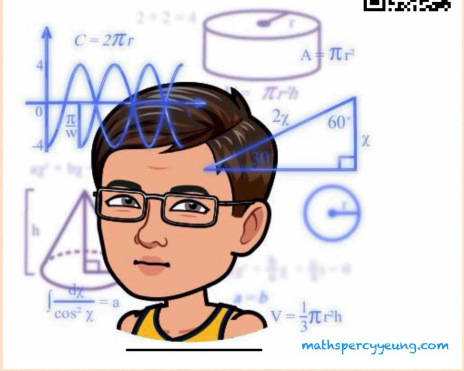


S1

Mathematics

Past Exam Paper (1314–2223)

Question Book

Ch4 Linear Equations in One Unknown

UCCKE F1 Ch4 Linear Equations in One Unknown

Ch4 Linear Equations in One Unknown

[1314 S.1 1st Exam MC Q5]

1. Kenneth had to travel 20 km to visit Esther. After walking for x km, he started to drive to Esther's house. It is known that the driving distance is 5 km more than 4 times the walking distance.

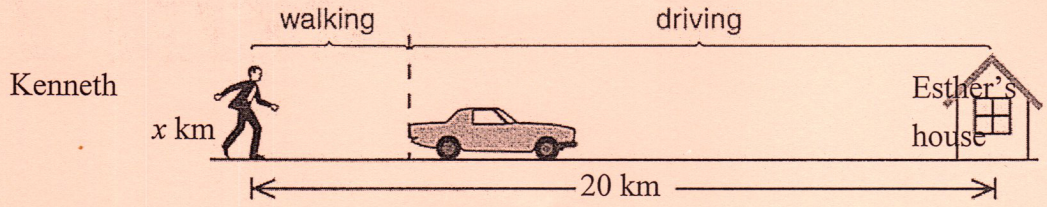


Figure 2

Which of the following is true?

A. $x+(5x-4)=20$

B. $x+(4x-5)=20$

C. $x+(5x+4)=20$

D. $x+(4x+5)=20$

[1314 S.1 1st Exam SQ Q6]

2. Solve $\frac{x+3}{3}=-\frac{5x-1}{6}$ (2 marks)

[1415 S.1 1st Exam MC Q5]

3. When solving the equation

$\frac{3x}{4}-\frac{x}{6}=14$ in the fastest way, the first step is to multiply both sides of the equation by

A. the sum of 4 and 6.

B. the difference of 4 and 6.

C. the H.C.F. of 4 and 6.

D. the L.C.M. of 4 and 6.

[1415 S.1 1st Exam MC Q6]

4. Which of the following statements are correct for the equation

$$8(x-2)=4+2(3x+1)?$$

I. The L.H.S. of the equation can be simplified to $8x-16$.

II. The R.H.S. of the equation can be simplified to $5+6x$.

III. The equation can be simplified to $4(x-2)=2+(3x+1)$.

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

[1415 S.1 1st Exam SQ Q5]

5. Solve the equation $6t-9=4t+3$.

(3 marks)

[1415 S.1 1st Exam Enhanced Question Q2]

6. Gordon travels from home to school. He drives a distance of 10 km. Then he runs half of the remaining distance and walks the rest. It is known that he walks $\frac{1}{3}$ of the total distance. Let x km be the total distance.

(a) (i) Express the walking distance in terms of x.
(ii) Express the running distance in terms of x.

(2 marks)

(b) Set up an equation to find x. (1 mark)

(c) Find the total distance from Gordon's home to school. (2 marks)

[1415 S.1 1st Exam Enhanced Question Q3]

7. Ricky has three types of banknotes, \$10-note, \$20-note and \$50-note in his wallet. The number of \$20-notes is fewer than that of \$10-notes by 5, while the number of \$50-notes is more than half of the number of \$20-notes by 7. It is known that he has more than 20 banknotes altogether.

   Let y be the number of \$10-notes.

   (a) Express the number of \$50-notes in terms of y. (1 mark)

   (b) Set up an inequality of y. (2 marks)

   (c) Using the result in (b), can $y = 9$ be a solution of the inequality in (b)? Show your working steps.

   (2 marks)

[1516 S.1 1st Exam MC Q6]

8. In the working steps below, which one is correct?

   A. $4(x-2)$
   $= 4x - 2$

   B. $3b - (2b - 2)$
   $= 3b - 2b - 2$

   C. $\dfrac{-c-2}{-1}$
   $= c + 2$

   D. $\dfrac{y-4}{2}$
   $= y - 2$

[1516 S.1 1st Exam SQ Q3]

9. Solve $8p - 2 = 22$.

   (2 marks)

[1516 S.1 1st Exam SQ Q4]

10. Solve $\frac{c}{5} - \frac{1}{6} = \frac{1}{30}$.

(3 marks)

[1516 S.1 1st Exam Enhanced Question Q1]

11. A piece of ice is taken out from a freezer and placed on the floor at room temperature. At first, the temperature of the ice is –12°C and then rises by 2°C for every minute.

(a) What is the temperature of the ice after 4 minutes? (2 marks)

(b) Let y °C be the temperature of the piece of ice after t minutes.

(i) Set up a formula to represent the relationship between y and t. (1 mark)

(ii) Use the formula in (b)(i) to find the time required for the piece of ice to reach the melting point. (The melting point of water is 0 °C.) (2 marks)

[1516 S.1 1st Exam Enhanced Question Q2]

12. The weight of 3 bags of rice and 4 bottles of cooking oil is 32 kg. Each bag of rice is 6 kg heavier than a bottle of cooking oil. The weight of one bag of rice is x kg.

(a) Write down the weight of one bottle of oil in terms of x. (1 mark)

(b) Set up an equation to find x. (2 marks)

(c) Solve the equation in (b). (2 marks)

[1617 S.1 1st Exam MC Q6]

13. Which of the following operations is correct?

A. $-3(y-2)=4y$

$-3y-6=4y$

B. $\frac{x-7}{3}-\frac{4-3x}{3}=-4$

$\frac{x-7-4+3x}{3}=-4$

C. $\frac{-x+2}{2}=5$

$-x+1=5$

D. $\frac{x}{2}+1=\frac{4x}{4}$

$2\times\frac{x}{2}+1=2\times\frac{4x}{4}$

[1617 S.1 1st Exam SQ Q2]

14. Solve the equation $3(a-1) = -a + 5$. (2 marks)

[1617 S.1 1st Exam SQ Q3]

15. Solve the equation $\frac{3q+2}{4} - \frac{q+3}{5} = 1$. (3 marks)

[1617 S.1 1st Exam SQ(C) Q2]

16. Susan has some \$20 notes and \$50 notes. Given that the number of \$50 notes is 8 less than the number of \$20 notes. Let x be the number of \$20 notes.
    (a) Express the number of \$50 notes in terms of x.
    (b) Express the total value of the notes in terms of x.
    (c) If the total value of the notes is \$650, how many \$20 notes are there? (5 marks)

[1718 S.1 1st Exam FQ Q15]

17. Check whether $x = -3$ is a solution of the equation $5x + 13 = 1 + x$. (2 marks)

[1718 S.1 1st Exam FQ Q16]

18. Solve the equation $13x + 1 = 9 - 3x$. (2 marks)

[1718 S.1 1st Exam FQ Q17]

19. The price of a chair is $\$x$. The price of a table is five times the price of a chair.

(a) Express the price of a table in terms of x. (1 mark)

(b) Eric buys four chairs and a table for \$630. Find x. (2 marks)

[1819 S.1 1st Exam MC Q6]

20. One half of the sum of three consecutive even numbers is 30. Find the smallest number among them.

A. 8

B. 18

C. 19

D. 22

[1819 S.1 1st Exam MC Q7]

21. If $3-2(1-x)=1-\frac{1-x}{2}$, then $x=$

A. $-\frac{1}{3}$.

B. $\frac{1}{5}$.

C. $-\frac{1}{5}$.

D. 1.

[1819 S.1 1st Exam BQ Q14]

22. Solve each of the following equations. (4 marks)

(a) $2-x=6$

(b) $4x-3=x$

[1920 S.1 Exam MC Q3]

23. Which of the following equations does NOT have the solution $m = 4$?

A. $-2+3m=-m+14$

B. $-4(1-m)=12$

C. $\dfrac{m-3}{9}=\dfrac{1}{3}$

D. $\dfrac{m}{4}-\dfrac{m}{8}=\dfrac{1}{2}$

[1920 S.1 Exam IQ Q10]

24. Mandy buys some red pens and blue pens. The total number of pens is 14 and the total cost of the pens is \$116. Let x be the number of red pens that Mandy buys.

(a) Write down the number of blue pens in terms of x. (1 mark)

(b) If a red pen and a blue pen cost \$9 and \$7 respectively, find the number of red pens that Mandy buys. (3 marks)

[2021 S.1 ASUT MC Q9]

25. Ivan solves the equation $-(3x-4)-1=-3$ as follows:

1st line	$-(3x-4)-1=-3$
2nd line	$4-3x-1=-3$
3rd line	$4-3x=-2$
4th line	$3x=-6$
	$x=-2$

Determine on which line he first makes a mistake.

A. 1st line

B. 2nd line

C. 3rd line

D. 4th line

[2021 S.1 ASUT BQ Q14]

26. Solve the equation $3+2x=-1$. (3 marks)

[2021 S.1 ASUT AQ Q19]

27. Solve $\frac{2(x-3)}{3}-\frac{x-2}{6}=\frac{1}{3}$. (4 marks)

[2021 S.1 Final Exam BQ Q2]

28. Solve $5(2m-3)=7m$. (2 marks)

[2021 S.1 Final Exam IQ Q10]

29. The sum of the present ages of Bob and Kevin is 42.

(a) Let y be the present age of Bob. Write down the present age of Kevin in terms of y. (1 mark)

(b) If 3 years ago, the age of Kevin is twice that of Bob, find the present ages of Bob and Kevin respectively. (3 marks)

[2021 S.1 Final Exam MC Q3]

30. Solve $2-\frac{2k+3}{7}=\frac{1-5k}{6}$.

A. $-\frac{59}{23}$

B. $-\frac{95}{23}$

C. $-\frac{95}{47}$

D. $\frac{59}{47}$

[2122 S.1 ASUT MC Q8]

31. Consider the formula $y = ax^2$. If $a = 3$, $x = -2$, find the value of y.

A. -36

B. -12

C. 12

D. 36

[2122 S.1 ASUT MC Q9]

32. The solution of $-\frac{2y+1}{5} = \frac{4-3y}{2}$ is

A. $y = \frac{18}{19}$.

B. $y = \frac{22}{19}$.

C. $y = 2$.

D. $y = 22$.

[2122 S.1 ASUT BQ Q15]

33. Solve each of the following equations.

(a) $5(2m - 3) = 7m$ (2 marks)

(b) $-15 - \frac{y}{7} = 6$ (2 marks)

[2122 S.1 ASUT AQ Q19]

34. Adrian, Bessie and Cally share 50 sweets among them. The number of sweets Adrian gets is 10 more than the number of sweets Bessie gets. The number of sweets Bessie gets is 5 less than twice the number of sweets Cally gets. Let x be the number of sweets Adrian gets.

(a) Express the number of sweets Bessie and Cally gets in terms of x. (2 marks)

(b) Find the number of sweets Adrian gets. (3 marks)

[2122 S.1 Final Exam BQ Q1]

35. Solve $-2(x-1)=5$.

[2122 S.1 Final Exam IQ Q11]

36. Betty and Cara share some chocolates together. In the beginning, Betty's share of chocolates is 2.5 times of that of Cara's. Betty then gives 9 of her chocolates to Cara. In the end, Cara has exactly the same number of chocolates compared to Betty. Let the number of chocolates that Cara has in the beginning be y.

(a) Write down an equation using y that represents the situation above. (1 mark)

(b) Find the total number of chocolates. (3 marks)

[2122 S.1 Final Exam MC Q9]

37. Susan's age is 3 times her daughter's age now. 5 years ago, Susan's age was 4 times her daughter's age. Let y be the present age of Susan. Which of the following equations is correctly set up?

A. $y-5=4\left(\frac{y-5}{3}\right)$

B. $y-5=4\left(\frac{y}{3}-5\right)$

C. $y-5=3\left(\frac{y-5}{4}\right)$

D. $y-5=3\left(\frac{y}{4}-5\right)$

[2223 S.1 ASUT MC Q8]

38. The solution of $\frac{3}{4}-\frac{t}{12}=-\frac{5}{6}$ is

A. $t=-1$.

B. $t=1$.

C. $t=19$.

D. $t=-19$.

[2223 S.1 ASUT MC Q9]

39. Ada ran v km on Monday. On Tuesday, she ran 5 km less than she did on Monday. On Wednesday, she ran 8 km more than she did on Tuesday. If Ada ran a total of 85 km from Monday to Wednesday, which of the following equations can be used to find the value of v?

A. $3v+3=85$

B. $3v-2=85$

C. $3v-5=85$

D. $3v+8=85$

[2223 S.1 ASUT BQ Q15]

40. Solve each of the following equations.

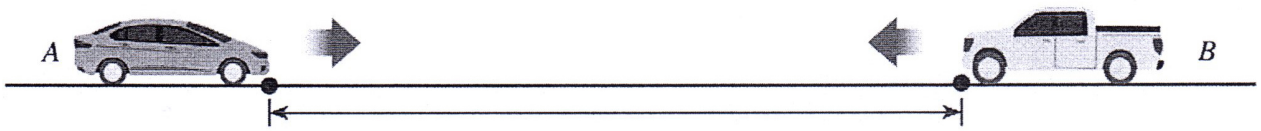
(a) $24 = -6(3 - n)$

(b) $3x - \frac{8+x}{5} = 1$

(5 marks)

[2223 S.1 ASUT AQ Q20]

41. In the figure, car A and car B are 45 km apart on the same straight road. Then, they move towards each other and the speed of car A is 8 km/h faster than that of car B.



(a) Let x km/h be the speed of car A. Express the speed of car B in terms of x.

(1 mark)

(b) If the two cars start together and meet 50 minutes later, find the speed of car A.

(4 marks)

[2223 S.1 Final Exam MC Q2]

42. Solve the equation $\frac{2-3x}{4} = -4$.

A. $x = 4$

B. $x = -4$

C. $x = 6$

D. $x = -6$

[2223 S.1 Final Exam IQ Q9]

43. Solve the equation $\frac{3x+1}{4} - \frac{2x-1}{6} = 0$. (4 marks)