Algebra and coordinates Worksheet

ACT Math

Name _____ Date _____

Warm-up

1. Find the midpoint of $(-3, -5)$ and $(1, 3)$.
   $x =$ _____ $y =$ _____

2. $f(x) = 2x - 3$. Find $f(2)$.

3. Solve: $9x + 8 = -19$

4. Find the slope of $y = 4x + 5$.

5. $a \star b = a + 2b$. Find $5 \star 8$.

Practice

6. What slope is perpendicular to $y = 9x + 1$?

7. Simplify: $\dfrac{x^2 + 12x + 27}{x + 3}$

8. Solve: $|x - 3| = 8$. Write both answers, separated by a comma.

9. Find the slope of $4x + 6y = 8$.

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10. $f(x) = x^2 - 7x$. Find $f(-2)$.

11. Solve: $\sqrt{x-8} = 3$

12. Find the distance from $(-1, -1)$ to $(5, 7)$.

13. Simplify: $\dfrac{x^2 - 36}{x + 6}$

Challenge

14. Find k so the line through $(1, 2)$ and $(3, k)$ has slope 2.

15. If $x + \dfrac{1}{x} = 6$, find $x^2 + \dfrac{1}{x^2}$.

16. If $5x + 2 = 12$, what's $15x$?

17. One endpoint is $(0, 3)$ and the midpoint is $(4, 7)$. Find the other endpoint's x.

18. $x \star y = 2x - y$. Find $2 \star (1 \star 1)$.

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Algebra and coordinates Worksheet: Answer Key

ACT Math

1. $x = -1$, $y = -1$

   Average each coordinate.

2. 1

   Substitute.

3. -3

   Undo 8, then divide.

4. 4

   Coefficient of x.

5. 21

   Follow the rule.

6. $-\dfrac{1}{9}$

   Negative reciprocal.

7. $x + 9$

   Factor the top.

8. $x = 11,\ -5$

   $x - 3 = \pm 8$.

9. $-\dfrac{4}{6}$

   Solve for y.

10. 18

    $(-2)^2 - 7(-2)$.

11. 17

    $x - 8 = 9$.

12. 10

    6 and 8 make a right triangle.

13. $x - 6$

    Factor the top.

14. 6

    $\dfrac{k-2}{2} = 2$.

15. 34

    Square both sides. The middle term is 2.

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16. 30

    $5x = 10$, then scale by 3.

17. 8

    Same step again.

18. 3

    Inside first: 1.

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