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Algebra is a branch of mathematics dealing with symbols and the rules for manipulating those symbols. In elementary algebra, those symbols (today written as Latin and Greek letters) represent quantities without fixed values, known as variables. Just as sentences describe relationships between specific words, in algebra, equations describe relationships between variables.

Example1

Solve: y + 3 = -2y

Collect like terms

Y +2Y = 3

3Y =3

Divide by 3 throughout

Y = 1

Example 2

Simplify : $\frac{36a^2b}{9ab^2}$

Solution

$\frac{\overset{4}{\cancel{36}}a^{\cancel{2}}\cancel{b}}{\cancel{9}\cancel{a}b^{\cancel{2}}} = \frac{4a}{b}$

Example 3

The sum of two numbers is 2. If one of the numbers is $\frac{2}{3}$ -, what is the other number?

Let one number be x

$x + \frac{2}{3} = 2$

$X = 2 - \frac{2}{3} = 1\frac{1}{3}$

Revision questions

1. Akiiki is 38 years old and his son is 12 years old. At what age will Akiiki be twice as old as his son?
2. (a) Solve: $\frac{12}{x}$ +2=6.
3. Solve $\frac{x}{2}$-1 = 0
4. Simplify 2b + 4a-2a *+ b.*
5. If $\frac{12}{n} = \frac{3}{4}$, what is the value of n?
6. A pencil and an exercise book cost shs 400. An exercise book costs three times as much as the pencil. What is the cost of the pencil?
7. Solve: 2x + 5 = x+1
8. Solve: 3(p-4)-2(3p-1) = 2p-15.
9. Solve $\frac{y}{2}$-3 = 5
10. Mary is x years old. She is twice as old as peter. Express Peter's age in terms of Mary's age.
11. What should be added to (2x + 2) to get (3x - 3)?
12. (a) Simplify $\frac{32\ x\ 1.2}{0.016}$

    (b) Solve: $\frac{1}{2}(3x-2) = \frac{2}{3}(2x+3)$
13. (a) By forming an equation, find 3 consecutive numbers which add up to 135.

    (b) The mother of Apio is 23 years old and Apio is 4 years old.
14. (i) In how many years will the mother be twice as old as APio?

    (ii) How old will Apio's mother be then?
15. If a = -1 and b = 3, find the value of $\frac{a^2b}{b}$
16. If $\frac{1}{8} = \frac{2}{t}$, find the value of t.
17. Solve 3x =9
18. Simplify: *(3x- 2)* -(2x + 2).
19. (a) 2x+$\frac{2}{5}$y = 12. Given that y= $\frac{1}{2}$. Find the value of x.

    (b) If x are positive integers, find the set of values, which satisfies the inequality: 2x + 4 $\leq$ 10.

20. Tom has three daughters: Amanda, Brenda and Kate. Brenda is 2 years younger than Amanda. Kate's age is $\frac{1}{2}$ that of Brenda. The total age of the three girls is 27 yrs. How old is Kate?

21. Subtract *2x* - 4 from *5x* - 4.

22. Solve *3p- 6*= 18 +p

23. (a) Given that $a = \frac{1}{2}; b = \frac{1}{3};\ c = \frac{1}{4}$

Find the value of b + 2c + 3a

(b) Solve: $\frac{3x}{4} + \frac{1}{3} = \frac{7}{12}$

24. Solve2x+2 = 6

25. If a = $^{-}$3 and b = 4, find the value of $a^2 + b^2$

26. Simplify: $\frac{1}{3}$(6x-3m)

27. If $\frac{3}{5} = \frac{6}{x}$ find the value of x.

28. (a) Find the value of x if

4(3x -5) -2(6 + x} = $^{-}$12

(b) Solve the inequality: *3x* - 6 < 10 + *x*

29. What is x if: 7 + x=11?

30. If P = r, r = 4 and q = 3, work out: $\frac{pq}{r}$

31. Simplify: 2(7-a)-(8-a)

32. Simplify:3m-(2 + m)

33. Solve 2p-8 =16

34. If $\frac{1}{6}x = 1\frac{1}{6}$, find the value of x.

35. (a) Kirya is 3 times as old as his daughter. The difference between their ages is 36 years. How old is the daughter.

b) Solve 2(3a-5)-3(1-a)=14

36. implify (3x + 5) - (x + I).

37. Give the solution set of the inequality: 1<X<7

38. Solve; a + 7 = 13

39. Simplify: (8m + 9) - (3m + 4).

40. Given that a = 1, and b - 3, find the value of 3a - 3b.

41. Solve for x in 2x - 5 = x - 1.

42. Annet is 20 years younger than Peter. In 15 years, Peter will be twice as old as Annet. How old is Annet now?

43. If $\frac{2}{5}$ of a number is 10. Find the number.

44. Solve 5y-4=16

45. Given that a = 2, b = 4 and c = -3. Work out: b (a +c).

46. (a) Solve x- 1 =2x+5.

(b) Solve the inequality; 3(2-x)< 15.

47. Solve; m-3 = 3

48. If a = 2, b = 3 and c = 5, find the value of 3a + b + c.

49. (a) Solve for x: $\frac{2x+2}{3} = \frac{x+3}{2}$

(b) What is the value of $\frac{bc-d}{c^2}$; when b = 8, c = 3 and d = 6?

50. Solve the equation; $\frac{1}{2}$p + 1 = 3

51. Find the value of $\frac{5a-(m-a)}{a}$, when a = 3 and m = 6.

52. (a) Solve the inequality: $\frac{3}{4}$x-8>l

(b) Solve for P 3-(p- l) = 2(p + 5)

53. Solve: 2x +7 =11.

54. Given that a=⁻6, b=3, c=⁻2 and d=1. Work out $\frac{ad}{bc}$

55. Three pupils are aged (2x +5), (3x – 10) and (x+3) years. Their total age is 34 years.

(a) Find the value of x (3 marks)

(b) How old is the youngest pupils? (2 marks)

56. Simplify: 6 x- 5m + 3m- 4x

57. Workout: $t^6 \div t^2$

58. solve 3 – X =2X

59. Given that x=3, y=4 and z=6, find the value of $\frac{xy}{z}$

60. Solve the inequality: 1+ $\frac{1}{2}$x>2.

61. (a) solve: $\frac{1}{2}$m + 7 = 2m -2

(03 arks)

(b) Solve $\frac{10}{n}$ + 4 =24

(03 marks)

62. Simplify 4k – 3k + k

63. Solve the equation 5t- 2 (t +1) = 1

64. Solve the inequality -2p + 4>6

65. Solve 3x- (x +3) =3

66. Solve for X: 3+4=X (*finite* 5)

67. a) Solve for x: 2(x+1)-3(2x-1) = -3 (03 marks)

b) Find the value of $a^r \div a^x$. given that a=2,r=5 and x=3 (03 marks)

68. Simplify 2x+3x = 5x

69. Given that a= ⁻3 and b=4, find the valve of 2a+2b

70. (a) solve 2m+3=18-m (3marks)

(b). Solve: 2(3x-1) -4(x-1) =4 (3marks)

71. Simplify

(a) $n^2 \times n = n^3$ (1mark)

(b) $m^6 \div m^3$ m $^{(6-3)} = m^3$ (1mark)

(c) $\frac{a^2 \times a^5}{a^3} = \frac{a^{2+5}}{a^3} = a^{7-3} = a^4$ (2marks)

72. Given that p= $^{-}$4, q = 3 and c = $^{-}$2, find the valve of $\frac{P\ q}{c}$

73. Solve 2 (3x - 6) = 24

74. (a) solve 6x-9(x-2) =3 (3 marks)

(b) Solve: 3 +4m $>$ 12 + 3m (3 mark)

75. Solve: $\frac{2}{3}$m =4

76. Given that k = 2 and p = -3, find the valve 3k +2p

77. (a) Solve: 14p + 4 =11 (2marks)

(b). Solve the inequality: 3x +4 >x+8. (02marks)

78. Simplify: 4*t*-2*k*+5*k*-*t*

79. (a) Solve the inequality: 9≤-3 (y-1). (03 marks)

b) State the first two values of the solution set for the inequality? (01 marks)

80. Simplify: 5ab-2xy-ab+7xy.

81. Given that n = 3 and r = $^{-}$2, evaluate $\frac{2n+r}{r}$

82. Simplify: 18x-5(3x+7).

83. Given that *a*= $^{-}$2, *b*=3 and c=4, find the value of *b*(a^2+ c).

84. Solve the equation: 7n + 2 = 23

85. Given that a = 3 and b = -2, find the value of a^2 -b^3.

86. (a) Solve the equation: $\frac{3}{5}n + 6 = 2 + n$ (03marks)

(b) Solve the inequality: 9 -2k > k + 3 (02 marks)

87. Simplify 3a +a -2a = 2a

88. Simplify: 5k -2(3-k)

89. (a) Given that m = 3k and k = 5, find the value of 2k + 6m (03 marks)

(b) Write the solution set for inequality 6< x<10 (01mark)

Suggested answers

1. Akiiki is 38 years old and his son is 12 years old. At what age will Akiiki be twice as old as his son?

Let the number of years that pass be x

Akiiki's age after x years will be 38 + x

The son's age after x years will be 12 + x

It implies that after x years; $\frac{38+x}{12+x} = 2$

$38 + x = 2(12 + x)$

$38 + x = 24 + 2x$

Collecting like terms to one side

$X = 14$

The age of Akiiki will be 38 + 14 = 52 years

2. (a) Solve: $\frac{12}{x} + 2 = 6$.

$\frac{12}{x} = 6 - 2 = 4$

$12 = 4x$

$X = 3$

3. Solve $\frac{x}{2} - 1 = 0$

Multiply by2 both sides

$X - 2 = 0$

Add 2 to both sides

$X = 2$

4. Simplify 2b + 4a-2a *+ b.*

Collect like terms

2b + b + 4a – 2a = 3b + 2a

5. If $\frac{12}{n} = \frac{3}{4}$, what is the value of n?

Cross multiplying

$\frac{12}{n} \times = \frac{3}{4}$

3n = 12 x 4

n = $\frac{12 \times 4}{3}$ = 16

6. A pencil and an exercise book cost shs 400. An exercise book costs three times as much as the pencil. What is the cost of the pencil?

Let the cost of pencil be x

The cost of a book =3x

It implies that 3x + x = 400

4x = 400

Divide by 4 either sides; x = 100

∴ the cost of a pencil = shs 100

7. Solve: 2x + 5 = x+1

Collect like terms

2x – x = 1 – 5

X = -4

8. Solve: 3(p-4)-2(3p-1) = 2p-15.

3(p-4) – 2(3p -1) = 2p-15

3p -12 – 6p + 2 = 2p – 15

-12 + 2 + 3p = 2p – 15

-10 + 15 = 2p + 3p

5 = 5p

P= 5/5

P=1

9. 10. Solve $\frac{y}{2}$-3 = 5

$\frac{y}{2}$ = 5 + 3 = 8

y = 8 x 2 = 16

10. . Mary is x years old. She is twice as old as peter. Express Peter's age in terms of Mary's age.

Peter's age = $\frac{x}{2}$

11. What should be added to (2x + 2) to get (3x - 3)?

Let the number be y

y + (2x + 2) = (3x -3)

y = (3x – 3) – (2x + 2)

y = 3x -3 -2x – 2

y = 3x -2x -3 – 2

= x - 5

12. (a) Simplify $\frac{32\ x\ 1.2}{0.016}$

$\frac{32\ x\ 1.2}{0.016} = \frac{32}{}\ x\ \frac{12}{10} \div \frac{16}{1000} = \frac{32}{}\ x\ \frac{12}{10}\ x\ \frac{1000}{16} =$ 24

(b) Solve: $\frac{1}{2}(3x-2) = \frac{2}{3}(2x+3)$

Multiply by 16 both sides

3(3x-2) = 2 x2(2x +3)

3(3x-2) = 4(2x + 3)

9x – 6 = 8x + 12

Collecting like terms

9x – 8x = 12 + 6

x = 18

13. (a) By forming an equation, find 3 consecutive numbers which add up to 135.

Let the numbers be x, x + 1, and x + 2

x + (x + 1) + (x + 2) = 135

3x + 3 = 135

3x = 132

x = 44

Therefore, the consecutive numbers are 44, 45 and 46

(b) The mother of Apio is 23 years old and Apio is 4 years old.

Let the years be x

(23+ x) = 2(4 + x)

23 + x = 8 + 2x

Collecting like terms

x = 15

thus, the mother will be twice as old as Apio after 15 years

(c) How old will Apio's mother be then?

Apio's mother will be 23 + 15 = 38 years

14. . If a = -1 and b = 3, find the value of $\frac{a^2b}{b}$

Substitution

$\frac{a^2b}{b} = \frac{-1^2\ x\ 3}{3} = 1$

15. If $\frac{1}{8} = \frac{2}{t}$, find the value of t.

By cross multiplying

1 x t = 2 x 8

t = 16

16. Solve 3x =9

$\frac{3x}{3} = \frac{9}{3}$

x = 3

17. Simplify: *(3x- 2)* -(2x + 2).

(3x -2) – (2x +2)

= 3x -2 -2x -2

= x -4

18. 2x+$\frac{2}{5}$y = 12. Given that y= $\frac{1}{2}$. Find the value of x.

Substitution

$2x + \frac{2}{5}\ x\ \frac{1}{2} = 12$

$2x + \frac{1}{5} = 12$

$2x = 12 - \frac{1}{5}$

$x = 5\frac{9}{10}$

(b) If x are positive integers, find the set of values, which satisfies the inequality: $2x + 4 \leq 10$.

$2x + 4 \leq 10$

$2x \leq 6$

$x \leq 3$

19. Tom has three daughters: Amanda, Brenda and Kate. Brenda is 2 years younger than Amanda. Kate's age is $\frac{1}{2}$ that of Brenda. The total age of the three girls is 27 yrs. How old is Kate?

Let Brenda's age be x

	Brenda	Amanda	Kate
Age	x	X + 2	$\frac{1}{2}x$

Total age 27

$x + x + 2 + \frac{x}{2} = 27$

$x = 10$

Kate's age $= \frac{10}{2} = 5years$

20. Subtract *2x* - 4 from *5x* - 4.

(5x – 4) – (*2x* – 4)

Remove brackets

= 5x – 4 – 2x +4

= 5x -2x -4 + 4

= 3x

21. Solve *3p- 6*= 18 +p

3p- 6= 18 +p

Collect like terms

3p –p = 18 + 6

2p = 24

P = 12

22. (a) Given that $a = \frac{1}{2}; b = \frac{1}{3};\ c = \frac{1}{4}$

Find the value of b + 2c + 3a

Substitution: $\frac{1}{3} + 2 \times \frac{1}{4} + 3 \times \frac{1}{2} = \frac{4+2x3+3x6}{12} = \frac{28}{12} = \frac{7}{3} = 2\frac{1}{3}$

(b) Solve: $\frac{3x}{4} + \frac{1}{3} = \frac{7}{12}$

Multiply by 12 both sides

3x x 3 + 4 = 7

9x = 3

x = $\frac{1}{3}$

23. Solve 2x+2 = 6

Collecting like terms

2x = 6-2 = 4

Dividing by 2 throughout

X = 2

24. If a = -3 and b = 4, find the value of $a^2 + b^2$

Substitute for a and b

= $(-3)^2 + 4^2$

= 9 + 16 = 25

25. Simplify: $\frac{1}{3}$(6x-3m)

$\frac{1}{3}$(6x-3m) = (2x –m)

26. If $\frac{3}{5} = \frac{6}{x}$, find the value of x.

$\frac{3}{5} = \frac{6}{x}$

By cross multiplication

3x = 30

Divide by 3 throughout, x = 10

27. (a) Find the value of x if

4(3x -5) -2(6 + x} = ¯12

Open brackets

12x – 20 – 12- 2x = 12

Collect like terms

10x -32 =12

10x = 44

x = $4\frac{2}{5}$

(b) Solve the inequality: *3x* - 6 < 10 + *x*

Collecting like terms

3x –x <10 + 6

2x < 16

X < 8

28. What is x if: 7 + x=11?

7 + x =11

Collect like terms

x = 11-7 = 4

29. If P = r, r = 4 and q = 3, work out: $\frac{pq}{r}$

$\frac{pq}{r} = \frac{4\ x\ 3}{4} = 3$

30. Simplify: 2(7-a)-(8-a)

Remove brackets

14 -2a -8 +a

Collect like terms

6-a

31. Simplify:3m-(2 + m)

Removing brackets

3m – 2-m

Collect like terms

2m -2 = 2(m + 1)

32. Solve 2p-8 =16

Collect like terms

2p = 16 +8 =24

Divide by 2 throughout

p = 12

33. If $\frac{1}{6}x = 1\frac{1}{6}$, find the value of x.

$\frac{1}{6}x = 1\frac{1}{6} = \frac{7}{6}$

By comparison

X = 7

34. (a) Kirya is 3 times as old as his daughter. The difference between their ages is 36 years. How old is the daughter.

Let the age of the daughter be x

Age of Kirya = 3x

But 3x – x = 36

2x = 36

X = 18

∴ daughter's age = 18 year

b) Solve 2(3a-5)-3(1-a)=14

Remove brackets

6a – 10 – 3 +3a = 14

Collect like terms

9a = 27

a = 3

35. Simplify (3x + 5) - (x + I).

Remove brackets

3x + 5 –x – 1

Collect like terms

2x + 4

36. Give the solution set of the inequality: 1<X<7

X = {2, 3, 4, 5, 6}

37. Solve; a + 7 = 13

Collect like terms

A = 13 – 7 = 6

38. Simplify: (8m + 9) - (3m + 4).

(8m + 9) - (3m + 4).

Remove brackets

8m + 9 – 3m -4

Collect like terms

5m +5 = 5(m+1)

39. Given that a = 1, and b - 3, find the value of 3a - 3b.

Substitute for a and b

(3 x 1) – (3 x -3) = 3 - -9 = 3 + 9 = 12

40. Solve for x in 2x - 5 = x - 1.

Collect like terms

2x – x = 5 -1

x = 4

41. Annet is 20 years younger than Peter. In 15 years, Peter will be twice as old as Annet. How old is Annet now?

Let annet's age be X

Peter's age = (X + 20)

⇨ 2(X + 15) = (X + 20) + 15

Removing blackets

2X + 30 = X + 20 + 15

X = 5

∴ Annet's age = 5years

42. If $\frac{2}{5}$ of a number is 10. Find the number.

Let the number be X

$\frac{2}{5}$ of x = 10

$\frac{2}{5}\ x = 0$

X = 10 x $\frac{5}{2}$ = 25

43. Solve 5y-4=16

Collect like terms

5y = 16 + 4 = 20

Divide by 5 on either side

$\frac{5y}{5} = \frac{20}{5}$

Y = 4

44. Given that a = 2, b = 4 and c = -3. work out: b (a +c).

Substituting for a, b and c

4(2-3) = 4 x -1 = -4

(a) Solve x- 1 =2x+5.

Collecting like terms

3x = 6

Dividing by 3 throughout

x = 2

(b) Solve the inequality; 3(2-x)< 15.

3(2-x)< 15

Remove brackets

6 – 3x < 15

Collect like term

X > -3

45. Solve; m-3 = 3

m = 6

46. If a = 2, b = 3 and c = 5, find the value of 3a + b + c.

Substitute for a, b, c

(3 x 2) + 3 + 5 = 14

47. Solve for x: $\frac{2x+2}{3} = \frac{x+3}{2}$

Multiplying through by 6

2(2x +2) = 3(x +3)

4x + 4 = 3x +6

Collecting like term

x = 2

(b) What is the value of $\frac{bc-d}{c^2}$; when b = 8, c = 3 and d = 6?

Substituting = $\frac{8\ x\ 3-6}{3^2} = \frac{24-6}{3\ x\ 3} = \frac{18}{9} = 2$

48. Solve the equation; $\frac{1}{2}$ p + 1 = 3

$\frac{1}{2}$ p + 1 = 3

⇨ $\frac{1}{2}P = 2$

$P = 4$

49. Find the value of $\frac{5a-(m-a)}{a}$, when a = 3 and m = 6.

Substitution

$\frac{5\ x\ 3-(6-3)}{3} = \frac{15-3}{3} = \frac{12}{3} = 4$

50. (a) Solve the inequality: $\frac{3}{4}$x-8>l

Multiply by 4 throughout

3x – 32> 4

Collecting like terms

3x > 36

Divide by 3 throughout

x > 12

b) Solve for P 3-(p- l) = 2(p + 5)

3-(p-1) = 2p + 10

3-p + 1 = 2p + 10

3p = -6

p = -2

51. Solve: 2x +7 =11.

Collect like terms

2x = 11 -7

= 4

$\frac{2x}{2} = \frac{4}{2}$

x = 2

52. Given that a=⁻6, b=3, c=⁻2 and d=1. Work out $\frac{ad}{bc}$

Substitute for a, b, c, d: = $\frac{^{-}6\ x\ 1}{^{-}2\ x\ 3} = 1$

53. Three pupils are aged (2x +5), (3x – 10) and (x+3) years. Their total age is 34 years.

(a) Find the value of x (3 marks)

The sum of their years = 34

(2x + 5) + (3x-10) + (x +3) = 34

(6x-2) = 34

6x = 36

X = 6

(b) How old is the youngest pupils? (2 marks)

By substitution

(2x +5) = 2x 6 +5 = 17 years

(3x – 10) = 3 x 6 – 10 = 8 years

(x+3) = 6 +3= 9 years

$\therefore$ *the youngest is* 8 *years*

54. Simplify: 6 x- 5m + 3m- 4x

Collect like terms
= 6x-4x + 3m -5m
= 2x-2m

55. Workout: $t^6 \div t^2$

$= t^{(6-2)} = t^4$

56. solve 3 – X =2X

3 = 2x + x = 3x

X = 1

57. Given that x=3, y=4 and z=6, find the value of $\frac{xy}{z}$

Substitute for x, y and z = $\frac{3\ x\ 4}{6} = \frac{12}{6} = 2$

58. Solve the inequality: 1+ $\frac{1}{2}$x>2.

$\frac{1}{2}x > 2 - 1$
$x > 1x2$
$x > 2$

59. (a) solve: $\frac{1}{2}$m + 7 = 2m -2

(04 arks)

multiply by 2 throughout
m + 14 = 4m -4

Collect like terms

3m = 18

m = 6

(b) Solve $\frac{10}{n} + 4 = 24$ (03 marks)

Multiply by n

10 + 4n = 24n

Collect like terms

20n = 10

$\frac{20n}{20} = \frac{10}{20} = \frac{1}{2}$

n = $\frac{1}{2}$

60. Simplify 4k – 3k + k

4k + k -3k = 5k- 3k = 2k

61. Solve the equation 5t- 2 (t +1) = 1

Remove brackets: 5t – 2t-2 = 1

Collect like terms: 5t -2t = 1 +2

Simplify 3t = 3

t = 1

62. Solve the inequality -2p + 4>6

Collect like terms – 2p > 6 - 4 = 2

Divide through 2 : -p > 1

Multiply though by -1 (the sign changes) p < -1

63. Solve 3x- (x +3) =3

3x -x -3 = 3

2x = 6

X = $\frac{6}{2} = 3$

64. Solve for X: 3+4=X (*finite* 5)

3 + 4 = 7

7 ÷ 5 = 1r2

X = 2

65. 33.a) Solve for x: 2(x+1)-3(2x-1) = -3 (03 marks)

= 2x + 2 – 6x + 3 = -3

= -4x = -3-5 = -8

X = 2

b) Find the value of $a^r \div a^x$. given that a=2,r=5 and x=3 (03 marks)

$2^5 \div 2^3 = 2^{(5-3)} = 2^2 = 2x2 = 4$

66. Simplify 2x+3x + 5x = 10x

67. Given that a= -3 and b=4, find the valve of 2a+2b

Substitute: 2 x -3 + 2 x 4

= -6 + 8

= 2

68. (a) solve 2m+3=18-m (3marks)

Collect like term to one side

2m +m = 18-3

3m = 15

m = 5

(b). Solve: 2(3x-1) -4(x-1) =4 (3marks)

6x -2 -4x +4 =4

2x = 2

x = 1

69. Simplify

(a) $n^2 \times n = n^3$ (1mark)

(b) $m^6 \div m^3$ $m^{(6-3)} = m^3$ (1mark)

(c) $\frac{a^2 \times a^5}{a^3} = \frac{a^{2+5}}{a^3} = a^{7-3} = a^4$ (2marks)

70. Given that p= -4, q = 3 and c = -2, find the valve of $\frac{P\,q}{c}$

$Substitute\ and\ evalute = \frac{-4 \times 3}{-2}$

= +6

71. Solve $2(3x - 6) = 24$

$= 6x - 12 = 24$

$6x = 36$

$x = 6$

72. . (a) solve 6x-9(x-2) =3 (3 marks)

6x -9x + 18 = 3

-3x = -15

x = 5

73. Solve: $3 + 4m > 12 + 3m$ (3 mark)

Collecting like term

M > 9

74. Solve: $\frac{2}{3}$m =4

$\frac{2}{3}m = 4$

Multiply by $\frac{3}{2}$ on either side

$\frac{3}{2} \; x \; \frac{2}{3}m = \frac{3}{2} \; x \; 4$;

m = 6

75. Given that k = 2 and p = -3, find the valve 3k +2p

Substitute for k and p

3 x 2 + 2 x -3 = 0

76. (a) Solve: 14p + 4 =11 (2marks)

14p +4 = 11

14p = 11 – 4 = 7

P = $\frac{7}{14}$

(b). Solve the inequality: 3x +4 >x+8. (02marks)

3x +4 > x +8

Collect like terms

3x – x > 8 – 4

2x > 4

X > 2

77. Simplify: 4*t*-2*k*+5*k*-*t*

Collect like terms: 4t-t +5k-2k = 3t+3k

78. (a) Solve the inequality: 9≤-3 (y-1). (03 marks)

$9 \leq -3(y-1)$
$9 \leq -3y + 3$
9-3 ≤ -3y +3-3
6 ≤ -3y
-2 ≤ y

b) State the first two values of the solution set for the inequality? (01 marks)

-1, 0

79. Simplify: 5ab-2xy-ab+7xy.

Collect like terms

(5ab-ab)+ (-2xy+7xy) = 4ab +5xy

80. Given that n = 3 and r = -2, evaluate $\frac{2n+r}{r}$

Substitute the expression

$\frac{2n + r}{-2} = \frac{(2 \times 3) + -2}{-2} = \frac{6 - 2}{-2} = \frac{4}{-2} = -2$

81. Simplify: 18x-5(3x+7).

18x-5(3x+7).

18x- 15x-35

3x -35

82. Given that $a = -2$, $b=3$ and c=4, find the value of $b(a^2 + c)$.

Substitute for a, b and c

$b(a^2 + c) = 3(-2^2 + 4)$

Evaluate

$3(-2^2 + 4) = 3(4+4) = 24$

83. Solve the equation: 7n + 2 = 23

7n + 2 = 23

Subtract 2 from either side

7n = 23-2 =21

Divide by 7 on both sides

$\frac{7n}{7} = \frac{21}{7}$

n = 3

84. Given that a = 3 and b = -2, find the value of $a^2 - b^3$.

Substitute for a and b

$3^2 - (-2)^3 = 9 - (-8)$

$= 9 + 8$

$= 17$

85. (a) Solve the equation: $\frac{3}{5}n + 6 = 2 + n$ (03marks)

Multiply by 5 throughout to remove a fraction

$5\{\frac{3}{5}n + 6 = 2 + n\}$

= 3n + 30 = 10 + 5n

Collect like terms = (30 – 10) = (5n – 3n)

= 20 = 2n

n = 10

(b) Solve the inequality: 9 -2k > k + 3 (02 marks)

9 – 2k > k +3

Collect like terms: 9 – 3 > k + 2k

6 > 3k

Divide by 3 throughout: **2 > K**

86. Simplify 3a +a -2a = 2a

87. Simplify: 5k -2(3-k)

= 5k -6 + 2k

= 7k - 6

88. (a) Given that m = 3k and k = 5, find the value of 2k + 6m (03 marks)

2k + 6m = 2k +6(3k)

= 2k + 18k

= 20k

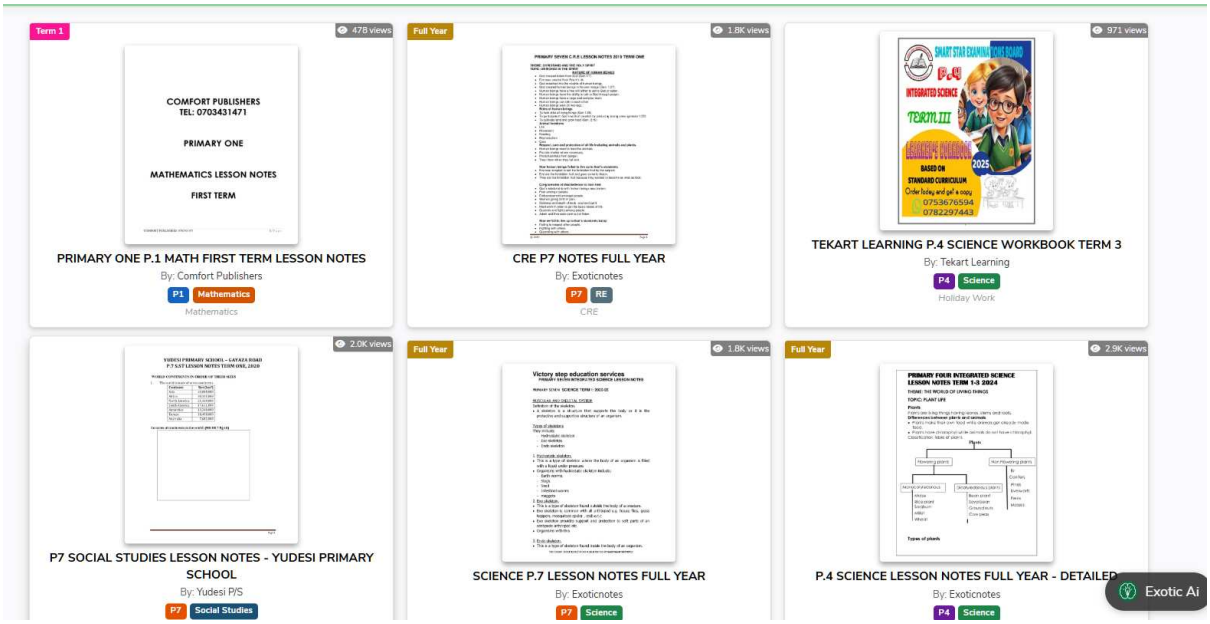
= 20 x 5

= 100

(d) Write the solution set for inequality 6< x<10 (01mark)

{7, 8,9}

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