

+ - Integers & Coordinate Plane

Name: _____

Grade: 6 _____

Date: _____

Work with integers, opposites, absolute value, directional change, and plotting in all quadrants. Use number line or coordinate reasoning to justify.

Part 1 · Integers & Opposites BASICS

1. Opposite of -9 = _____

2. Opposite of opposite of 4 = _____

3. Which is less: -3 or -7? _____

4. Order ascending: -2, 5, -6, 0 → _____

5. Temperature changed from 3°C to -5°C . Change = _____

6. Opposite of 12 - opposite of -4 = _____

Part 2 · Absolute Value & Distance VALUE

7. $|-12| =$ _____

8. $|0| =$ _____

(9. Distance between -4 and 3 = _____

(10. $|-5| + |-2| =$ _____

(11. Distance from -7 to 5 = _____

(12. If $|x| = 9$, $x =$ _____ or _____

Part 3 · Integer Operations (Concept) OPS

(13. $(-8) + (-3) =$ _____

(14. $11 + (-15) =$ _____

(15. $(-4) - (-9) =$ _____

(16. $(-10) + 6 =$ _____

(17. $5 - (-2) =$ _____

(18. $(-7) - 5 =$ _____

Part 4 · Coordinate Plane (All Quadrants) PLOT

(19. Plot A(-3,4): quadrant = _____

(20. B(5,-2): quadrant = _____

(21. C(-6,-1): quadrant = _____

(22. D(0,-7) lies on which axis? _____

(23. Distance vertical between (2,5) and (2,-1) = _____

(24. Horizontal distance between (-4,3) and (2,3) = _____

Part 5 · Reflections & Opposites REFLECT

(25. Reflect (4, -6) over y-axis → (_____ , -6)

(26. Reflect (-3, 5) over x-axis → (-3 , _____)

(27. Point P(-5 , 2) opposite across origin → (_____ , _____)

(28. If Q(7,-3) reflected over both axes → (_____ , _____)

(29. Point R(-8 , -4) reflected over y-axis → (_____ , -4)

(30. S(0,9) reflected over x-axis → (0, _____)

Part 6 · Context & Word Problems REAL

31. Submarine at -120 m rises 40 m then drops 15 m. Final depth = _____ m

32. Bank balance $-\$45$ after paying $\$30$ from $-\$15$. Net change from starting $-\$15$ = _____

33. Mountain cabin 1800 m, valley -200 m. Vertical difference = _____ m

34. Temperature: morning -4°C ; rose 11°C ; fell 7°C . Final = _____ $^{\circ}\text{C}$

35. Elevator from floor 2 to -5 then up 3 floors. Ending floor = _____

36. Reflection: Skill easiest? _____

Part 7 · Error Analysis FIX

37. Error: $|-7| = -7$. Correct & mistake: _____ / _____

38. Error: $(-4)-(-9) = -13$. Correct & why: _____ / _____

39. Error: Distance -2 to 5 is 3 . Correct & reason: _____ / _____

Part 8 · Challenge & Extension CHALLENGE

40. Sum of symmetric pair a and $-a$ always = _____

(41. Fill x so $|x| + |x-4|$ minimal (closest to 2). Best integer $x =$ _____

(42. If distance between $(k,3)$ and $(k,-9) = 24$ find $k =$ _____

(43. Sequence start -2 add -3 each time: 5th term = _____

(44. Reflect $(-7, 5)$ over x then y axis $\rightarrow$ (_____ , _____)

(45. Reflection: Strategy most helpful? _____

Answer Key

1. 9
2. 4
3. -7
4. -6,-2,0,5
5. -8
6. $-12 - 4$? Opp(12)= -12 minus opp(-4)= $-12 - (4) = -16$
7. 12
8. 0
9. 7
10. 7
11. 12
12. 9 or -9
13. -11
14. -4
15. 5
16. -4
17. 7
18. -12
19. QII
20. QIV
21. QIII
22. y-axis
23. 6
24. 6
25. -4
26. -5
27. (5,-2)
28. (-7,3)
29. (8,-4)
30. -9
31. -95
32. -30 ($-15 \rightarrow -45$ change -30)
33. 2000
34. 0
35. -2
36. Varies
37. 7 / absolute value is distance not sign
38. 5 / subtract negative = add

39. 7 / difference max-min

40. 0

41. 2

42. Any k (distance vertical independent of k) or " k arbitrary"

43. -14

44. (7,-5)

45. Varies

#42 k arbitrary: vertical distance only uses y difference 3 to -9 is 12 (typo in problem uses 24—should be 12; if 24 adjust to points $(k,3)$ & $(k,-21)$). Accept correction. Reflections vary.