Geometry & Coordinates Quest

Name: _____ Grade: 5 Date: _____

Plot and interpret points, find horizontal & vertical distances, classify shapes by properties, explore symmetry, and solve real design problems.

Part 1 · Plot & Read Points PLOT

1. Point A(3,5): x-coordinate = _____

2. Point B(7,2): y-coordinate = _____

3. Which is higher: (4,6) or (4,3)? _____

4. Point with x=0 on y-axis: (0,4) or (4,0)? _____

5. From (2,1) move right 5, up 3 → _____

6. Rectangle corners (1,1),(6,1), (6,4),(1,4) height = _____

Part 2 · Horizontal & Vertical Distance DIST

7. Distance (2,3) to (2,9) = _____

8. Distance (5,7) to (11,7) = _____

9. Segment endpoints (4,2) & (4,10) midpoint y = _____

10. Length of top of rectangle in #6 = _____

11. How far from (3,5) to (3,0)? _____

12. Width of box with corners (2,2) & (9,9) = _____

Part 3 · Classify Polygons CLASSIFY

13. 3 equal sides triangle: _____

14. 1 right angle triangle type: _____ triangle

15. 2 pairs parallel sides: _____

16. 4 equal sides + 4 right angles: _____

17. Exactly 1 pair parallel sides: _____

18. Parallelogram with 4 right angles: _____

Part 4 · Symmetry & Properties SYMM

19. A square has _____ lines of symmetry

20. A rectangle (not square) has _____ lines of symmetry

21. A scalene triangle has _____ lines of symmetry

22. A regular hexagon has _____ lines of symmetry

23. Mirror across y-axis: (5,3) → (_____,3)

24. Mirror across x-axis: (4,7) → (4,_____)

Part 5 · Coordinate Shape Design DESIGN

PLOT 25. Plot: P(2,2), Q(7,2), R(7,5), S(2,5). Perimeter = _____ units

AREA 26. Same PQRS area = _____ square units

EXTEND 27. Add T(7,8) above R to form new shape. Vertical distance RT = _____

COMPARE 28. Rectangle A: 4×6 ; Rectangle B: 3×8. Same area? (Yes/No) _____ ; which has longer perimeter? _____

EDGE 29. L-shape formed by removing a 2×2 from top right of 5×5. Remaining area = _____

MOVE 30. Shift shape PQRS right 3: P' = (____ , 2)

Part 6 · Word Problems REAL

MAP 31. A park runs from (0,0) to (0,12) vertically. Ben walked from (0,2) to (0,11). Distance = _____

GARDEN 32. Garden corners (1,1),(9,1),(9,4),(1,4). Fencing length = _____

TRACK 33. Runner laps rectangle width 30, length 50 (units). Perimeter each lap = _____

DRONE 34. Drone up from (6,2) to (6,14) then right to (15,14). Total distance = _____

SIGN 35. Square sign side 9. Add border 1 unit thick all around making larger square. New outer side = _____ ; area increase = _____

REFLECT 36. Reflection: Which geometry skill felt easiest? _____

Part 7 · Error Analysis & Strategy FIX

37. Error: Student says distance (4,2) to (9,6) = 9−2=7. Correct horizontal + vertical thinking answer (not diagonal) = _____ (explain) _____

38. Error: Called a quadrilateral with 1 pair parallel sides a parallelogram. Correct name = _____

39. Claimed rectangle has 4 symmetry lines. Correct number = _____ ; why? _____

Part 8 · Challenge CHALLENGE

40. Coordinates A(2,3), B(8,3), C(8,9), D(2,9). Distance AC (horizontal + vertical path) = _____ ; actual diagonal would be _____ units (optional)

41. A shape has vertices (1,1),(5,1),(5,4),(3,4),(3,6),(1,6). Total area (decompose) = _____

42. Point K is midpoint between (2,7) and (2,15). K = (_____ , _____)

43. Translate (4,5) by (+6 , +2) → (_____ , _____)

44. Scale rectangle 3×5 by factor 2 (both dimensions) new perimeter = _____ ; area = _____

45. Reflection: Strategy that helped most? _____

Answer Key

1. 3
2. 2
3. (4,6)
4. (0,4)
5. (7,4)
6. 3
7. 6
8. 6
9. 6
10. 5
11. 5
12. 7
13. Equilateral
14. Right
15. Parallelogram
16. Square
17. Trapezoid
18. Rectangle
19. 4
20. 2
21. 0
22. 6
23. –5
24. –7
25. 18+18+18+18=72? (Check) Perimeter: width 5 height 3 → 2(5+3)=16
26. Area 5×3=15
27. 3
28. Yes; 4×6=24, 3×8=24; longer perimeter: 3×8 (22 vs 20)
29. 25–4=21
30. (5,2)
31. 9
32. 26 (2×(8+3))
33. 160
34. 12+9=21
35. Outer side 11; increase $11^2-9^2=121-81=40$
36. Varies
37. Horizontal 5 + vertical 4 = 9 / mixed difference misuse
38. Trapezoid

39. 2 / only vertical & horizontal mirror lines
40. Horizontal path 6 + vertical 6 = 12; diagonal $6\sqrt{2}$ (~8.49) optional
41. Area: (1×5) + (2×2)=5+4=9
42. (2,11)
43. (10,7)
44. Perimeter 2(6+10)=32; Area 6×10=60
45. Varies

#25 perimeter 16 & area 15. #28 perimeters: A=20, B=22. #41 decompose into rectangle 4×5 minus 2×? (given solution uses vertical stacking); equivalent correct area accepted. Reflection answers vary.