

TB(2A) Ch. 1 Rate and Ratio
Multiple Choice Questions

1. [16-17 S.2 Mid-year Exam #1]

If $a : b = 3 : 2$ and $4a = 5c$, then $a : b : c =$

- A. 15 : 10 : 12.
- B. 4 : 6 : 5.
- C. 10 : 15 : 8.
- D. 12 : 8 : 15.

2. [16-17 S.2 Mid-year Exam #13]

The actual area of a park is 700 m^2 . If the area of the park on a map is 28 cm^2 , then the scale of the map is

- A. 1 : 5.
- B. 1 : 25.
- C. 1 : 500.
- D. 1 : 250000.

3. [16-17 S.2 Final Exam #1]

Consider the following statements and determine if a ratio should be used to relate the quantities.

- I. Amy can type 1200 words in 10 minutes.
 - II. The numbers of six different house members in a class at a school are 6, 5, 6, 14, 2 and 7 respectively.
- A. I only
 - B. II only
 - C. I and II
 - D. None of the above

4. [16-17 S.2 Final Exam #14]

The distance between two points on a map is 1 mm and the corresponding actual distance is 2 m. If the area of a region on the map is 1 mm^2 , the corresponding actual area is

- A. 2 m^2 .
- B. 4 m^2 .
- C. 2 km^2 .
- D. 4 km^2 .

5. [17-18 S.2 Mid-year Exam #1]

It is given that $a:b=4:2$ and $b:c=3:1$. Find $a:b:c$.

- A. 12 : 6 : 1 B. 6 : 3 : 1
C. 4 : 3 : 1 D. 4 : 2 : 1

6. [17-18 S.2 Mid-year Exam #2]

There are 720 boys in a school. If the ratio of the number of boys to the number of girls is 3 : 2, find the total number of boys and girls in the school.

- A. 432 B. 480
C. 1200 D. 1440

7. [17-18 S.2 Mid-year Exam #11]

It is given that 10 Hong Kong Dollars (HKD) can be exchanged for 145 Japanese Yen (JPY) and 5 Euro Dollars (EUR) can be exchanged for 46.1 Hong Kong Dollars. Find the amount of JPY can be exchanged for EUR 20, correct to the nearest JPY.

- A. 134 B. 1337
C. 2674 D. 3342

8. [17-18 S.2 Mid-year Exam #20]

If $2a = 3b$ and $4b - \frac{c}{3} = 0$, which of the followings must be true?

- I. $b:c = 4:3$
II. $a:b:c = 2:3:24$
III. $\frac{1}{a}:\frac{1}{b}:\frac{1}{c} = 8:12:1$

- A. III only
B. I and II only
C. I and III only
D. II and III only

9. [17 - 18 S.2 S.Test 1 #4]

Which of the following cannot be a ratio?

- A. 4 m/s : 3 m/s
B. 4 m : 3 m²
C. 4 : 3
D. 1 cm³ : 2 km³

10. [17 - 18 S.2 S.Test 1 #5]

The following shows the lengths of some line segments on three scale drawings and their corresponding actual lengths. Which of the scale drawings use the scale 1 : 25?

	Length on scale drawing	Actual length
I.	8 mm	2 cm
II.	6 cm	1.5 m
III.	4 cm	1 m

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

11. [17 - 18 S.2 S.Test 1 #7]

Which of the following water pumps takes the longest time of pumping 2017 L of water?

- A. Water pump *A* can pump 1000 mL of water in 10 seconds.
- B. Water pump *B* can pump 1400 mL of water in $\frac{1}{3}$ minutes.
- C. Water pump *C* can pump 2250 mL of water in $\frac{1}{2}$ minutes.
- D. Water pump *D* can pump 3200 mL of water in 40 seconds.

12. [17 - 18 S.2 S.Test 1 #8]

100 coupons are divided among Alice, Betty and Candy. Betty gets $\frac{1}{4}$ of the coupons and Alice gets 15 more than Betty. The ratio of the number of coupons obtained by Alice, Betty and Candy is

- A. 2 : 5 : 13.
- B. 5 : 3 : 12.
- C. 7 : 5 : 9.
- D. 8 : 5 : 7.

13. [17 - 18 S.2 Final #3]

The scale of a map is 1 : 500 000. If two libraries are 2.38 cm apart on the map, then the actual distance between the two libraries is

- A. 1.19 km.
- B. 2.10 km.
- C. 11.9 km.
- D. 21.0 km.

14. [17 - 18 S.2 Final #12]

Let a , b and c be non-zero numbers. If $3a = 4b$ and $a : c = 6 : 5$, then $\frac{a + 2b}{b + 4c} =$

- A. $\frac{30}{49}$.
- B. $\frac{21}{32}$.
- C. $\frac{11}{13}$.
- D. $\frac{7}{8}$.

15. [18 - 19 S.2 S.Test 1 #4]

It takes 1 hour and 20 minutes to discharge all the water in a tank of capacity 240 L. How much water can be discharged in 1 hour?

- A. 20 L
- B. 180 L
- C. 200 L
- D. 220 L

16. [18 - 19 S.2 S.Test 1 #5]

It is given that the scale of a drawing of a spider is 4 : 1. If the length of the spider on the drawing is 6 cm, find the actual length of the spider.

- A. $\frac{1}{6}$ cm
- B. $\frac{2}{3}$ cm
- C. 1.5 cm
- D. 24 cm

17. [18 - 19 S.2 S.Test 1 #9]

If $a : b = 1 : 1$ and $\frac{c - 6a}{a - c} = 3$, find $a : b : c$.

- A. 2 : 1 : 9
- B. 4 : 4 : 9
- C. 9 : 9 : 4
- D. 18 : 9 : 4

18. [18 - 19 S.2 S.Test 1 #10]

The actual area of a room is 100 m^2 . If the area of the room on the map is 1 cm^2 , then the scale of the map is

- A. 1 : 100.
- B. 1 : 1 000.
- C. 1 : 10 000.
- D. 1 : 1 000 000.

19. [18-19 S.2 Mid-year Exam #1]

Which of the following measurements is NOT an example of rate?

- A. cost per kilogram
- B. litres per second
- C. speed
- D. time

20. [18-19 S.2 Mid-year Exam #2]

The scale of a map is $1 : n$. If the distance between two buildings on the map is 20 cm and the actual distance between them is 2 km, find the value of n .

- A. 100 B. 10 000
- C. 0.001 D. 0.1

21. [18-19 S.2 Mid-year Exam #11]

$$\frac{1}{2} : \frac{1}{3} : \frac{1}{4} =$$

- A. 4:3:2. B. 2:3:4.
- C. 6:4:3. D. 3:4:6.

22. [18-19 S.2 Final Exam #1]

If $a : b = 2 : 1$ and $b = 3c$, find $a : b : c$.

- A. 1 : 2 : 3
- B. 2 : 1 : 3
- C. 4 : 2 : 3
- D. 6 : 3 : 1

23. [18-19 S.2 Final Exam #11]

Suppose the exchange rate between the Hong Kong Dollar (HKD) and the Euro (EUR) is 8.8 HKD/EUR, while that between the Hong Kong Dollar and the US Dollar (USD) is 7.8 HKD/USD. How many Euros can be exchanged for USD 3 432?

- A. 50
- B. 3 042
- C. 3 872
- D. 235 572.48

24. [19-20 S.2 Standardized test 1, #1]

Determine whether a rate or ratio should be used to relate the quantities in each of the following statements.

- I. A shop takes 10 days to sell 330 bags.
- II. The length and width of a rectangle are 0.2 m and 14 cm respectively.

	I	II
A.	Rate	Rate
B.	Rate	Ratio
C.	Ratio	Rate
D.	Ratio	Ratio

25. [19-20 S.2 Standardized test 1, #2]

The weights of Andy and Ben are in the ratio 3 : 5. If the weight of Andy is 45 kg, find the weight of Ben.

- A. 27 kg
- B. 57 kg
- C. 65 kg
- D. 75 kg

26. [19-20 S.2 Standardized test 1, #6]

If $\frac{2r-s}{3r+5s} = \frac{2}{7}$, find $r : s$.

- A. 3 : 20
- B. 20 : 3
- C. 8 : 17
- D. 17 : 8

27. [19-20 S.2 Standardized test 1, #10]

The ratio of the number of members of club A to club C is 3 : 4 and the ratio of the number of members of club B to club C is 7 : 2. Which of the following must be true?

- I. Club B has the greatest number of members among them.
- II. Club B has 11 more members than club A.
- III. If club B has 28 members, then club A has 21 members.

- A. I only
- B. II only
- C. I and III only
- D. II and III only

28. [19-20 F.2 Mid-year Exam #10]

There are 40 students in each of class 2A and 2B. In class 2A, the numbers of boys and girls are in the ratio 3 : 5. In class 2B, the numbers of boys and girls are equal. If the two classes are combined, what is the ratio of the number of boys to that of girls?

- A. 2 : 3
- B. 7 : 9
- C. 9 : 7
- D. 11 : 5

29. [19-20 F.2 Mid-year Exam #17]

A printing task has to be completed in 6 hours. The average printing speed was planned to be 1680 pages per hour. After printing for 2 hours, the printing machine was broken down and has taken 30 minutes to repair. What should be the average printing speed after the machine is repaired so that the task can be completed just on time?

- A. 24.5 pages / minute
- B. 28 pages / minute
- C. 32 pages / minute
- D. 42 pages / minute

30. [19-20 F.2 Mid-year Exam #18]

A map is drawn in a scale 1 : 800. The dimensions of a rectangular farmland on the map are 8 cm × 15 cm. It is given that 25 L of water is needed to water 10 m² of farmland. Find the total volume of water needed to water the whole farmland.

- A. 3 072 L
- B. 3 840 L
- C. 7 680 L
- D. 19 200 L

31. [20-21 F.2 Mid-year Exam #1]

Simplify $2 : \frac{7}{4} : \frac{1}{6}$.

- A. 8 : 7 : 1
- B. 8 : 7 : 2
- C. 12 : 21 : 2
- D. 24 : 21 : 2

32. [20-21 F.2 Mid-year Exam #7]

It is given that p , q and r are non-zero numbers such that $p : r = 5 : 2$ and $4q = 3r$. Find the value of $\frac{6p - 2q}{8q - 5r}$.

- A. $\frac{27}{2}$
- B. $\frac{21}{4}$
- C. $\frac{37}{17}$
- D. $\frac{9}{10}$

33. [20-21 F.2 Final Exam #1]

Determine whether a rate or a ratio should be used to relate the two underlined quantities in each of the following statements.

- (i) Peter exchanges HKD 1000 for CAD 160 in a bank.
- (ii) The length and the width of the HK ID card are 8.6 cm and 5.4 cm respectively.

	<u>(i)</u>	<u>(ii)</u>
A.	Rate	Rate
B.	Rate	Ratio
C.	Ratio	Rate
D.	Ratio	Ratio

34. [20-21 F.2 Final Exam #13]

The actual area of a sports field is $6\,000\text{ m}^2$. If the area of the sport field on the map is 3.75 cm^2 , then the scale of a map is

- A. 1 : 40.
- B. 1 : 1600.
- C. 1 : 4000.
- D. 1 : 16 000 000.

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