2.1 HOMEWORK HANDOUT: ALGEBRAIC EXPRESSIONS

PART A

1) State the number of terms in each of the following algebraic expressions.

a)
$$4x + 3$$

c)
$$6x^2 - 7x + 12$$

d)
$$-7m$$

e)
$$8x^2v^5z^3$$

c)
$$6x^2 - 7x + 12$$
 d) $-7m$ e) $8x^2y^5z^3$ f) $9x^5 - 8xy + 4y^3 + 6$

2) Determine the value of each of the following for x = 2.

a)
$$x + 25$$

c)
$$6x + 3$$

d)
$$4-10x$$

e)
$$\frac{x}{2} + 12$$

b)
$$8x$$
 c) $6x+5$ d) $4-10x$ e) $\frac{x}{2}+12$ f) $-3(x-4)$ g) $\frac{x-16}{7}$

g)
$$\frac{x-16}{7}$$

3) For each of the following, state the operations, in order, that are applied to the variable.

b)
$$t + 8$$

c)
$$3x - 7$$

d)
$$-2(m+5)$$

e)
$$y^2 + 3$$

b)
$$t+8$$
 c) $3x-7$ d) $-2(m+5)$ e) y^2+3 f) $-5x^2+10$ g) $\frac{p^3}{4}-7$

g)
$$\frac{p^3}{4} - 7$$

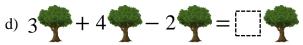
4) Create an algebraic expression to represent each of the following.

- a) A number x is tripled and then 19 is subtracted from the result.
- b) The variable y is squared and then the result is increased by 10.
- c) The variable n is decreased by 6 and then the result is multiplied by -8.
- d) A number p is increased by 70 and then the result is divided by 6.

5) State the value that should be placed in each box.







6) State the value that should be placed in each box.







7) Identify each of the following pairs as like terms or unlike terms.

- a) 6x and 14x
- b) 10x and 10y c) -5a and 10a
- d) -9x and 5

8) State the coefficient for each of the following terms.

- a) 8x
- b) 15 y
- c) -4x
- d) *x*
- e) v

9) Simplify each of the following expressions by collecting like terms.

- a) x+x+x+x

- b) 2y+5y c) 3x+4x+x d) 9a-5a+4a
- e) 2x+6x-8x f) 3k-7k g) w+5w-9w h) 2z-10z+7z

10)	Simplify	each of	the fo	llowing	expressions	hy co	allecting	like terms

a)
$$x + x + y + y + y$$

b)
$$2a+5a+6b+10b$$

a)
$$x + x + y + y + y$$
 b) $2a + 5a + 6b + 10b$ c) $3g + 10h + 4g + 3h$

d)
$$5y-8y+6-10$$

e)
$$6t + 5 - t - 9$$

d)
$$5y-8y+6-10$$
 e) $6t+5-t-9$ f) $3x+4-x+7-6x$

11) Shagun stated that 5x + 2 is equal to 7x. Is Shagun's claim correct? Explain.

12) Simplify each of the following expressions by collecting like terms.

a)
$$-5x + 6x + (-3x)$$

b)
$$-8x - (-2x)$$

c)
$$16x - 4y + x + 12y$$

d)
$$-a+4a-9+15$$

e)
$$4x-3-9x+6$$

d)
$$-a+4a-9+15$$
 e) $4x-3-9x+6$ f) $2-4m+9+(-11m)$

13) Nina is confused about the meaning of the expressions 2x and x^2 .

- a) Explain the meaning of each of these expressions.
- b) Are there any values of x for which these two expressions are equal? Explain.

PART B

14) Evaluate each expression for the given value of the variable.

a)
$$-5x + 12$$
 for $x = -3$

b)
$$-8 + 20k$$
 for $k = -4$ c) $7x^2 - 1$ for $x = 3$

c)
$$7x^2 - 1$$
 for $x = 3$

d)
$$-3x^2 + 6x - 2$$
 for $x = 2$

e)
$$\frac{t-24}{3}$$
 for $t = 6$

d)
$$-3x^2 + 6x - 2$$
 for $x = 2$ e) $\frac{t - 24}{3}$ for $t = 6$ f) $-4(3t - 10)$ for $t = -9$

15) The height of a balloon after t seconds can be represented by the expression 2+3t. Use this expression to determine the balloon's height after 10 seconds.



16) The formula for the area of a circle with radius r is $A = \pi r^2$. Determine, to one decimal place, the area of a circle that has a radius of 6 cm.

ANSWERS

- **1**) a) 2 b) 1
- c) 3
 - d) 1
- e) 1
- f) 4 f) 6
- c) 17 d) -16 e) 13 **2)** a) 27 b) 16 3) a) The variable x is multiplied by 5.
 - b) 8 is added to the variable *t*.
 - c) The variable x is multiplied by 3 and then 7 is subtracted from the result.
 - d) 5 is added to the variable m and then the result is multiplied by -2.
 - e) The variable *y* is squared and then 3 is added to the result.
 - f) The variable x is squared and then the result is multiplied by -5 and increased by 10.
 - g) The variable p is cubed and then the result is divided by 4 and decreased by 7.

4) a)
$$3x-19$$

b)
$$v^2 + 10$$

c)
$$-8(n-6)$$

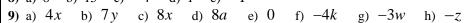
4) a)
$$3x-19$$
 b) y^2+10 c) $-8(n-6)$ d) $\frac{p+70}{6}$ **5)** a) 3 b) 4 c) 3 d) 5



g) -2



8) a) 8 b) 15 c) -4 d) 1 e) -1



10) a)
$$2x+3y$$
 b) $7a+16b$ c) $7g+13h$ d) $-3y-4$ e) $5t-4$ f) $-4x+11$

11) Shagun's claim is incorrect.
$$5x$$
 and 2 are not like terms and thus cannot be combined into a single term. $-2p+16$

12) a)
$$-2x$$
 b) $-6x$ c) $17x+8y$ d) $3a+6$ e) $-5x+3$ f) $-15m+11$

13) a)
$$2x = x + x$$
, whereas $x^2 = x \times x$. b) 0 and 2. When $x = 0$, both expressions work out to 0. When $x = 2$, both expressions work out to 4.

c)
$$62$$
 d) -2