Algebra: The Distance Formula

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Name: _____ Date: _____ Score: ____ / 10

DIRECTIONS

Use the Distance Formula $d = \sqrt{[(x_2-x_1)^2 + (y_2-y_1)^2]}$ to find the distance between each pair of points. Simplify all radicals.

1. Find d:
   (0, 0) and (3, 4)
   Answer: _____

2. Find d:
   (1, 2) and (4, 6)
   Answer: _____

3. Find d:
   (−3, 0) and (0, 4)
   Answer: _____

4. Find d:
   (2, −1) and (2, 5)
   Answer: _____

5. Find d:
   (−1, −1) and (2, 3)
   Answer: _____

6. Find d:
   (0, −3) and (4, 0)
   Answer: _____

7. Find d:
   (−2, 3) and (4, −5)
   Answer: _____

8. Find d:
   (3, −2) and (−1, 1)
   Answer: _____

9. Find d:
   (−5, 2) and (3, −4)
   Answer: _____

10. Which is farther? A: (0,0)→(6,8) or B: (−3,1)→(3,−7)
    Show work for both.
    Answer: _____

Based on the Numberbender lesson "ALGEBRA: Using the Distance Formula" • youtu.be/5JilGerPyW4

Answer Key & Solutions

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TEACHER NOTES

Items 1–6: results are perfect squares — no radical simplification needed. Items 7–8: results simplify cleanly. Items 9–10: compare or apply distances. Remind students to square both differences before adding under the radical.

1. Find d: (0, 0) and (3, 4)

Answer: 5

$\sqrt{(3^2+4^2)} = \sqrt{(9+16)} = \sqrt{25} = 5.$

2. Find d: (1, 2) and (4, 6)

Answer: 5

$\sqrt{(3^2+4^2)} = \sqrt{(9+16)} = \sqrt{25} = 5.$

3. Find d: (−3, 0) and (0, 4)

Answer: 5

$\sqrt{(3^2+4^2)} = \sqrt{(9+16)} = \sqrt{25} = 5.$

4. Find d: (2, −1) and (2, 5)

Answer: 6

$\sqrt{(0^2+6^2)} = \sqrt{36} = 6.$

5. Find d: (−1, −1) and (2, 3)

Answer: 5

$\sqrt{(3^2+4^2)} = \sqrt{(9+16)} = \sqrt{25} = 5.$

6. Find d: (0, −3) and (4, 0)

Answer: 5

$\sqrt{(4^2+3^2)} = \sqrt{(16+9)} = \sqrt{25} = 5.$

7. Find d: (−2, 3) and (4, −5)

Answer: 10

$\sqrt{(6^2+8^2)} = \sqrt{(36+64)} = \sqrt{100} = 10.$

8. Find d: (3, −2) and (−1, 1)

Answer: 5

$\sqrt{(4^2+3^2)} = \sqrt{(16+9)} = \sqrt{25} = 5.$

9. Find d: (−5, 2) and (3, −4)

Answer: 10

$\sqrt{(8^2+6^2)} = \sqrt{(64+36)} = \sqrt{100} = 10.$

10. Which is farther? A: (0,0)→(6,8) or B: (−3,1)→(3,−7) Show work for both.

Answer: Equal — both d = 10

A: $\sqrt{(36+64)}=10$; B: $\sqrt{(36+64)}=10$. Same distance.