

S1

Mathematics

Exam Past Paper (1314–2223)

Question Book

Ch7 Percentage (I)

UCCKE F1 Ch7 Percentage (I)

Ch7 Percentage (I)

[1314 S.1 1st Exam MC Q6]

1. Daniel bought a cell phone at \$ x and then sold it to Steven at \$ y . Daniel suffered a loss of \$ z . Which of the following statements is true?
- A. $x > y$
 - B. $x + y = z$
 - C. $y - x = z$
 - D. Loss per cent = $\frac{z}{y} \times 100\%$

[1314 S.1 1st Exam Enhanced Question Q2]

2. (a) Find the value of $\left[5\left(1 + \frac{1}{7}\right) - \frac{5}{7}\right] \div \frac{5}{7}$.
- (b) Simplify $\left[a\left(1 + \frac{1}{b}\right) - \frac{a}{b}\right] \div \frac{a}{b}$.
- (c) If Mr. Lau buys a book for $\frac{a}{b}$ dollars and then he sells it for $a\left(1 + \frac{1}{b}\right)$ dollars. Mr. Lau makes a profit for 20%, find the value of b .
- (d) If Mr. Lau makes a profit of 30 dollars, find the selling price. (10 marks)

[1314 S.1 1st Exam Enhanced Question Q3]

3. Mrs. Cheung wants to buy a jacket with marked price of \$300 and a discount of 10%. She can use one of the following methods to pay for the jacket:

I. Use her VIP card to get an extra 20% discount on the selling price.

II. Use a cash coupon of \$50.

(a) Calculate the discount per cent of the final selling price of each of the above methods.

(b) Which method should Mrs. Cheung use? Explain your answer.

(5 marks)

[1314 S.1 3rd Exam MC Q1]

4. The table below shows the number of students in UCCKE in last year and this year.

	Last year	This year
Number of boys	400	500
Number of girls	600	500

Which of the following statements are true?

I. Last year, the number of boys is $66\frac{2}{3}\%$ of the number of girls.

II. This year, the number of boys is 50% of the total number of students.

III. Percentage increase in the number of boys = Percentage decrease in the number of girls

A. I and II only

B. I and III only

C. II and III only

D. I, II and III

[1314 S.1 3rd Exam MC Q2]

5. A man donated 10% of his savings to build a school and then gave 40% of the rest of his savings to his son. What percentage of his savings did he remain?
- A. 46%
 - B. 50%
 - C. 54%
 - D. 60%

[1415 S.1 2nd Exam MC Q7]

6. Given that a is a positive number, which of the following expressions gives the largest value?
- A. $a \times (1 + 10\%)$
 - B. $a \div (1 - 10\%)$
 - C. $a \div (1 + 10\%)$
 - D. $a \times (1 - 10\%)$

[1415 S.1 2nd Exam MC Q8]

7. Which of the following are **NOT** true?

- I. $50\% \div 5\% = 10\%$.
- II. $20\% \times 5\% = 100\%$.
- III. $30\% + 70\% = 1$.

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

[1415 S.1 2nd Exam SQ Q7]

8. There are 30 students in a class. It is known that the number of boys is 12. Find the percentage of girls in the class. (3 marks)

[1415 S.1 2nd Exam Enhanced Question Q3]

9. The marked price of a cell phone was \$5000. It was sold at a discount of 10% and the profit percent was 12.5%.

- (a) Find the selling price of the cell phone. (1 mark)
- (b) Find the cost price of the cell phone. (2 marks)
- (c) If the cell phone was sold at the marked price, what would be the profit percent? (2 marks)

Bonus part:

- (d) The cost price of an item is \$ c . If it is sold at a discount of 20%, the profit per cent will be 20%. Express the marked price in terms of c .

(2 marks)

[1415 S.1 3rd Exam MC Q9]

10. The length and the width of a rectangle increases by 30% and decreases by 30% respectively. Find the percentage change in the area of the rectangle.

- A. - 9%
- B. - 6%
- C. No change
- D. + 9%

[1415 S.1 3rd Exam MC Q10]

11. Alice and nine friends are going to have a buffet lunch in a hotel. The hotel offers a promotion plan of “buy 3 get 1 free” for the buffet, find the discount per cent for each person.

- A. 12%
- B. 20%
- C. 22.2%
- D. 25%

[1415 S.1 3rd Exam SQ Q1]

12. There are 60 girls and 40 boys attending a test. It is known that 80% of the girls pass and 15% of the boys fail the test.

- (a) Write down the percentage of girls failed. (1 mark)
- (b) Find the percentage of students failed. (2 marks)

[1516 S.1 2nd Exam MC Q3]

13. Which of the following expressions is NOT equal to 0.2?

- A. $\frac{1}{5}$
- B. $100\% \times 0.2$
- C. 20%
- D. $1 - 0.8\%$

[1516 S.1 2nd Exam SQ Q3]

14. Mr. Ho bought a watch for \$2500 and sold it for \$1750. Find the loss per cent. (3 marks)

[1516 S.1 2nd Exam SQ Q4]

15. The number of students in UCCKE was x last year. It is known that the number of students increased by 15% and there are 920 students in this year. Find x .

(3 marks)

[1516 S.1 2nd Exam Enhanced Question Q2]

16. The marked price of a cell phone is \$5000.

(a) If it is sold at a discount of 40%, the profit per cent will be 50%. Find the cost of the cell phone.

(3 marks)

(b) If it is sold at a discount of $d\%$, there will be no profit or loss. Find d .

(2 marks)

[1617 S.1 2nd Exam MC Q2]

17. Which of the following is / are correct?

I. $30\% + 70\% = 1$

II. $20\% \times 5\% = 100\%$

III. $50\% \div 5\% = 10\%$

A. I only

B. I and II only

C. I and III only

D. II and III only

[1617 S.1 2nd Exam SQ Q13]

18. In a company, there are 156 junior staff members. It is known that 40% of the staff members are senior staff members. Find the total number of staff members in the company. (3 marks)

[1617 S.1 2nd Exam SQ Q14]

19. There are 250 books on the bookshelf.

- (a) Janice takes away 6% of the books. How many books are there on the bookshelf now? (1 mark)
- (b) After Janice took away the books, she put 20 books back to the bookshelf. Find the overall percentage change in the number of books on the bookshelf. (2 marks)

[1617 S.1 2nd Exam Enhanced Question Q21]

20. In an electrical shop, if a customer buys an item with a bank A credit card, he/she will get a discount of 14%. Miss Lee buys an air-conditioner in the shop with bank A credit card. She pays \$4988 for the air-conditioner.

- (a) Find the marked price of the air-conditioner.
- (b) Hugo is a VIP of the shop, and so he can get a further discount of 10%. Find the overall discount percent if he buys the air-conditioner with bank A credit card?

(5 marks)

[1617 S.1 3rd Exam MC Q1]

21. If x is half of y , then

- A. x is $\frac{1}{50}$ of y .
- B. x is 100% of y .
- C. y is $\frac{1}{2}$ of x .
- D. y is 200% of x .

[1617 S.1 3rd Exam MC Q9]

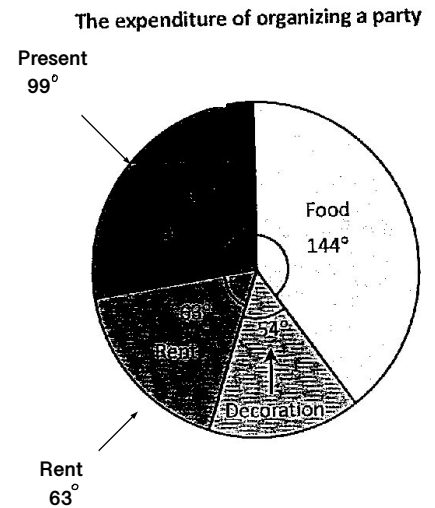
22. A box of chocolates was sold for \$150, with a percentage loss of 20%. Find the cost of this box of chocolates.

- A. \$120
- B. \$125
- C. \$180
- D. \$187.5

[1617 S.1 3rd Exam SQ Q17]

23. The pie chart below shows the expenditure of organizing a party.

- (a) What percentage of the total expenditure is spent on food? (2 marks)
- (b) If the total expenditure of the party is \$10 800, find the expenditure on rent. (2 marks)



[1718 S.1 3rd Exam MC Q5]

24. Arrange the numbers $\frac{1}{3}$, 0.3 and 33% in descending order.

- A. $\frac{1}{3}$, 0.3, 33%
- B. $\frac{1}{3}$, 33%, 0.3
- C. 33%, $\frac{1}{3}$, 0.3
- D. 0.3, 33%, $\frac{1}{3}$

[1718 S.1 3rd Exam EQ Q19]

25. Mr. Leung bought 560 apples. He marked the price of the apples at \$6 each and he sold only 350 apples in the market.

(a) Find the percentage of apples that Mr. Leung has sold. (2 marks)

(b) Mr. Leung then sold all the remaining apples to Mr. Fung at a 30% discount of the marked price.

(i) Find the amount that Mr. Fung should pay. (2 marks)

(ii) If the overall profit percent of Mr. Leung was 20%, find the total cost of the apples.

(3 marks)

(iii) Mr. Fung found that half of the apples are rotten. So, he wants to give a special offer with “buy 4 get 1 free”. It is known that there will be no profit or loss after selling the remaining apples.

Find the marked price of each apple.

(3 marks)

[1819 S.1 3rd Exam MC Q5]

26. In a test, 40% of students in a class fail. The students who fail the test need to retake the test. In the 1st test, 70% of them pass. Find the percentage of students in the class who fail both tests.

A. 28%

B. 21%

C. 18%

D. 12%

[1819 S.1 3rd Exam MC Q13]

27. Which of the following offers the greatest discount per cent?

- A. Buy 7 get 3 free
- B. Buy 5 get 2 free
- C. Buy 2 get 1 free
- D. 30% off

[1819 S.1 3rd Exam AQ Q27]

28. Danny is a cake shop owner. He bought 200 cakes for \$6 each and then put every 4 cakes into a box. The marked price of each box of cakes is \$36.

(a) Suppose that he sold all the cakes at the marked price.

(i) Find the profit.

(ii) Find the profit per cent.

(3 marks)

(b) If he only sold 30 boxes of cakes at the marked price by the end of the day, he then decided to discard x molded cakes and re-pack 6 cakes into one box. On the next day, he sells them at a discount of 60% of the marked price per box as before. Suppose that he sells all the packed cakes and does not make a loss. Find the maximum value of x .

(3 marks)

[1920 S.1 Exam MC Q10]

29. The salary of Alison this month is \$18 600, which is \$1400 less than the salary last month. Find the percentage change in her monthly salary.

- A. -7.5%
- B. -7%
- C. $+7\%$
- D. $+7.5\%$

[1920 S.1 Exam MC Q11]

30. Wesley deposits $\$P$ in a bank at an interest rate of 3% p.a. What is the amount that he will get after 18 months?

- A. $\$1.03P$
- B. $\$1.04P$
- C. $\$1.045P$
- D. $\$1.45P$

[1920 S.1 Exam BQ Q5]

31. The number of teachers in UCCKE last year was 105. It is known that the percentage increase in the number of teachers is 20% this year. Find the number of teachers in UCCKE this year. (2 marks)

[1920 S.1 Exam BQ Q6]

32. Ryan spent \$42 to buy snacks, which is 35% of the money in his wallet. Find the amount of money originally in his wallet. (2 marks)

[1920 S.1 Exam AQ Q15]

33. The marked price of a box of surgical mask is 22% higher than its cost price. If it is then sold at a $x\%$ discount, the selling price will be \$73.2 and there will be a loss of 2.4%.

(a) Find the cost price of the box of surgical mask.

(2 marks)

(b) Find x .

(3 marks)

[2021 S.1 WSUT MC Q6]

34. Daniel scored 80 marks in a test. If Ivan's score is 15% lower than Daniel's score, find Ivan's score.

A. 65 marks

B. 68 marks

C. 92 marks

D. 94 marks

[2021 S.1 WSUT MC Q7]

35. Serena sold two iPads for \$6000 each. She gained 20% on one and lost 20% on the other. After the two transactions, Serena

A. lost \$500.

B. lost \$250.

C. gained \$500.

D. had no gain and no loss.

[2021 S.1 WSUT MC Q8]

36. The marked price of a handbag is 40% above the cost price. If the handbag is sold at a discount of 20% on the marked price, then the profit percent is

A. 8%.

B. 12%.

C. 20%.

D. 28%.

[2021 S.1 WSUT BQ Q13]

37. There are 375 students in a hall, where 18 of them with surname 'Lee' and 24 of them with surname 'Wong'.

(a) Find the percentage of students in the hall with surname 'Lee'. (1 mark)

(b) Find the percentage of students in the hall who are not with surname 'Lee' or 'Wong'. (2 marks)

[2021 S.1 WSUT BQ Q14]

38. Last month, the price of a notebook computer was \$8800. If the price is changed to \$8272 this month, find

(a) the change in the price of the notebook computer. (1 mark)

(b) the percentage change in the price of the notebook computer. (2 marks)

[2021 S.1 WSUT IQ Q18]

39. A pair of shoes is sold at a discount of 25% on its marked price. The selling price is \$570.

(a) Find the marked price of the pair of shoes. (2 marks)

(b) After selling the pair of shoes, the profit percent is 20%. Find the cost price of the pair of shoes. (2 marks)

[2021 S.1 WSUT AQ Q21]

40. 1L of Mocktail X is a mixture of orange juice and apple juice, in which orange juice occupies 40% of Mocktail X by volume. A certain volume of orange juice is added to Mocktail X to make Mocktail Y . And the same volume of apple juice is added to Mocktail X to make Mocktail Z . It is known that the percentage of orange juice in Mocktail Y is greater than the percentage of orange juice in Mocktail Z by $16\frac{2}{3}\%$. Find the volume of orange juice added to Mocktail X to make Mocktail Y . (5 marks)

[2021 S.1 Final Exam BQ Q5]

41. If 240 is decreased to 108, find the percentage decrease. (2 marks)

[2021 S.1 Final Exam IQ Q11]

42. A book is sold at a discount of 40% and a profit of 20% is made. If the marked price of the book is \$300, find its cost price. (3 marks)

[2021 S.1 Final Exam MC Q7]

43. There are 6 black balls and 10 white balls in a basket. What is the percentage of black balls in the basket?
- A. 37.5%
 - B. 40%
 - C. 60%
 - D. 62.5%

[2021 S.1 Final Exam MC Q8]

44. There are 30 girls in a classroom. If 60% of the students in the classroom are boys, how many boys are there in the classroom?
- A. 12
 - B. 18
 - C. 45
 - D. 75

[2122 S.1 WSUT MC Q2]

45. Carol has \$20. She spends 40% of her money to buy a book. How much does she have left?
- A. \$14
 - B. \$12
 - C. \$10
 - D. \$8

[2122 S.1 WSUT MC Q7]

46. There are 6 apples and 8 oranges on a table. If I want apples to be 50% of the total fruits on the table, I should
- A. take away 2 apples from the table.
 - B. take away 2 oranges from the table.
 - C. put 4 more oranges on the table.
 - D. put 4 more apples on the table.

[2122 S.1 WSUT MC Q10]

47. After a 10% service charge is added to a restaurant bill, a 7% credit card discount is applied. What is the percentage change of the bill total?
- A. 2.3%
 - B. -2.3%
 - C. 3%
 - D. -3%

[2122 S.1 WSUT BQ Q13]

48. Part of a sales receipt from a purchase is given below.

XYZ Supermarket			
Date: 22/2/2022			
Item	Marked Price/\$	Discount	Final Price/\$
1L Water	9	20%	7.2
500g Sugar	14	15%	11.9
6×Lemon Tea	16	5%	15.2

Find the overall discount in this purchase.

(2 marks)

[2122 S.1 WSUT BQ Q14]

49. Out of 700 students in a school, 175 of them are members of the Japanese club. 80% of the club members love sushi.

- (a) Find the number of Japanese club members who love sushi. (2 marks)
- (b) Find the percentage of students in the school who are members of the Japanese club and do NOT love sushi. (2 marks)

[2122 S.1 WSUT IQ Q17]

50. Natasha wrote three quizzes this session. She scored 75 in the second quiz but her score decreased by 15 in the third quiz.

- (a) Find the percentage change in her score from the second to the third quiz. (2 marks)
- (b) We also know that her score in the third quiz is 25% more than that of in the first quiz.
Find her score in the first quiz. (2 marks)

[2122 S.1 WSUT AQ Q20]

51. Adam decided to sell his bicycle. He marked it for sale at 25% higher than cost, and ended up giving a discount of 5%. He still made a profit of \$135.

Let the marked price of the bicycle be \$ x .

- (a) Express the cost of the bicycle in terms of x . (1 mark)
- (b) Hence, or otherwise, find the profit percentage. (4 marks)

[2122 S.1 Final Exam BQ Q5]

52. There are 800 students in total in a school. 80% of the students have received a vaccine shot. Find the number of students who have not received any vaccine shots at all. (2 marks)

[2122 S.1 Final Exam IQ Q12]

53. The marked price of a pair of headphones is \$250. It is sold at a discount of \$40. After selling the pair of headphones, a profit percent of 25% is made. Find the cost price of the headphones. (3 marks)

[2122 S.1 Final Exam MC Q5]

54. In the subject of mathematics, Ani achieved a grand total mark of 80 last year and a grand total of only 66 this year. What is the percentage change in his grand total mark?

- A. 17.5%
- B. 21.2%
- C. -17.5%
- D. -21.2%

[2122 S.1 Final Exam MC Q6]

55. Consider two values A and B . If A is 12.5% more than B , then B is

- A. 12.5% more than A .
- B. 12.5% less than A .
- C. 11.1% more than A .
- D. 11.1% less than A .

[2223 S.1 WSUT MC Q2]

56. 12% of x is 36, find the value of x .

- A. 4.32
- B. 31.68
- C. 300
- D. 432

[2223 S.1 WSUT MC Q3]

57. The price of a necklace is changed from \$200 to \$150. The percentage change in the price is

- A. -25%.
- B. -75%.
- C. +25%.
- D. +75%.

[2223 S.1 WSUT MC Q7]

58. Andy sold a vase to Billy at a profit of 10% and Billy then sold it to Carmen at a loss of 15%. If Carmen pays \$1122 for the vase, find the profit made by Andy.
- A. \$120
 - B. \$680
 - C. \$748
 - D. \$1200

[2223 S.1 WSUT MC Q10]

59. A hamburger shop promotes a new hamburger. Customers who buy the new hamburger can buy a second hamburger at half price. What is the overall discount per cent if Clara buys 2 such hamburgers?
- A. 20%
 - B. 25%
 - C. 50%
 - D. 75%

[2223 S.1 WSUT BQ Q13]

60. David wants to buy a bookshelf. The marked price of bookshelf *A* is \$1250 and it is sold at a discount of 20%. The marked price of bookshelf *B* is \$1100 and it is sold at a discount of \$110. If David would like to buy a bookshelf with a lower selling price, which bookshelf should he buy? (4 marks)

[2223 S.1 WSUT BQ Q14]

61. If Dorothy cuts off 8% of the length of a piece of ribbon, it will become 69 cm long. Find the original length of the piece of ribbon. (2 marks)

[2223 S.1 WSUT BQ Q15]

62. Bryan bought a heater for \$800. Later, he sold the heater to a recycling company at a loss of 85%. Find his loss. (2 marks)

[2223 S.1 WSUT IQ Q18]

63. The length and the width of a rectangle are 5 cm and 4 cm respectively. The length is increased by 20% while the width is decreased by 20%. Paul claims that the percentage change in the area of the rectangle is 0%. Do you agree? Explain your answer. (5 marks)

[2223 S.1 Final Exam MC Q5]

64. The cost price of a dress is \$240. It is sold at a profit of 40%. Find the selling price.
- A. \$96
 - B. \$144
 - C. \$336
 - D. \$384

[2223 S.1 Final Exam MC Q13]

65. If X is 80% of Y , then Y is
- A. 20% of X .
 - B. 25% of X .
 - C. 80% of X .
 - D. 125% of X .

[2223 S.1 Final Exam BQ Q3]

66. The volume of a canned drink is reduced by 35 mL. If the percentage decrease is 10%, find

(a) the original volume of the canned drink,

(2 marks)

(b) the new volume of the canned drink.

(1 mark)