

GHS Sorted Past Paper - MC
S1-07 Percentages (I)

1. [20 - 21 S1 Final Exam - 09] (92%)

9. 120% of P is 60. Find the value of P .

- A. 50
- B. 56
- C. 72
- D. 300

2. [20 - 21 S1 Final Exam - 22] (54%)

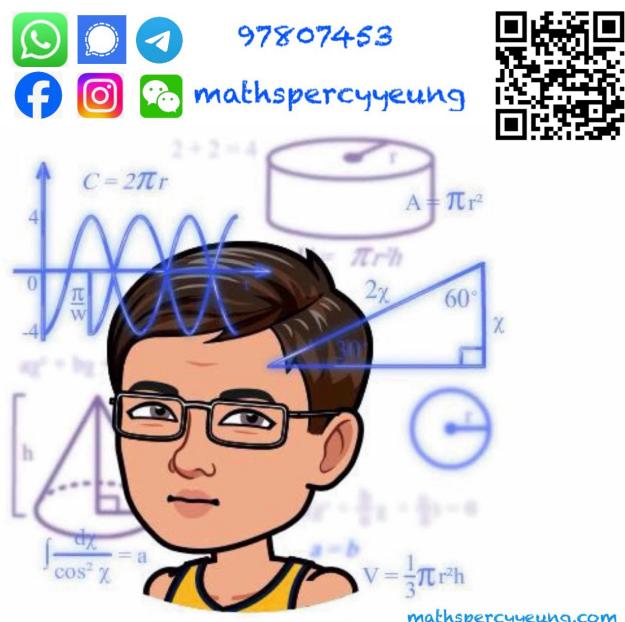
22. Mary sold a fiction at a loss of 10% and a comic at a profit of 15%. If the cost prices of the two books are the same, find the overall profit or loss percent.

- A. overall loss percent of 2.5%
- B. overall profit percent of 2.5%
- C. overall loss percent of 5%
- D. overall profit percent of 5%

3. [20 - 21 S1 Standardized Test - 04] (95%)

4. There are 800 students in a school and 40% of them are girls. Find the number of boys in the school.

- A. 160
- B. 320
- C. 480
- D. 640



4. [20 - 21 S1 Standardized Test - 06] (55%)

6. The marked price of a piano is \$4000. If the piano is sold at the marked price, the profit percent is 60%. If the piano is sold at a discount of 10%, find the profit.

- A. \$1100
- B. \$1500
- C. \$2500
- D. \$3600

5. [21 - 22 S1 Final Exam - 06] (98%)

6. In term one, there are 600 girls and 490 boys in a school. In term two, the number of girls and boys is more than that in term one by 20% and 40% respectively. Find the total number of students in term two.

- A. 1308
- B. 1406
- C. 1567
- D. 1744

6. [21 - 22 S1 Final Exam - 16] (71%)

16. Peter bought a book at a discount of 15% and he saved \$60. What is the selling price of the book?

- A. \$280
- B. \$340
- C. \$400
- D. \$460

7. [22 - 23 S1 Final Exam - 07] (91%)

7. 250 students received the scholarship last year. If there are 225 students receiving the scholarship this year, the number of students receiving the scholarship is

- A.** increased by 10% .
- B.** decreased by 10% .
- C.** increased by 11.1% .
- D.** decreased by 11.1% .

8. [22 - 23 S1 Final Exam - 15] (74%)

15. In a pet shop, 60% of the animals are dogs and the rest are cats. If 30% of the dogs and 15% of the cats have completed all vaccinations, what is the percentage of animals in this pet shop which have not completed all vaccinations?

- A.** 93%
- B.** 76%
- C.** 24%
- D.** 18%

9. [22 - 23 S1 Standardized Test - 01] (92%)

1. 40% of x is 16. Find x .

- A.** 6.4
- B.** 9.6
- C.** 40
- D.** 64

10. [22 - 23 S1 Standardized Test - 02] (78%)

2. A is 25% greater than B . If $B = 30$, then

$$A =$$

- A. 22.5.
- B. 24.
- C. 37.5.
- D. 40.

11. [22 - 23 S1 Standardized Test - 06] (51%)

6. The length of a side of a square is x cm originally. If it is increased by 20%, find the percentage change in the area of square.

- A. 4%
- B. 20%
- C. 40%
- D. 44%

12. [22 - 23 S1 Standardized Test - 07] (42%)

7. Bobby sells two wallets for \$910 each. He gains 30% on one and loses 30% on the other. After the two transactions, Bobby

- A. loses \$180.
- B. loses \$63.
- C. gains \$180.
- D. has no gain and no loss.

13. [23 - 24 S1 Final Exam - 02] (86%)

2. If P is increased by 30% and the increase is 90. $P =$

- A.** 27.
- B.** 69.
- C.** 117.
- D.** 300.

14. [23 - 24 S1 Final Exam - 03] (77%)

3. A book is sold for \$99 with a loss of 10%. The cost of the book is

- A.** \$89.1.
- B.** \$90.
- C.** \$108.9.
- D.** \$110.

15. [23 - 24 S1 Final Exam - 18] (49%)

18. If A is 25% more than B , which of the following is/are true?

- I. B is 1.25 times of A .
- II. The difference of A and B is 25% of B .
- III. B is 20% less than A .

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

16. [23 - 24 S1 Standardized Test - 03] (97%)

3. If 36% of P is 54, then $P =$

- A.** 19.
- B.** 74.
- C.** 132.
- D.** 150.

17. [23 - 24 S1 Standardized Test - 04] (97%)

4. During a sale, a computer marked at \$8600 is sold at a discount of 15%. Find the selling price of the computer.

- A.** \$1290
- B.** \$6450
- C.** \$7310
- D.** \$7740

18. [23 - 24 S1 Standardized Test - 09] (37%)

9. If x is 60% more than y , then y is

- A.** 62.5% less than x .
- B.** 60% less than x .
- C.** 45% less than x .
- D.** 37.5% less than x .

19. [24 - 25 S1 Final Exam - 07] (73%)

7. After spending \$5 to buy an ice-cream, Patrick's wallet has \$20 left. Find the percentage change in the amount of money in Patrick's wallet.

- A.** -25%
- B.** -20%
- C.** 20%
- D.** 25%

20. [24 - 25 S1 Final Exam - 17] (54%)

17. Tommy sells two items for \$495 each. He gains 10% on one and loses 10% on the other. After the two transactions, Tommy

- A.** has no gain and no loss.
- B.** makes an overall profit of 1%.
- C.** suffers an overall loss of 1%.
- D.** suffers an overall loss of 5%.

21. [24 - 25 S1 Standardized Test - 03] (95%)

3. If 40% of x is 240, then $x =$

- A.** 96.
- B.** 336.
- C.** 400.
- D.** 600.

22. [24 - 25 S1 Standardized Test - 04] (84%)

4. Bobby got 80 marks in a test last month. In this month, he gets 75 marks. The percentage change in his marks from last month to this month is

- A.** 6.67%.
- B.** 6.25%.
- C.** -6.25%.
- D.** -6.67%.

23. [24 - 25 S1 Standardized Test - 08] (58%)

8. Alfred sells two watches for \$1200 each. He gains 20% on one and loses 20% on the other. After the two transactions, Alfred

- A. loses \$240.
- B. loses \$100.
- C. gains \$480.
- D. has no gain and no loss.

24. [24 - 25 S1 Final Exam - 19] (85%)

19. The base area and the height of a tank in the shape of right prism are 30 cm^2 and 12 cm respectively. The volume of the water is 60% of the capacity of the tank. Some marbles are put into the tank and they are totally submerged in water. If the volume of each marble is 15 cm^3 , find the minimum number of marbles needed so that the water will overflow.

- A. 8
- B. 9
- C. 10
- D. 11

25. [23 - 24 S3 Final Exam - 03] (80%)

3. The length and width of rectangle $ABCD$ is $x \text{ cm}$ and $y \text{ cm}$ respectively. If the length is increased by 25% and the width is decreased by 25%, find the percentage decrease of the area of rectangle $ABCD$.

- A. 0%
- B. 5.75%
- C. 6.25%
- D. 93.75%

26. [22 - 23 S4 Mid-year Exam - 03] (75%)

3. The income of Amy is 10% more than that of Betty while the income of Betty is 10% less than that of Candy. It is given that the income of Amy is \$19 800. The income of Candy is

- A. \$ 19 602 .
- B. \$ 19 800 .
- C. \$ 20 000 .
- D. \$ 23 760 .

27. [24 - 25 S4 Final Exam - 03] (62%)

3. The marked price of a Usagi doll is 80% above its cost. A profit of \$186 is made by selling the Usagi doll at a discount of 10% on its marked price. Find the selling price of the Usagi doll.

- A. \$ 300
- B. \$ 354
- C. \$ 486
- D. \$ 540

28. [20 - 21 S5 Final Exam - 10] (92%)

10. There are 120 red balls and some blue balls in a bag. If the number of red balls is 25% more than that of blue balls, find the total number of balls in the bag.

- A. 210
- B. 216
- C. 270
- D. 280

29. [24 - 25 S5 Final Exam - 12] (48%)

12. In a school, 36% of the students wear glasses. It is given that 40% of the students in the school are boys and 70% of the boys do not wear glasses. If $x\%$ of the girls in the school wear glasses, then $x =$

- A. 24.
- B. 40.
- C. 45.
- D. 50.

30. [22 - 23 S6 Mock Exam - 12] (87%)

12. If a book is sold at its marked price, then the percentage profit is 30%. If the book is sold at a 25% discount on its marked price, then the loss is \$8. Find the cost of the book.

A. \$160
B. \$240
C. \$320
D. \$360

31. [24 - 25 S1 Final Exam - 18] (33%)

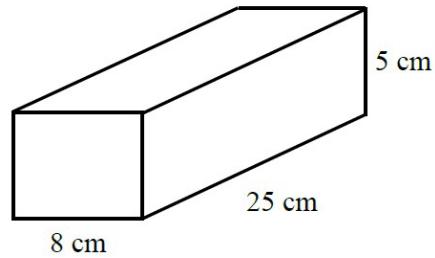
18. There are two right prisms X and Y . The base area of X is 50% larger than that of Y , while the height of Y is 25% shorter than that of X . If the volume of X is 120 cm^3 , then the volume of Y is

A. 15 cm^3 .
B. 30 cm^3 .
C. 45 cm^3 .
D. 60 cm^3 .

32. [20 - 21 S1 Final Exam - 18] (56%)

18. A cube is melted and recast to the solid metal cuboid as shown below. Find the percentage change in the total surface area.

A. 17.8%
B. 21.7%
C. -17.8%
D. -21.7%



33. [22 - 23 S4 Final Exam - 01] (93%)

1. The mean price of ten selected items is \$780. In a sale, all the selected items are sold at a discount of 30%, find the mean price of these selected items in the sale.

A. \$234
B. \$546
C. \$780
D. \$1014

GHS Sorted Past Paper - Conventional Questions

S1-07 Percentages (I)

1. [20 - 21 S1 Final Exam - 05]
5. After a series of training, the time for Samuel to complete a 200 m race changes from 30 s to 27 s. Find the percentage change in the time for Samuel to complete a 200 m race. **(2 marks)**

2. [20 - 21 S1 Final Exam - 17]

17. $A(-18, 11)$, $B(-18, -8)$, $C(10, -8)$ and $D(14, 0)$ are four points in a rectangular coordinate plane as shown in **Figure 7**.

(a) Find the area of the quadrilateral $ABCD$. **(3 marks)**
(b) If D is translated upward to point E such that $ABCE$ becomes a trapezium, write down the coordinates of E . **(1 mark)**

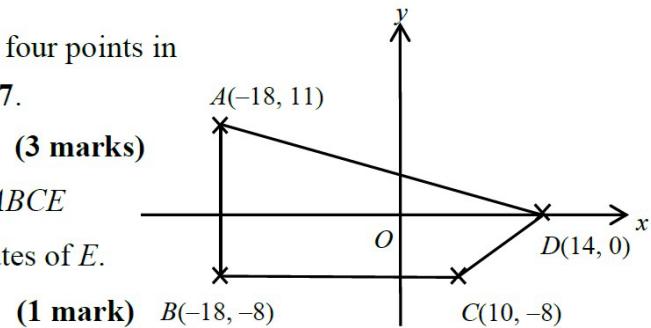


Figure 7

3. [20 - 21 S1 Final Exam - 21]

21. Shop A offers a discount of “Buy 6 Get 1 Free” on buying a particular brand of toy cars. Shop B offers a discount of 20% on buying the same brand of toy cars with the same marked price. If you want to take seven toy cars and make the payment, which shop will you choose? Explain your answer. **(3 marks)**

4. [20 - 21 S1 Standardized Test - 04]

4. In a tutorial class, the tuition fee for each student increased from \$250 to \$310. However, the number of students enrolled in the tutorial class decreased from 15 to 12. Find the percentage change of the total tuition fee of the tutorial class. **(3 marks)**

5. [21 - 22 S1 Final Exam - 09] (31%)

9. The selling price of a Chinese book is \$46 and it is sold at a loss of \$12.

(a) Find the cost price of the Chinese book. **(1 mark)**

(b) Ben bought the Chinese book at the cost price found in (a) and Candy bought an English book. The selling price of the English book is 2 times that of the Chinese book. Ben and Candy made an overall profit of 15% on selling the two books together.

(i) Find the cost price of the English book. **(2 marks)**

(ii) What is the profit or loss percentage Candy made by selling the English book? (Give your answer in 3 significant figures if necessary). **(2 marks)**

6. [21 - 22 S1 Final Exam - 13] (23%)

13. **Figure 6** shows a right prism, which is a tank containing some water. The wet surface area of the tank is 916 cm^2 . It is given that the perimeter of the base is 38 cm and the base area is 80 cm^2 .

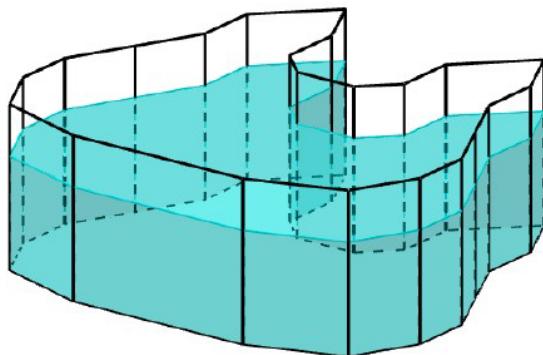


Figure 6

(a) Find the height of the water level. **(2 marks)**

(b) Initially, 88% of the capacity of the tank was filled with water. Dan claims that the water would overflow if he put 50 identical marbles of 5 cm^3 each into the tank and all are immersed in the water. Do you agree with his claim? Explain your answer. **(4 marks)**

7. [22 - 23 S1 Final Exam - 09] (55%)

9. A shirt is sold for \$189 at a profit of 5%.

(a) Find the cost price of the shirt. **(2 marks)**

(b) If the cost price of the shirt is 10% lower than its marked price, find the discount percent of the shirt. **(3 marks)**

8. [22 - 23 S1 Final Exam - 15] (41%)

15. Andy is 160 cm tall. It is given that Andy is 25% taller than Ben and Ben is 20% shorter than Calvin. Andy claims that he is taller than Calvin. Do you agree? Explain your answer.

(2 marks)

9. [22 - 23 S1 Standardized Test - 01] (84%)

1. In a company of 800 employees, 35% of the employees are female. It is known that 60% of the male employees and 70% of the female employees are married.

(a) Find the number of married male employees. **(2 marks)**

(b) Find the percentage of married employees. **(3 marks)**

10. [22 - 23 S1 Standardized Test - 05] (80%)

5. The marked price of a book is 28% greater than the cost price. The book is sold at a 15% discount on its marked price. If the book is sold for \$544, find the cost price. **(3 marks)**

11. [23 - 24 S1 Final Exam - 11] (72%)

11. It is given that the marked price of a phone in a shop is \$8 000. In a sale, the phone is sold at 20% discount and the profit percent is 60%.

(a) Find the cost price of the phone. **(3 marks)**

(b) If the phone is sold at 10% discount instead, find the profit percent in selling the phone. **(2 marks)**

12. [23 - 24 S1 Standardized Test - 03] (97%)

3. In 2022, the number of babies born in a city is 5000. If the number of babies born in 2023 is decreased by 15%, how many babies were born in 2023? **(2 marks)**

13. [23 - 24 S1 Standardized Test - 06] (75%)

6. In a shop, the cost of a calculator is \$290. Suppose the shop sells a calculator at a loss of 20%.

(a) Find the selling price of a calculator.

(b) By what percent should the selling price be increased such that the shop will gain at 10% profit after selling a calculator? **(4 marks)**

14. [24 - 25 S1 Final Exam - 03] (91%)

3. Convert 2.15 into percentage.

(1 mark)

15. [24 - 25 S1 Final Exam - 04] (97%)

4. There are 800 students in a school, in which 35% of them are female. Write down the number of male students.

_____ (1 mark)

16. [24 - 25 S1 Final Exam - 18] (41%)

18. The volume of a stone is 950 cm^3 . The stone is placed inside a right rectangular tank as shown in **Figure 4**. Some water is filled later so that the stone is totally submerged into the water and the depth of water reaches 10 cm.

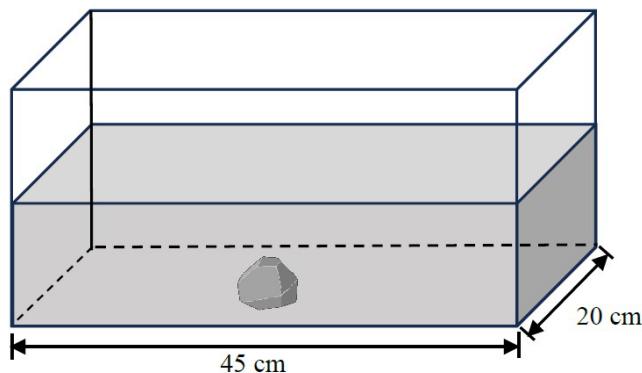


Figure 4

(a) Find the volume of water filled. (2 marks)

(b) The stone is removed afterwards. Benjamin claims that the percentage decrease of the wet lateral surface area of the tank is less than 10%. Do you agree? Explain your answer. (3 marks)

17. [24 - 25 S1 Final Exam - 21] (24%)

21. If a phone is sold at its marked price, the shop owner will make a 20% profit. The shop owner earns \$252 if a 12% discount is offered. Find the marked price of the phone. (4 marks)

18. [24 - 25 S1 Standardized Test - 02] (55%)

2. The cost of a dress is $\$c$. Its marked price is 20% above the cost, and it is sold at a discount of 25% on its marked price.

(a) (i) Express the marked price of the dress in terms of c .
(ii) Express the selling price of the dress in terms of c . (3 marks)

(b) A loss of \$44 is made after selling the dress, find the value of c . (2 marks)

19. [24 - 25 S1 Standardized Test - 05] (24%)

5. In a tutorial class, the number of girls and boys in September are k and $2k$ respectively. If 9 girls and 2 boys join the tutorial class in October, then the number of girls is 30% more than the number of boys.

(a) Find the value of k . **(2 marks)**

(b) In November, there are n students join the tutorial class. It is given that the number of boys is now more than the number of girls. Someone claims that the percentage increase of the total number of students from October to November is at least 15%. Do you agree? Explain your answer. **(2 marks)**

20. [21 - 22 S3 Mid-year Exam - 13] (59%)

13. Juice A and Juice B contain 45% and 60% water respectively. They are mixed to form Juice C of volume 500 mL, which contains 51.9% water. How much Juice A and Juice B are needed to form Juice C ? **(3 marks)**

21. [22 - 23 S4 Mid-year Exam - 03] (79%)

3. The cost of a phone is \$5 000. The phone is now sold and the percentage loss is 20%.

(a) Find the selling price of the phone.

(b) If the phone is sold at a discount of 60% on its marked price, find the marked price of the phone. **(4 marks)**

22. [22 - 23 S5 Mid-year Exam - 03] (66%)

3. In a Christmas party, the number of male participants is 13% more than the number of female participants. The difference of the number of male participants and the number of female participants is 78. Find the number of male participants in the Christmas party. **(4 marks)**

23. [24 - 25 S4 Mid-year Exam - 04] (58%)

4. The marked price of a doll is higher than its cost by \$40. The doll is sold at a discount of 30% on its marked price. After selling the doll, the loss percentage is 2%. Find the marked price of the doll.

(4 marks)

24. [20 - 21 S5 Final Exam - 05]

5. A toy is sold at a discount of 20% of its marked price. The marked price of the toy is \$ 300.

(a) Find the selling price of the toy.

(b) If the marked price of the toy is 50% higher than the cost of the toy, find the percentage profit of selling the toy.

(5 marks)

25. [21 - 22 S5 Mid-year Exam - 03] (64%)

3. The marked price of a laptop is \$23000. It is sold at a discount of 10% on its marked price.

(a) Find the selling price of the laptop.

(b) If a profit of \$2700 is made by selling the laptop, find the percentage profit.

(4 marks)

26. [22 - 23 S5 Final Exam - 05] (76%)

5. A necklace is sold at a discount of 10% on its marked price. The marked price of the necklace is 30% above its cost price. If the profit of selling the necklace is \$680, find the marked price of the necklace.

(4 marks)

27. [23 - 24 S5 Final Exam - 08] (87%)

8. The marked price of a book is \$120 higher than its cost. A 20% profit is made by selling the book at a discount of 25% on its marked price. Find the cost and profit by selling the book.

(5 marks)

28. [23 - 24 S5 Mid-year Exam - 08] (92%)

8. The marked price of a cup is 30% higher than its cost price. If the cup is sold at a discount of 20%, the profit is \$10, find its cost price.

(4 marks)

29. [24 - 25 S5 Final Exam - 07] (94%)

7. The marked price of a watch is 25% above its cost. A profit of \$350 is made by selling the watch at a discount of 15% on its marked price. Find the marked price of the watch.

(4 marks)

30. [24 - 25 S5 Mid-year Exam - 06] (86%)

6. The marked price of a basketball is \$700. It is sold at discount of 15%.

(a) Find the selling price of the basketball.

(b) After selling the basketball, the percentage profit is 19%. Find the cost of the basketball.

(4 marks)

31. [20 - 21 S6 Mock Exam - 06]

6. The height of Peter is 20% more than that of John. It is given that Peter is 150 cm tall.

(a) Find the height of John.

(b) The height of Alice is 20% less than that of Peter. Are Alice and John of the same height? Explain your answer.

(4 marks)

32. [21 - 22 S6 Mock Exam - 05] (99%)

5. The marked price of a book is \$300. It is then sold at a discount of 10%.

(a) Find the selling price of the book.

(b) If the percentage profit is 8%, find the cost of the book.

(4 marks)

33. [21 - 22 S2 Mid-year Exam - 08] (68%)

8. There are some green balls, yellow balls and white balls in a bag. The number of green balls is twice the number of yellow balls and the number of white balls is half of the number of yellow balls.

(a) Find the ratio of the number of green balls to that of yellow balls to that of white balls. **(2 marks)**

(b) If 5 green balls are taken away from the bag and 3 yellow balls are added into the bag, the number of yellow balls will be equal to that of green balls. Find the original number of yellow balls in the bag. **(2 marks)**

34. [22 - 23 S6 Mock Exam - 05] (94%)

5. There are some balls in a game booth. The number of red balls is 20% more than that of yellow balls while the number of yellow balls is 40% less than that of blue balls. If there are 510 yellow balls,

(a) find the number of red balls.

(b) find the number of blue balls.

(4 marks)

35. [24 - 25 S1 Standardized Test - 06] (27%)

6. **Figure 4(a)** shows a rectangular tank containing some water. The wet surface area of the tank is 1200 cm^2 .

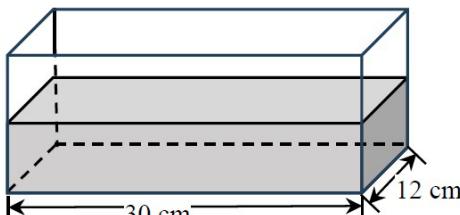


Figure 4(a)

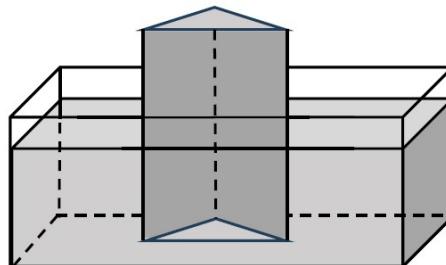


Figure 4(b)

(a) Find the height of the water level in **Figure 4(a)**. **(2 marks)**
 (b) A prism with base area 60 cm^2 is put into the tank as shown in **Figure 4(b)**. It is given that the water level rises by $k\%$. Find the value of k . **(3 marks)**

36. [23 - 24 S6 Mock Exam - 05] (86%)

5. The marked price of a lip gloss is 125% higher than its cost. A profit of \$96 is made by selling the lip gloss with a discount of 20% on its marked price. Find the selling price of the lip gloss. **(4 marks)**

37. [23 - 24 S1 Standardized Test - 08] (13%)

8. There are some small cubes with length 6 cm and the total surface area of these cubes is $A \text{ cm}^2$. Suppose all the small cubes are melted and recast into a bigger cube with length 18 cm and total surface area $B \text{ cm}^2$. Find the percentage change from A to B . **(3 marks)**

38. [21 - 22 S1 Final Exam - 06] (83%)

6. It is given that a square is of side 15 cm originally. If the length of the side of the square is increased by 40%, find
 (a) the side of the new square, **(1 mark)**
 (b) the percentage increase in the area of the square. **(2 marks)**

39. [20 - 21 S1 Standardized Test - 07]

7. The marked prices of a pack of rice of brand A and brand B are both \$160. If they are sold at a discount of 25%, the loss percent from selling a pack of rice of brand A is 20%.
 (a) Find the cost prices of a pack of rice of brand A . **(3 marks)**
 (b) It is given that the cost price of a pack of rice of brand B is \$100. If a pack of rice of brand A and a pack of rice of brand B are sold, find the overall profit or loss percent. **(2 marks)**

40. [24 - 25 S6 Mock Exam - 06] (83%)

6. A phone is sold at a discount of 20% on its marked price. After selling the phone, the loss is \$2040 and the percentage loss is 17%. Find the marked price of the phone. **(4 marks)**

41. [20 - 21 S1 Standardized Test - 07]

7. The marked prices of a pack of rice of brand A and brand B are both \$160. If they are sold at a discount of 25%, the loss percent from selling a pack of rice of brand A is 20%.

(a) Find the cost prices of a pack of rice of brand A . **(3 marks)**

(b) It is given that the cost price of a pack of rice of brand B is \$100. If a pack of rice of brand A and a pack of rice of brand B are sold, find the overall profit or loss percent. **(2 marks)**

42. [20 - 21 S1 Standardized Test - 05]

5. The length and the width of a rectangle are a cm and b cm respectively. If the length is increased by 10% and the width is decreased by 5%, find the percentage increase in the area of rectangle.

(2 marks)