

Playground Designer

Teacher Guide & Answer Keys

Grade 5 · All levels

Overview

Students design a playground on a coordinate grid. They plot equipment at ordered pairs, find distances along grid lines, find the fourth corner and perimeter of rectangular areas, and interpret a graph of visitors over time.

Time: 2 class periods · **Product:** Playground Map · **Standards:** 5.G.A.1, 5.G.A.2

Suggested pacing

- Day 1: Introduce the challenge, read the scenario together, and work Parts 1–2 in pairs.
- Day 2: Finish the remaining parts and create the final product.
- Wrap-up: Share products and reflect on strategies.

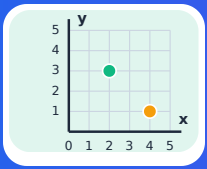
Levels

- **Remedial:** smaller numbers, fewer steps, more structure.
- **Standard:** grade-level numbers and the full set of tasks.
- **Advanced:** harder numbers, extra reasoning and multi-step questions.

All three levels practice the same learning goals, so the class can share and compare work.

Rubric

Category	4 Excellent	3 Good	2 Developing	1 Beginning
Math accuracy	All answers correct	Most answers correct	Some answers correct	Few answers correct
Shows work	Clear work for every step	Work for most steps	Some work shown	Little work shown
Explains thinking	Clear, complete explanations	Mostly clear explanations	Some explanation	Little explanation
Final product	Complete, neat and creative	Complete and neat	Partly complete	Not complete



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Answer key · Remedial KEY

Part 1: Plot the Equipment

1. Plot and label each point. How far is the Swings from the Slide?
4 units

2. How far is the Slide from the Sandbox?
4 units

Part 2: Fence the Play Area

3. Where is the fourth corner?
(2, 7)

4. What is the perimeter of the fence?
16 units

5. What is the area inside?
16 square units

Part 3: Visitors

6. List the ordered pairs.
(0, 0), (1, 3), (2, 6), (3, 9), (4, 12)

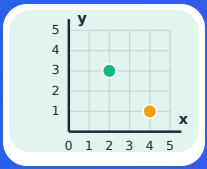
7. What does the point (3, 9) mean?
After 3 hours, 9 families have visited.

Part 4: Your Design

8. Coordinates and distance:
Answers vary.

Extension

(4, 3)



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Answer key · Standard KEY

Part 1: Plot the Equipment

1. Plot and label each point. How far is the Swings from the Slide?
7 units

2. How far is the Slide from the Sandbox?
6 units

Part 2: Fence the Play Area

3. Where is the fourth corner?
(2, 10)

4. What is the perimeter of the fence?
26 units

5. What is the area inside?
42 square units

Part 3: Visitors

6. List the ordered pairs.
(0, 0), (1, 5), (2, 10), (3, 15), (4, 20)

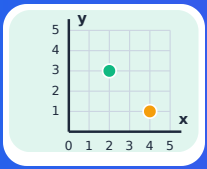
7. What does the point (3, 15) mean?
After 3 hours, 15 families have visited.

Part 4: Your Design

8. Coordinates and distance:
Answers vary.

Extension

(5.5, 4)



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Answer key · Advanced KEY

Part 1: Plot the Equipment

1. Plot and label each point. How far is the Swings from the Slide?
8 units

2. How far is the Slide from the Sandbox?
7 units

Part 2: Fence the Play Area

3. Where is the fourth corner?
(3, 9)

4. What is the perimeter of the fence?
30 units

5. What is the area inside?
56 square units

Part 3: Visitors

6. List the ordered pairs.
(0, 0), (1, 7), (2, 14), (3, 21), (4, 28)

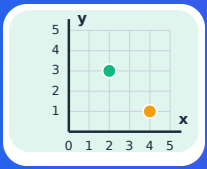
7. What does the point (3, 21) mean?
After 3 hours, 21 families have visited.

Part 4: Your Design

8. Coordinates and distance:
Answers vary.

Extension

(7, 2)



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Worked teacher example (Standard, Part 1)

Plot and label each point. How far is the Swings from the Slide?

7 units

How far is the Slide from the Sandbox?

6 units

Model the first part aloud: read the situation, name the operation, estimate, solve, and check. Then let partners try Part 2.

Look for

- Students use correct notation and units in every answer.
- Students explain why an answer is reasonable (estimates, benchmarks, pictures).
- Final products show the math clearly, not just the answers.