# Designing a City Park

## A WebQuest for 9th- 12th Grade (Geometry)


Designed by

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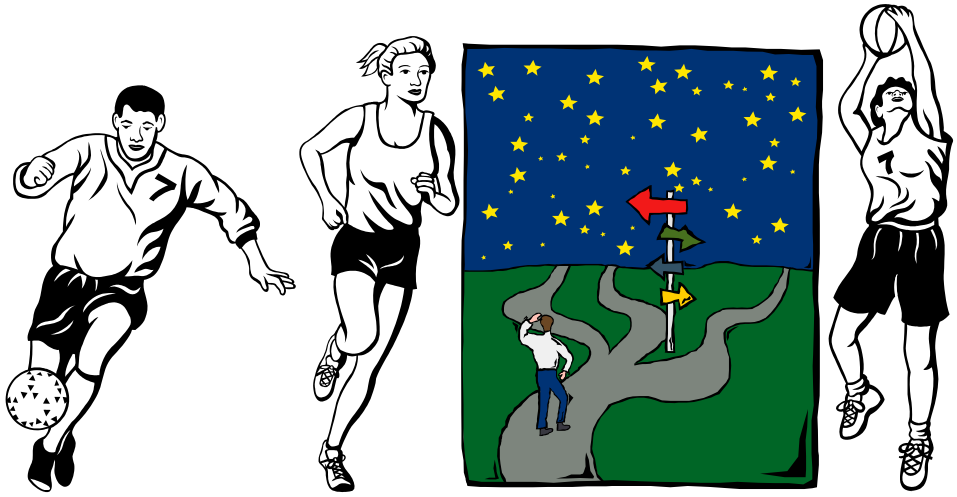


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**Introduction**

Recreational parks are an important part of a community. They provide a place for kids to play on a playground, for youth and adults to participate in athletic events. A park is a great place to have a family reunion complete with barbecuing hamburgers and a rousing game of volleyball or softball. Recreation is an important part of our daily lives.
The county in which you live has realized that there is a need for more recreational facilities in the area and has decided to devote a square

mile block for a park facility. The firm with which you are employed has decided to submit a proposal for the design of the park, and you have been selected to be a part of the design team that will create the layout of the park.



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**The Task**

Your design team, which includes you and three others, will be creating a proposal for the layout of the park. This design will then be presented to the city council. During your work on the project you will need to keep an **individual log** of your part in the team. You will record all research findings as well as any ideas that you come up with. Upon completion of the project, your team will have:

- a **log of minutes** of team meetings (including all decisions and answers),
- detailed **blueprints** of the park layout,
- a **written description** of the proposed park facilities,
- a **Power Point presentation** that will be presented to the city council, and
- a **scale model** of the park (extra credit).



**The Process**

## 1. Initial Development:

- Your employers have assigned you to a team of four people. You will start out working together, but will eventually branch out to complete individual research. You will have two roles in your team, the first relating to the team work, the second relating to your research topic.
- The first task in your team is to select team roles. The four roles are: **recorder** (takes minutes at meetings and writes report), **artist** (makes sketches of layout and blueprints), **technologist** (creates Power Point presentation and blueprints), and **reporter** (makes presentation and blueprints).

## 2. Brainstorming:

Answer the following in your individual log:
1. What do you like to do at the park?
2. What makes a park attractive to you?

3. What are some ways that a park will benefit the community in which you live?

Once you've answered the questions and selected your roles, the team will brainstorm ideas for the park. Think about things that you would like to be able to do in the park. Remember the following rules for your brainstorming session:

- anything goes, do not limit your ideas because of time, space or money,
- do not evaluate ideas, this is an idea generating session
- write all ideas so that each team member can see the list
- set a time limit (about 10 minutes)

After your brainstorming session is through, break the list of ideas into four categories:

- playground equipment,
- athletic facilities,
- landscaping,
- park buildings/structures.

If there is not much in the category, don't worry at this point. You will get more ideas as you do your research.

## 3. Individual Research:

Each member of the team needs to choose one of the categories to research. You will need to look for different things depending on which topic you research. Use the resources listed on this site for your research.

- **Playground equipment:** Look at the different types of playground equipment that are available (keep in mind the area needed for the equipment). Examine the safety issues of playground, such as ground covering and extra space around the equipment. Compare and contrast the different playground equipment that is available. Keep records of your findings to share with your team.
- **Athletic facilities:** Look at the various types of athletic facilities that could be included in the park. Compare and contrast the different types of court surfaces. Make sure you include dimensions of the fields/facilities as well as any area that may be required around the field for ease of play or spectators. Keep records of your findings to share with your team.
- **Landscaping:** Look at the various types of vegetation that will grow well (and look nice) with minimal maintenance. Look for vegetation that will be ecologically sound in your environment. Compare and contrast various ground surfaces that you would like to include in your park. Keep records of your findings to share with your team. (It may be helpful if the recorder investigates this area.)

- **Park buildings/facilities:** Look at various structures that you would like to include in your park. Think about what types of structures will be helpful in your park. Determine advantages and disadvantages of various types of buildings and ramadas. Keep records of your findings to share with your team.

If you are finding it difficult to find information, you might want to look at the websites for various parks to know what facilities and landscaping options have been used in the past. Keep notes regarding your research as you will be bringing your information back to the team for collaboration and decision making.

## 4. Park Layout:

Once everyone has completed their research, you will need to meet together as a team to discuss what you would like to actually include in the park as well as the layout of the park.

- First, calculate the amount of area that is available for use. (There are resources provided for assistance.)
- Second, determine how much area you want to devote to various things (athletic facilities, playground, picnic areas, etc.) Don't forget that people will need a place to park!
- Third, as a group, determine where you want to place everything that you want in your park. You might want to make rough "models" out of paper that you can move around until you create a layout that you like. Don't forget to include dimensions for each item that you are putting in your park - you want to make sure everything fits!
- Once you have agreed on an appropriate layout, the artist will need to make a sketch of the layout that will be used for the report and the blueprints.
- Determine an appropriate name for your park.

Answer the following questions in your team meeting minutes:

1. What types of symmetry are you using in your park? How does this symmetry enhance your park?
2. What types of shapes have you included in your park? How are these shapes used and why are they used?
3. What types of congruent figures have you used in your park? Why are these congruent shapes used?
4. What types of similar figures have you used in your park? Why are these similar shapes used?

## 5. Projects (Report, Blueprints, Presentation):

- **Recorder:** Write a rough draft of the report. Include any facilities that are available in the park as well as dimensions of the facilities. Discuss the type of vegetation and landscaping that will be present in your park. Also, give a brief summary of how

this park will benefit the community. This should be done using Microsoft word.

- **Artist, Reporter and Technologist:** Create the blueprints for the park. You will need to decide on a scale for the blueprints. Turn the sketch of the park into a coordinate system (x- and y-axes, you may want to use the first quadrant only). Use this system to help you make the blueprints. There are resources provided for assistance. You may need to play around with the scale until you find one that works for your design. Make sure you include all dimensions in your blueprints. The artist should be in charge of this project as the reporter and technologist have other responsibilities.
- **Technologist, Reporter:** Create a "rough draft" of your Power Point presentation. Remember that this will be used to present your park design to the city council. You may want to include information that will persuade the council of how your design will benefit the community. You will want to work together as the reporter will be presenting the information that the technologist has created.

## 6. Team Feedback/Revisions:

As a team evaluate the rough draft of the report and the Power Point presentation. Give suggestions of how these may be improved. Remember that this is a team effort.
Make the appropriate revisions and discuss whether any revisions are necessary.

## 7. Scale Model:

For extra credit, use your blueprints to make a scale model of your proposed park. Be creative in building the park, and don't forget to include additional things such as garbage cans.

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**Resources**

## Park Facility Sites:

Metro parks has information on each of the city's parks as well as the facilities available and people to contact. Also included is information concerning benefits of having parks.
Parks in Nashville and Middle Tennessee is a directory with links to various park sites.
Williamson County has links to various recreation and park facilities in the county.
Hendersonville has links to park facilities in the city.

## Playground Sites:

Games and Sports has pictures and information on playground equipment as well as benches, tables and other equipment.
The World Playground, Parks & Recreation Products & Services Web Directory is a comprehensive listing of playground equipment and athletic facilities with links to manufacturers and safety sites.
Playgroundweb.com has images of various playground equipment.
The National Program For Playground Safety has guidelines for playground safety.
Child Safe Products: Playground Surfaces is a commercial site with information regarding ground covering for playgrounds.
American Academy of Orthopaedic Surgeons Public Information, Play It Safe Playground" is an article discussing various aspects of playground safety.

## Athletic Facility Sites:

The World Playground, Parks & Recreation Products & Services Web Directory is a comprehensive listing of playground equipment and athletic facilities with links to manufacturers and safety sites.
Sports Stop Station is a student designed site with information of various sports such as basketball, soccer and tennis.
Sports & Recreation Web is a directory of links to "tons" of information on all types of sports.
Best Brands in Tennis Court Construction is a good place to find the dimensions of a tennis court as well as other information about tennis courts.
US Tennis Court & Track Builders Association is another good site for finding dimensions and other information about tennis courts and running tracks.
Basketball Regulations is another student designed page with information on regulation court dimensions.
Volleyball Wide World has a lot of information about volleyball, including regular and sand court dimensions.
The Yellow Pages of Swimming is a great place to find out everything you ever wanted to know about the sport (including sizes of various pools).

## Landscaping Sites:

National Gardening has information regarding landscaping.
Gardening is a site that has information on desert vegetation as well as plants that thrive in other regions.
Yahoo! Landscaping Directory is a listing of links to various commercial sites that will help you if you do not want to include desert landscaping.

Google – Gardening Directory has information and how to on landscaping.
Green Acres has information concerning different native plants and landscaping.

## Math Resources:

Various Math Topics is a good place to visit for assistance with area and ratios (for the blueprints).
Conversion Table will allow you to make conversions with area.

Your geometry textbook is also a good resource for area and ratio problems.

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**Evaluation**

## Individual Log (Individual Grade):

Your individual log will be evaluated based on completeness. It should include all your research findings.

## Team Meeting Minutes (Group Grade):

The meeting minutes will be evaluated based on completeness. They should include all decisions that are made during meetings, as well as answers to the questions in #4 of the process.

| **Team Meeting Minutes** | **Exemplary** 4 points | **Accomplished** 3 points | **Developing** 2 points | **Beginning** 1 point |
|---|---|---|---|---|
| completeness | minutes for all meetings | minutes for most meetings | minutes for some meetings | few minutes for meetings |
| organization | minutes are well organized | minutes are organized | minutes are minimally organized | minutes are not organized |
| questions | all questions answered with complete sentences | most questions are answered with complete sentences | some questions are answered with complete sentences | few questions are answered with complete sentences |

| | | | | |
|---|---|---|---|---|
| accuracy | all answers are accurate | most answers are accurate | some answers are accurate | few answers are accurate |

## Blueprints (Group Grade):

Your blueprints will be evaluated on the following criteria:

- neatness,
- appropriate scale,
- inclusion of all dimensions, and
- accuracy.

| **Blueprints** | **Exemplary** 4 points | **Accomplished** 3 points | **Developing** 2 points | **Beginning** 1 point |
|---|---|---|---|---|
| neatness | blueprints are very neat with not stray marks | blueprints are neat with few stray marks | blueprints are neat with several stray marks | blueprints have many stray marks |
| scale | the scale used is the most appropriate scale | the scale use is appropriate | the scale use is adequate | the scale used is difficult to read |
| dimensions | all dimensions are shown | most dimensions are shown | some dimensions are shown | few dimensions are shown |
| accuracy | the drawing is completely accurate | the drawing is mostly accurate | the drawing is somewhat accurate | the drawing is minimally accurate |

## Written Description (Group Grade):

Your written description should be word-processed with appropriate grammar and spelling. It will be evaluated on the inclusion of the following criteria:

- a description of the facilities offered at the park,
- a description of the vegetation and landscaping in the park, and
- a brief summary of how this park will benefit the community.

| **Written Description** | **Exemplary** 4 points | **Accomplished** 3 points | **Developing** 2 points | **Beginning** 1 point |
|---|---|---|---|---|
| grammar/spelling | grammar and spelling are accurate with no errors | grammar and spelling are mostly accurate with few errors | grammar and spelling are somewhat accurate with | grammar and spelling are minimally accurate with many errors |

| | | | | |
|---|---|---|---|---|
| | | | several errors | |
| facilities | includes a complete description of all facilities | includes a complete description of most facilities | includes a discription of some facilities | includes a description of few facilities |
| vegetation/landscaping | all vegetation and landscaping designs are detailed completely | most vegetation and landscaping designs are detailed | some vegetation and landscaping designs are described | few vegetation and landscaping designs are mentioned |
| summary | includes a persuasive summary of how the design will benefit the community | includes a summary of how the design will benefit the community | | |

## Presentation (Group Grade):

Your presentation should be well organized and will be evaluated on the inclusion of the following criteria:

- Power Point presentation
- a brief description of the park facilities, and
- a persuasive "argument" of how your design will benefit the community.

| **Team Meeting Minutes** | **Exemplary** 4 points | **Accomplished** 3 points | **Developing** 2 points | **Beginning** 1 point |
|---|---|---|---|---|
| organization | well organized | mostly organizes | somewhat organized | minimally organized |
| visual aids | all are relevant and helpful | most are relevant and helpful | some are relevant and helpful | few are relevant and helpful |
| description | includes all facilities | includes most facilities | includes some facilities | includes few facilities |
| argument | very persuasive - this would be the top choice | fairly persuasive - this choice is in the top two choices | somewhat persuasive - this is in the top five choices | minimally persuasive - this is in the top 20 choices |

## Conclusion

During this project, you were able to experience a little of the work that goes into designing a park. You worked with various geometry topics including symmetry, area, similarity and congruence. How do you think the local parks compare with your park? The next time you go to the park, look around at the layout and see what the designers did to create a comfortable and inviting environment (and remember all the work that goes into designing that environment!).

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## Credits & References

I would like to thank Krystlin Thomas for her webquest that I adapted for my students.

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