

Algebra: Multiplying Complex Numbers

N

Practice Worksheet • numberbender.com

Name: _____ Date: _____ Score: _____

DIRECTIONSMultiply the complex numbers. Use $i^2 = -1$ to simplify. Write your answer in a + bi form.**1** Multiply:

$$3i \cdot 5i$$

Answer: _____

2 Multiply:

$$2i \cdot (3+4i)$$

Answer: _____

3 Multiply:

$$(1+i)(1-i)$$

Answer: _____

4 Multiply:

$$(2+3i)(1+i)$$

Answer: _____

5 Multiply:

$$(3-2i)(3+2i)$$

Answer: _____

6 Multiply:

$$(1+2i)(2+3i)$$

Answer: _____

7 Multiply:

$$(2+i)^2$$

Answer: _____

8 Multiply:

$$(4-i)(2+3i)$$

Answer: _____

9 Multiply:

$$(3+4i)(3-4i)$$

Answer: _____

10 Multiply:

$$(1-i)(2-3i)$$

Answer: _____

Answer Key & Solutions

Algebra: Multiplying Complex Numbers • Numberbender

N

TEACHER NOTES

Distribute like polynomials (FOIL for two binomials). Replace i^2 with -1 . Combine real parts and imaginary parts separately.

te/y.

$$\begin{aligned} 1 \quad & 3i \cdot 5i \\ & = -15 \end{aligned}$$

$$15i^2 = 15(-1) = -15$$

$$\begin{aligned} 2 \quad & 2i(3+4i) \\ & = -8 + 6i \end{aligned}$$

$$6i+8i^2 = 6i-8 = -8+6i$$

$$\begin{aligned} 3 \quad & (1+i)(1-i) \\ & = 2 \end{aligned}$$

$$1-i^2 = 1+1 = 2$$

$$\begin{aligned} 4 \quad & (2+3i)(1+i) \\ & = -1 + 5i \end{aligned}$$

$$2+2i+3i+3i^2 = 2+5i-3 = -1+5i$$

$$\begin{aligned} 5 \quad & (3-2i)(3+2i) \\ & = 13 \end{aligned}$$

$$9-4i^2 = 9+4 = 13$$

$$\begin{aligned} 6 \quad & (1+2i)(2+3i) \\ & = -4 + 7i \end{aligned}$$

$$2+3i+4i+6i^2 = 2+7i-6 = -4+7i$$

$$\begin{aligned} 7 \quad & (2+i)^2 \\ & = 3 + 4i \end{aligned}$$

$$4+4i+i^2 = 4+4i-1 = 3+4i$$

$$\begin{aligned} 8 \quad & (4-i)(2+3i) \\ & = 11 + 10i \end{aligned}$$

$$8+12i-2i-3i^2 = 8+10i+3 = 11+10i$$

$$\begin{aligned} 9 \quad & (3+4i)(3-4i) \\ & = 25 \end{aligned}$$

$$9-16i^2 = 9+16 = 25$$

$$\begin{aligned} 10 \quad & (1-i)(2-3i) \\ & = -1 - 5i \end{aligned}$$

$$2-3i-2i+3i^2 = 2-5i-3 = -1-5i$$