

**N.CN.A.2: Operations with Complex Numbers 4**

- 1 For all values of  $a$  and  $b$ , what is the additive inverse of  $a + bi$ ?  
1)  $a - bi$  2)  $-a + bi$  3)  $a + bi$  4)  $-a - bi$
- 2 Express and simplify in  $a + bi$  form:  $(12 + 3i) - (3 - i)$
- 3 Subtract  $(3 - 2i)$  from  $(-2 + 3i)$ , and express in  $a + bi$  form.
- 4 The product of  $5 - 2i$  and  $i$  is  
1)  $7$  2)  $2 + 5i$  3)  $5 - 2i$  4)  $-2 + 5i$
- 5 The expression  $(1 + i)^2$  is equivalent to  
1)  $1$  2)  $2$  3)  $i$  4)  $2i$
- 6 The value of  $(1 - i)^2$  is  
1)  $0$  2)  $2$  3)  $-2i$  4)  $2 - 2i$
- 7 The expression  $(3 - i)^2$  is equivalent to  
1)  $8$  2)  $8 - 6i$  3)  $10$  4)  $8 + 6i$
- 8 Expressed in  $a + bi$  form,  $(1 + 3i)^2$  is equivalent to  
1)  $10 + 6i$  2)  $-8 + 6i$  3)  $10 - 6i$  4)  $-8 - 6i$
- 9 What is the product of the complex numbers  $2 + 3i$  and  $1 - 2i$  expressed in simplest terms?  
1)  $8 - i$  2)  $8$  3)  $-4 - i$  4)  $-4$
- 10 The product of  $(-2 + 6i)$  and  $(3 + 4i)$  is  
1)  $-6 + 24i$  2)  $-6 - 24i$  3)  $18 + 10i$  4)  $-30 + 10i$
- 11 The expression  $(i^3 - 1)(i^3 + 1)$  is equivalent to  
1)  $-2$  2)  $2i - 1$  3)  $2i + 1$  4)  $-2i$
- 12 Expand and express  $(i - 3)^4$  in simplest  $a + bi$  form, where  $i$  is the imaginary unit.
- 13 Where  $i$  is the imaginary unit, expand and simplify completely  $(3 - i)^4$ .
- 14 Express the complex number  $(1 + 2i)^4$  in  $a + bi$  form.
- 15 If  $4 + 2i - (a + 4i) = 9 - 2i$ , find the value of  $a$ .

**N.CN.A.2: Operations with Complex Numbers 4  
Answer Section**

1 ANS: 4 REF: 069520siii

2 ANS:  
 $9 + 4i$

REF: 019607siii

3 ANS:  
 $-5 + 5i$

REF: 069609siii

4 ANS: 2 REF: 089726siii

5 ANS: 4 REF: 089519siii

6 ANS: 3 REF: 019932siii

7 ANS: 2 REF: 019622siii

8 ANS: 2 REF: 069719siii

9 ANS: 1 REF: 080322siii

10 ANS: 4 REF: 069620siii

11 ANS: 1 REF: 010235siii

12 ANS:  
 $28 - 96i$

REF: 069940siii

13 ANS:  
 $28 - 96i$

REF: 080141siii

14 ANS:  
 $-7 - 24i$

REF: 069440siii

15 ANS:  
 $-5$

REF: 019510siii