later, Janice starts driving from town Q to town P along the same road at a speed of 35 km/h. If they meet each other exactly at the mid-point between town P and town Q, find the speed of Raymond's car. **(3 marks)**

11. [14-15 S.2 Final Exam #2]

It is given that $\frac{x}{y} = \frac{2}{3}$ and $\frac{y}{z} = \frac{2}{3}$.

- (a) Find $x : y : z$. **(1 mark)**
 (b) Find the value of $\frac{x + 2y}{x + 2z}$. **(2 marks)**

12. [15-16 S.2 Mid-year Exam #3]

On a map, 5 cm represents an actual distance of 6 km.

- (a) Write down the scale of the map in the form of 1 : n , where n is an integer. **(1 mark)**
 (b) If a road is 8.4 km long, find its length in cm on the map. **(2 marks)**

13. [15-16 S.2 Mid-year Exam #5]

It is given that $15a = 2b$ and $2a - 3c = 4a - 8c$. Find $a : b : c$.

(3 marks)

14. [15-16 S.2 Mid-year Exam #13]

$\triangle ABC$ is a right-angled triangle, where $\angle ABC = 90^\circ$. It is given that $AB : BC : AC = 3 : 4 : 5$. $\triangle ABC$ is enlarged to $\triangle PQR$ by a scale factor of 3.5.

- (a) If the difference between the perimeters of $\triangle ABC$ and $\triangle PQR$ is 93 cm, find AB . **(2 marks)**
(b) Write down the ratio of the area of $\triangle ABC$ to the area of $\triangle PQR$. **(1 mark)**

15. [15-16 S.2 Final Exam #3]

A church is 2400 m away from Peter's home. To go from home to church in weekend, Peter spent 10 minutes walk and 8 minutes run on Saturday and spent 15 minutes walk and 6 minutes run on Sunday. Find the walking speed and running speed of Peter in m/min.

(3 marks)**16. [16-17 S.2 Mid-year Exam #4]**

The distance between two cities on a map is 7.5 cm. The actual distance between them is 48.75 km.

- (a) Find the scale of the map in the form $1 : n$. **(2 marks)**
(b) If the actual length of a highway is 19.5 km, find the length of the highway on the map. **(1 mark)**
(c) A country park in the map is a rectangle of size $6 \text{ cm} \times 8 \text{ cm}$. Find the actual area of the park in km^2 . **(2 marks)**

17. [16-17 S.2 Mid-year Exam #9]

Early this year, 1360 Great British Pounds (GBP) can be exchanged for 2000 United States Dollars (USD) and 234 USD can be exchanged for 1800 Hong Kong Dollars (HKD).

- (a) Find the exchange rates between
(i) GBP and USD in GBP/USD, **(1 mark)**
(ii) HKD and USD in USD/HKD. **(1 mark)**
(b) How many GBP can be exchanged for 120000 HKD? **(2 marks)**
(c) Recently, the same amount 1360 GBP can be exchanged for 1700 USD only while the exchange rate between HKD and USD remains unchanged. What is the change in the amount of GBP that can be exchanged for 120000 HKD? **(2 marks)**

18. [16-17 S.2 Final Exam #1]

A number of candies are shared among Annie, Mary and Janice in a ratio of $1 : 3 : 5$. Janice has 12 more candies than that Annie has.

- (a) Find the number of candies Mary has. **(2 marks)**
(b) After Janice has given 3 candies to Annie, write down the new ratio of numbers of candies among Annie, Mary and Janice. **(1 mark)**

19. [17-18 S.2 Mid-year Exam #5]

It is given that the scale of the map is 1:10 000. The actual distance between Good Hope School and Choi Hung MTR station is 2 km.

- (a) Find the distance on the map in cm. (2 marks)
- (b) A shuttle bus drives from Choi Hung MTR station to Good Hope School at 35 km/h. Find the required travelling time in minutes. (2 marks)

20. [17-18 S.2 Mid-year Exam #10]

A bag of x candies is shared between Sarah and Zoe. The ratio of Sarah's share to Zoe's share is 2 : 1.

- (a) Write down the number of Sarah's candies in terms of x . (1 mark)
- (b) If Sarah gives 10 candies to Zoe, then the ratio of Sarah's share to Zoe's share becomes 8 : 7. Find the value of x . (2 marks)

21. [17-18 S.2 Mid-year Exam #13]

It is given that the ratio of the base length, base width and height of cuboid A and cuboid B are 1 : 2 : 4 and 3 : 4 : 6 respectively. If the perimeter of the base of cuboid A is twice that of cuboid B , find the ratio of the volume of cuboid A to the volume of cuboid B . (3 marks)

22. [17-18 S.2 S.Test 1 #1]

It is given that $\frac{x}{y} = \frac{3}{5}$ and $\frac{y}{z} = \frac{3}{2}$.

- (a) Write down the ratio $x : y : z$. (1 mark)
- (b) Find the value of $\frac{x+y}{x-y+z}$. (2 marks)

23. [17-18 S.2 S.Test 1 #2]

A length of 2 cm on a map represents an actual distance of 6 km.

- (a) Express the scale of the map in the form of 1 : n . (1 mark)
- (b) Town A and town B are 4 cm apart on the map. If Victoria walked at a speed of 80 m/min, how long would it take for her to travel from town A to town B ? (2 marks)

24. [17-18 S.2 S.Test 1 #6]

In a factory, a machine produces 4200 bags of potato chips in 7 days. The machine operates 10 hours a day.

- (a) Find the production rate in bags/hour. (1 mark)
- (b) If the production rate of the machine remains unchanged, can it produce more than 800 bags of potato chips in 15 hours? Explain briefly. (2 marks)
- (c) The production cost \$ C of each bag of potato chips is given by $C = \frac{k}{n} + 5$, where n is the

number of bags of potato chips produced and k is a constant. It is known that the cost of each bag is \$20 when 15 bags are produced. The manager of the factory claims that when the cost of each bag is \$10, 50 bags are produced. Do you agree? Explain briefly. **(3 marks)**

25. [17-18 S.4 Final Exam #3]

700 coins are shared among Adrian, Bernard and Calvin. It is known that the ratio of Adrian's share to Bernard's share is 6 : 7, and that of Adrian's share to Calvin's share is 2 : 5. Find the number of coins in Calvin's share. **(3 marks)**

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