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

1. [11-12 F.2 S.Test #3]

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

A. 1 : 1 : 3 **B.** 1 : 3 : 1

C. 1 : 3 : 9 **D.** 1 : 4 : 3

2. [11-12 F.2 S.Test #7]

It is given that $\frac{1}{a} : \frac{1}{2} = \frac{3}{2} : \frac{b}{5}$. Find $a : b$.

A. 2 : 1 **B.** 3 : 20

C. 4 : 15 **D.** 15 : 4

3. [11 - 12 F.2 S.Test #8]

The distance between city *A* and city *B* on a map is 24 cm. It is given that the scale of the map is 1: 750 000. How long does it take a car traveling at $27\frac{7}{9}$ m/s to go from city *A* to city *B*?

A. 1 h 48 min **B.** 3 h

C. $138\frac{8}{9}$ h **D.** 180 h

4. [11 - 12 F.2 Mid-year Exam #4]

Katie drove for 5 hours at a rate of 60 km per hour and then another 2 hours at 100 km per hour. What was her average speed for the whole journey?

A. 32 km/h B. 71 km/h

C. 72 km/h D. 80 km/h

5. [11 - 12 F.2 Mid-year Exam #8]

Suppose we can exchange RMB 810 for HKD 1000 and USD 10 for HKD 78. How many RMB can we exchange for USD 120?

A. RMB 12 **B.** RMB 758

C. RMB 830 **D.** RMB 1156

6. [11 - 12 F.2 Mid-year Exam #13]

The speed of *a* and *b* are 30 m/s and 7.2 km/h respectively. Find $a : b$.

A. 1 : 15

B. 2 : 3

C. 3 : 2

D. 15 : 1

7. [11 - 12 F.2 Mid-year Exam #14]

If $2x = 5y$ and $\frac{2}{x} : \frac{5}{z} = 2:5$, $x:y:z =$

A. $1:2:1$.

B. $5:2:5$.

C. $4:10:25$.

D. $20:8:25$.

8. [11 - 12 F.2 Final Exam #1]

Emmy drives from A to B at 35 km/h for 48 minutes. On the return journey, she drives for 80 minutes. What is her driving speed on the return journey?

A. 21 km/h

B. 32.8 km/h

C. 37.3 km/h

D. 58.3 km/h

9. [11 - 12 F.2 Final Exam #2]

If $\frac{3a+6b}{5a-2b} = 5$, then $a:b =$

A. 4 : 11.

B. 8 : 11.

C. 11 : 4.

D. 11 : 8.

10. [12 - 13 S.2 S.Test 1 #1]

Which of the following is an appropriate unit of the speed limit of a highway?

A. km/h B. h/km

C. m/min D. km/min

11. [12 - 13 S.2 S.Test 1 #2]

If $\frac{1}{2} : a = 3:2b$, find a : b .

A. 1 : 3 B. 2 : 3

C. 3 : 1 D. 3 : 2

12. [12 - 13 S.2 S.Test 1 #7]

If $2x = 5y$ and $5(x-z) = 3x$, then $x:y:z =$

A. 2 : 2 : 5 . B. 2 : 5 : 2 .

C. 5 : 2 : 2 . D. 25 : 10 : 4.

13. [12 - 13 S.2 S.Test 1 #8]

A bridge is measured 7.5 cm in a photo in which the length of the bridge is $\frac{1}{10000}$ of its actual length. Find the scale of another photo if the length of the same bridge is 15 cm in it.

A. 1 : 500

B. 1 : 5 000

C. 1 cm : 100 m

D. 1 cm : 500 m

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

A telecommunication company offers four different plans of mobile phone services as below:

Plan	Monthly fee ($)	Airtime (min)
A	70	600
B	95	900
C	153	1450
D	200	1750

Which plan has the lowest rate in $/min?

A. Plan *A* **B.** Plan *B*

C. Plan *C* **D.** Plan *D*

15. [12 - 13 S.2 Mid-year Exam #9]

If $\frac{a-b}{a}=\frac{2}{3}$, then $a : b =$

A. 1 : 1. **B.** 1 : 3.

C. 3 : 1. **D.** 3 : 5.

16. [12 - 13 S.2 Mid-year Exam #17]

If $a : b = 1 : 2$ and $b : c = 3 : 4$, which of the following must be true?

I. $a : b : c = 3 : 6 : 8$

II. $\frac{1}{a} : \frac{1}{b} : \frac{1}{c} = 8 : 4 : 3$

III. $a : (a + b) : (a + b + c) = 3 : 9 : 17$

A. I only

B. I and II only

C. II and III only

D. I, II and III

17. [12 - 13 S.2 Mid-year Exam #20]

Amy and Betty finished a 10 km race in 1 hour 15 minutes and 50 minutes respectively. If they started the race at the same position and at the same time, find the distance between them after the race had started for 12 minutes.

A. 0.8 km **B.** 1.6 km
C. 2.4 km **D.** 4 km

18. [12 - 13 S.2 Final Exam Q1]

If $2p - \frac{1}{3}m = 0$, find $p : m$.

A. 1 : 6 **B.** 6 : 1
C. 2 : 3 **D.** 3 : 2

19. [12 - 13 S.2 Final Exam Q2]

Find the value of 3 km/h + 3 m/min.

A. 3.18 m/min **B.** 53 m/min
C. 100 m/min **D.** 883 m/min

20. [13 - 14 S.2 S.Test 1 #3]

If $a : b = \frac{1}{2} : \frac{1}{3}$ and $b : c = 3 : 5$, find $a : b : c$.

A. $1:3:5$
B. $2:3:5$
C. $3:2:5$
D. $9:6:10$

21. [13 - 14 S.2 S.Test 1 #4]

The scale of a map is 1 : 50,000. If the actual length of a highway is 20 km, find its length on the map.

A. 4 cm
B. 20 cm
C. 40 cm
D. 50 cm

22. [13 - 14 S.2 S.Test 1 #9]

\$580 is shared by Mickey and Minnie in the ratio of $7:3$. If Mickey gives \$58 to Minnie, find the ratio of the share of Mickey to the share of Minnie.

A. $2:1$
B. $3:2$
C. $5:2$
D. $6:5$

23. [13 - 14 S.2 S.Test 1 #10]

City A and city B are x km apart. Tiffany drives from city A to city B in y minutes. If she uses the same speed to drive from city B to city C which are z km apart, find the time required.

A. $\frac{zy}{x}$ hours

B. $\frac{xy}{z}$ hours

C. $\frac{60zy}{x}$ hours

D. $\frac{zy}{60x}$ hours

24. [13 - 14 S.2 Mid-year Exam #2]

Which of the following is NOT an example of rate?

A. $\frac{2\text{ m}}{10\text{ cm}}$ **B.** \$5 per kg

C. 38 students/class **D.** $\frac{14\text{ sweets}}{7\text{ children}}$

25. [13 - 14 S.2 Mid-year Exam #3]

If $a : b = 1 : 2$, which of the following must be true?

A. $a = 2b$ **B.** $a + b = 3$

C. $b = 2a$ **D.** $2a : b = 2 : 1$

26. [13 - 14 S.2 Mid-year Exam #17]

The numbers of boys and girls in a class were in the ratio of 7 : 6. There were 5 more boys than girls. Later, 2 boys had withdrawn. Find the new ratio of girls to boys in this class.

A. 5 : 6 **B.** 6 : 7

C. 10 : 11 **D.** 11 : 10

27. [13 - 14 S.2 Mid-year Exam #20]

Peter spent \$5,000 on buying some tiles to cover the entire rectangular floor of his bedroom at a cost of \$250/m^2. Which of the following are the possible dimensions of his bedroom on a floor plan of scale 1 : 200?

A. 2.5 cm × 2 cm **B.** 4 cm × 3 cm

C. 4 cm × 3.5 cm **D.** 5 cm × 4 cm

28. [13 - 14 S.6 Mock Exam #10]

40 cm^3 of a certain liquid containing alcohol and water in the ratio 3 : 2. How much water must be added to the liquid such that the new ratio of alcohol to water is 4 : 5?

A. 14 cm^3

B. 16 cm^3

C. 18 cm^3

D. 20 cm^3

29. [13 - 14 S.2 Final Exam #1]

If $x : y = 4 : 3$ and $z : y = 4 : 5$, find $x : y : z$.

A. 4 : 3 : 5 **B.** 12 : 15 : 20
C. 16 : 12 : 15 **D.** 20 : 15 : 12

30. [13-14 S.6 Mock Exam #10]

40 cm^3 of a certain liquid containing alcohol and water in the ratio 3 : 2. How much water must be added to the liquid such that the new ratio of alcohol to water is 4 : 5?

A. 14 cm^3
B. 16 cm^3
C. 18 cm^3
D. 20 cm^3

31. [14 - 15 S.2 Mid-Year Exam #1]

In a Mathematics test, Robin gets 102 marks. If the ratio of Robin's mark to Candy's mark is 6 : 5, how many marks does Candy get?

A. 85 **B.** 102
C. 119 **D.** 187

32. [14 - 15 S.2 Mid-Year Exam #2]

In a secondary school, there are 1269 students. It is given that the ratio of the number of teachers to the number of students is 3 : 47. How many teachers and students are there in the school altogether?

A. 1272
B. 1350
C. 1408
D. 1692

33. [14 - 15 S.2 Mid-Year Exam #11]

Usian Bolt, the world record holder of men's 100 m race, can finish 100 m in 9.58 seconds. Convert his speed in km/h.

A. 16.0 km/h
B. 34.5 km/h
C. 37.6 km/h
D. 57.5 km/h

34. [14-15 S.6 Mock Exam #8]

The ratio of weights of a mixture of two types of tea A and B of a new brand of tea is 5 : 7. If the cost of tea A and tea B are \$7 per kg and \$31 per kg respectively, then the average cost of the new brand of tea is

A. \$21 per kg.
B. \$22 per kg.
C. \$23 per kg.
D. \$24 per kg.

35. [14 - 15 S.2 Final Exam #4]

A job can be completed by 24 workers in 18 days. How many days does it take for 36 workers to complete the job?

A. 12 days **B.** 18 days
C. 27 days **D.** 48 days

36. [14 - 15 S.2 Final Exam #13]

If $3:(h-3)=5:(2k-5)$, $h:k=$

A. $1:2$. **B.** $2:1$.
C. $5:6$. **D.** $6:5$.

37. [15-16 S.2 Mid-year Exam #6]

Angel, Betty and Candy share a sum of money in the ratio of 4 : 3 : 2. If Candy's share is \$250, the sum of money is

A. \$625.
B. \$750.
C. \$875.
D. \$1125.

38. [15-16 S.2 Mid-year Exam #17]

The running speed of Jane is 3 times her walking speed. She has to run 12 minutes and walk for 4 minutes to finish 6 laps of a 400 m circular track. Find her average speed for 6 laps.

A. 9 km/h
B. 60 m/min
C. 120 m/min
D. 150 km/h

39. [15-16 S.2 Mid-year Exam #19]

It is given that $a : b : c = 1 : 2 : 3$ and $\frac{1}{a}+\frac{1}{b}+\frac{1}{c}=33$. Find the value of $\frac{1}{a}-\frac{1}{b}-\frac{1}{c}$.

A. -4

B. $\frac{1}{6}$

C. 1

D. 3

40. [15-16 S.2 Final Exam #2]

It is given that $A : B = B : C = 2 : 3$, then $A : C =$

A. 2 : 3.

B. 3 : 2.

C. 4 : 9.

D. 9 : 4.

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