



TEST: Ch 3 Linear Equations

Section	Marks	Your mark
A: Vocabulary knowledge	5	
B: Multiple Choice	10	
C: Short Answer	28	
D: Analysis Problem	7	
Total Marks = 50		

Instructions

- Read questions carefully
- CAS Ti89 calculators may be used.
- No sharing of equipment, including calculators.
- Use a pencil when completing questions.

Section A: Vocabulary Knowledge (5 x 1 = 5 marks)

Complete the sentence by choosing the appropriate word from the word list below.

- 1 The inverse operation to addition is
- 2 Multiplication is the inverse operation to
- 3 When multiplying or dividing when solving an inequation, you must the inequation sign.
- 4 When solving a linear equation in x we must transpose it to make x the
- 5 $2x + 3 = 5$ and $2x = 2$ are a pair of equations

WORD LIST

- | | |
|------------|-------------|
| Equivalent | subtraction |
| Switch | subject |
| Division | Times |

Section B: Multiple Choice (10 marks)

1 The linear equation represented by the sentence, 'When a certain number is multiplied by 7, the result is 3 times the certain number plus 7.' is:

- A $x + 7 = 3x$
- B $7x + 3 = 3x$
- C $3x + 7 = 3x$
- D $7x = 3x + 7$
- E $x = 3$

2 The solution to the equation $\frac{x}{4} = 5$ is:

- A $x = 20$
- B $x = -20$
- C $x = 1.25$
- D $x = 1$
- E $x = 9$

3 What is the solution to the equation $7 = 14 + x$?

- A $x = 2$
- B $x = -7$
- C $x = 7$
- D $x = -2$
- E 21

4 What is the solution to the equation $5x + 3 = 37$?

- A $x = 8$
- B $x = -8$
- C $x = 6.8$
- D $x = 106$
- E $x = -106$

5 The solution to the equation $8 - 2x = 21$ is:

- A $x = 6.5$
- B $x = -6.5$
- C $x = 13$
- D $x = -13$
- E $x = 11.5$

6 The solution to the equation

$4x + 3 = 7x + 33$ is:

- A $x = 11$
- B $x = 10$
- C $x = -10$
- D $x = -11$
- E $x = -12$

7 The solution to the equation

$7(x - 15) = 28$ is:

- A $x = 11$
- B $x = 19$
- C $x = 20$
- D $x = 6.14$
- E $x = 6$

8 The solution to the inequation

$3x + 4 > 0$ is:

- A $x > 0$
- B $x > -1\frac{1}{3}$
- C $x > -4$
- D $x < 1\frac{1}{3}$
- E $x > -0.75$

9 The solution to the inequation

$x - 5 > 2x$ is:

- A $x > 5$
- B $x > -5$
- C $x < 5$
- D $x < -5$
- E $x = 5$

10 When rearranging $y = ax + b$ in terms of x , we obtain:

- A $x = \frac{y - a}{b}$
- B $x = \frac{y - b}{a}$
- C $x = \frac{b - y}{a}$
- D $x = \frac{y + b}{a}$
- E $x = y - ab$

Section C: Short Answer Section (27 Marks)

- Working out must be shown to gain full marks.
- CAS may be used to check answers and must be used when asked in the question.
- If your answer is a decimal, then give it correct to 1 decimal place, otherwise leave it in simplest fraction format.

1 Solve the following equations.

(2 x 1=3 marks)

(a) $a + 46 = 243$

(b) $b - 6.1 = 3.2$

(c) $\frac{x}{8} = 2.25$

2 Solve the following equations.

(2x2 =4 marks)

(a) $5c + 4 = 49$

(b) $\frac{5}{d} = \frac{3}{5}$

2 Solve the following equation.

(2 marks)

$$\frac{t}{0.2} + 5 = 2.3$$

3 Solve the equation $\frac{5}{x-2} = \frac{-7}{8}$.

(3 marks)

4 Solve the following equation
 $8(2x - 5) = -30$

(3 marks)

5 Solve the equation.

(3 marks)

$$4(6n + 3) = 2(7 - 4n) + 5$$

6 Solve the inequation $\frac{x+7}{3} < -4$

(3 marks)

7 Solve the inequation $6 - 3(5x + 4) < 18$.

(4 marks)

8 Rearrange the following formulae:

(3 marks)

(a) $v = u + at$ to make t the subject

(b) $s = ut + \frac{1}{2}at^2$ to make a the subject

Section D: ANALYSIS PROBLEM

- Working out must be shown to gain full marks
- CAS calculator may be used to check your answer.

Acapulco Gold Car Rental Company charges a flat fee of \$60 plus 25 cents per kilometre.

Columbian Car Rentals charges \$80 per day plus 20 cents per kilometre.

- (a) On Day 1 of her holiday Jane is to travel 210 kilometres in her hire car.
Which company should she hire it from and how much will it cost?

- (b) On Day 2 she proposes to travel a further 350 kilometres.
How much will it cost with both companies? Which is cheaper?

- (c) Jane has allowed a budget of \$800 for her holiday car hire.
Will she have any money left over after the two days and if yes, which company saved her the most?

(3 + 2 + 2 = 7 marks)