

2.1 HOMEWORK HANDOUT: ALGEBRAIC EXPRESSIONS

PART A

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

a) $4x+3$ b) y 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) $x+25$ b) $8x$ c) $6x+5$ d) $4-10x$ e) $\frac{x}{2}+12$ f) $-3(x-4)$ g) $\frac{x-16}{7}$



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

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




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





- A number x is tripled and then 19 is subtracted from the result.
- The variable y is squared and then the result is increased by 10.
- The variable n is decreased by 6 and then the result is multiplied by -8 .
- 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.

a)  = 




b)  = 







c)  + 2  = 

d) 3  + 4  - 2  = 

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

a)  +  =  + 

b)  +  =  + 

c) 7  + 4  - 3  + 5  =  + 

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) $15y$ c) $-4x$ d) x e) $-y$

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 following expressions by collecting like terms.
- a) $x+x+y+y+y$ b) $2a+5a+6b+10b$ c) $3g+10h+4g+3h$
- d) $5y-8y+6-10$ e) $6t+5-t-9$ 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) $4x-3-9x+6$ 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 $x=3$
- 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
- 2) a) 27 b) 16 c) 17 d) -16 e) 13 f) 6 g) -2
- 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) y^2+10 c) $-8(n-6)$ d) $\frac{p+70}{6}$ 5) a) 3 b) 4 c) 3 d) 5
- 6) a) 2, 3 b) 4, 3 c) 4, 9 7) a) like terms b) unlike terms c) like terms d) unlike terms
- 8) a) 8 b) 15 c) -4 d) 1 e) -1
- 9) a) $4x$ b) $7y$ c) $8x$ d) $8a$ e) 0 f) $-4k$ g) $-3w$ h) $-z$
- 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.
- 14) a) 27 b) -88 c) 62 d) -2 e) -6 f) 148 15) 32 m 16) 113.1