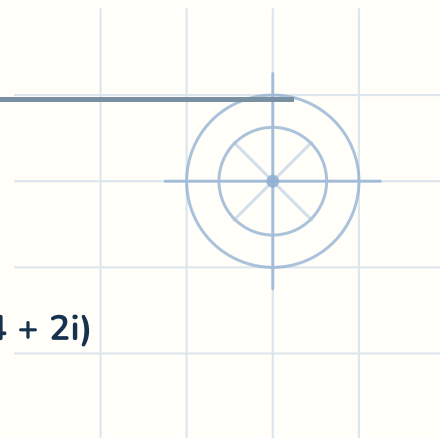


Complex numbers — Adding and subtracting

Name: _____

Date: _____

Add or subtract each pair of complex numbers.



1 $(-1 - 4i) - (-2 + 4i)$

$$\begin{aligned} -1 - (-2) &= 1 \\ -4 - 4 &= -8 \\ &= 1 - 8i \end{aligned}$$

2 $(5 - 2i) - (4 + 2i)$

3 $(-5 + 3i) - (-5 + 6i)$

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

5 $(2 - i) + (-3 - 2i)$

6 $(6 - 4i) + (-2 + 4i)$

7 $(-1 - 5i) + (6 - 6i)$

8 $(1 + 6i) + (1 - 4i)$

9 $(1 - 3i) - (-2 - 3i)$

10 $(2 - 5i) - (-1 - 3i)$

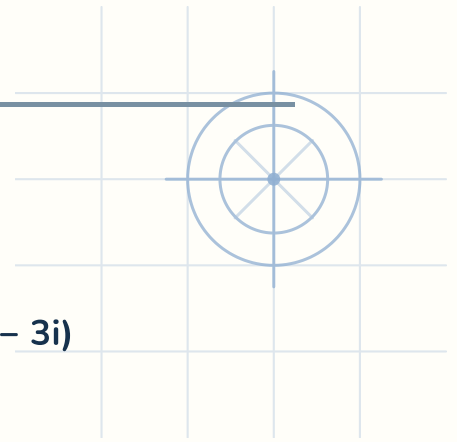


Complex numbers — Multiplying

Name: _____

Date: _____

Multiply each pair of complex numbers.



$$\begin{aligned} 1 \quad (3 + 2i)(-4 - 2i) \\ &= -12 - 6i - 8i - 4i^2 \\ &= -12 + 4 - 6i - 8i \\ &= -8 - 14i \end{aligned}$$

$$2 \quad (3 - 5i)(-1 - 3i)$$

$$3 \quad (2 - 6i)(6 + i)$$

$$4 \quad (-2 + 3i)(-5 + 6i)$$

$$5 \quad (-4 - 6i)(-6 - 6i)$$

$$6 \quad (-4 + 6i)(-6 - i)$$

$$7 \quad (6 + 4i)(-5 - i)$$

$$8 \quad (-2 - 4i)(5 + i)$$

$$9 \quad (-1 + 2i)(3 - 5i)$$

$$10 \quad (1 + 3i)(2 + 3i)$$



Complex numbers — Powers of i

Name: _____

Date: _____

Work out each power of i .

1 i^6

$$\begin{aligned} i^1 &= i, i^2 = -1, i^3 = -i, i^4 = 1 \\ 6 \div 4 &= 1 \text{ remainder } 2 \\ &= -1 \end{aligned}$$

2 i^{23}

3 i^{16}

4 i^{15}

5 i^5

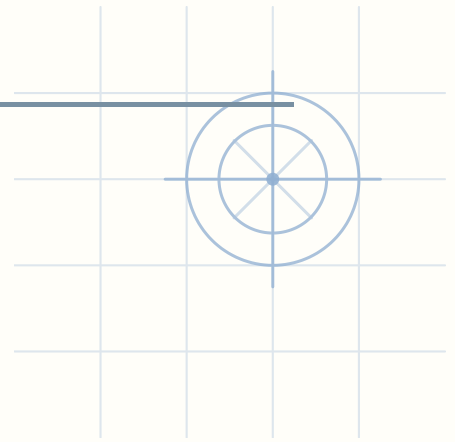
6 i^8

7 i^2

8 i^{20}

9 i^{11}

10 i^{10}



Power Pack · Complex numbers — Answer key

Add and subtract

1. $(-1 - 4i) - (-2 + 4i) = 1 - 8i$

2. $(5 - 2i) - (4 + 2i) = 1 - 4i$

3. $(-5 + 3i) - (-5 + 6i) = -3i$

4. $(-2 - 3i) + (-2 - 3i) = -4 - 6i$

5. $(2 - i) + (-3 - 2i) = -1 - 3i$

6. $(6 - 4i) + (-2 + 4i) = 4$

7. $(-1 - 5i) + (6 - 6i) = 5 - 11i$

8. $(1 + 6i) + (1 - 4i) = 2 + 2i$

9. $(1 - 3i) - (-2 - 3i) = 3$

10. $(2 - 5i) - (-1 - 3i) = 3 - 2i$

Multiply

1. $(3 + 2i)(-4 - 2i) = -8 - 14i$

2. $(3 - 5i)(-1 - 3i) = -18 - 4i$

3. $(2 - 6i)(6 + i) = 18 - 34i$

4. $(-2 + 3i)(-5 + 6i) = -8 - 27i$

5. $(-4 - 6i)(-6 - 6i) = -12 + 60i$

6. $(-4 + 6i)(-6 - i) = 30 - 32i$

7. $(6 + 4i)(-5 - i) = -26 - 26i$

8. $(-2 - 4i)(5 + i) = -6 - 22i$

9. $(-1 + 2i)(3 - 5i) = 7 + 11i$

10. $(1 + 3i)(2 + 3i) = -7 + 9i$

Powers of i

1. $i^6 = -1$

2. $i^{23} = -i$

3. $i^{16} = 1$

4. $i^{15} = -i$

5. $i^5 = i$

6. $i^8 = 1$

7. $i^2 = -1$

8. $i^{20} = 1$

9. $i^{11} = -i$

10. $i^{10} = -1$

