

Unit 8.2: Algebra

[35 points in total]

Section 1: Simplify the following expressions.

[4 points]

1)  $3y + 4x - 3y - 2x =$

2)  $6Y - 2y + 3y - 7Y =$

3)  $2x^2 + 3x - x^2 + 3x^3 =$

4)  $ax + bx + 3ab + 2ax =$

Section 2: Expand the brackets in the following expressions and simplify.

[6 points]

HINT:  $\frac{1}{4} \times 8 = \frac{1}{2 \times 2} \times (2 \times 2 \times 2) = 1 \times 2 = 2$

5)  $2(2x + 4) =$

6)  $a(2a + b - 2) =$

7)  $2x(x + 5) - 3y(2y + 2) =$

8)  $2s^2 + s(2 + s) =$

9)  $\frac{x}{2}(2x + 2) =$

10)  $\frac{1}{2x}(2x^2 + 4x) =$

**Section 3: Intervals****[8 points]**

- i) Identify whether the following intervals are open or closed intervals.
- ii) Count and write down the number of possible values in each interval

11)  $1 < x < 5$

Type of interval:

Number of possible values for  $x$ :

12)  $5 > y > -2$

Type of interval:

Number of possible values for  $y$ :

13)  $-8 \leq m \leq -2$

Type of interval:

Number of possible values for  $m$ :

14)  $3 \geq t \geq -3$

Type of interval:

Number of possible values for  $t$ :

**Section 4: Factorize the following expressions completely.****[4 points]**

e.g.  $6x + 18 = 6(x + 3)$

15)  $2x^2 + 11x =$

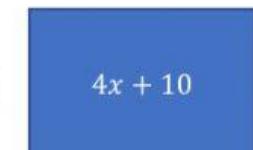
16)  $3x + 9y + 12 =$

17)  $x^3 - 3x^2 + 11x =$

18)  $6x^2 + 30x =$

Section 5: Solve the following problems. Simplify all your answers.

19) The area of the following rectangle is  $4x + 10$ . The width of the rectangle is 2. The length is unknown. [3 points]



Write down an expression for the length of the rectangle.

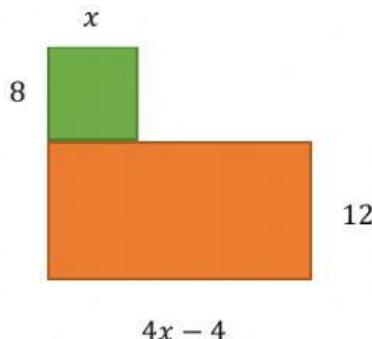
$$\text{length} =$$

The area of the rectangle is 24.

Find the length, and the value of  $x$ .

$$\text{length} = \quad x =$$

20) Refer to the shape and answer the following questions. [6 points]



Write an expression for the perimeter of the green rectangle

$$P_{green} =$$

Write an expression for the perimeter of the orange rectangle

$$P_{orange} =$$

Write an expression for the perimeter of the whole shape (Be careful with this question!)

It's asking for the perimeter of the whole shape, NOT  $P_{orange} + P_{green}$ .

$P =$

The area of the green rectangle is 56. Find  $x$ .

$x =$

Use the previous value of  $x$  to find the perimeter of the whole shape. (Be careful with this question! It's asking for the perimeter of the whole shape, NOT  $P_{orange} + P_{green}$ ).

$P =$

21) I'm trying to buy shirts at a store [4 points]

If I bought 3 shirts I will have 24,200 kyats left in my wallet. Using this information, write an expression for the amount of money I had originally.

*Money I had originally =*

If I bought 5 shirts I will have 200 kyats left. Using this information, write an expression for the amount of money I had originally.

*Money I had originally =*

Using the two equations above, find out how much each shirt cost, and how much money I had originally.

*Cost of 1 shirt =*

*Money I had originally =*