



What? Play Golf in Math Class?

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iMATHination

2012 Conference

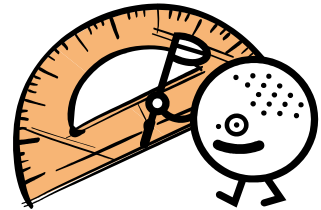
Common Core State Standards for Mathematics - Content Standards

Similarity, Right Triangles, and Trigonometry	<ul style="list-style-type: none"> Define trigonometric ratios and solve problems involving right triangles. G.SRT.6, 7, 8 Apply trigonometry to general triangles. G.SRT.9, 10, 11
Expressing Geometric Properties with Equations	<ul style="list-style-type: none"> Use coordinates to prove simple geometric theorems algebraically. Include distance formula; relate to Pythagorean theorem G. GPE.4, 5, 6, 7
Modeling with Geometry	<ul style="list-style-type: none"> Apply geometric concepts in modeling situations. G.MG.1, 2, 3

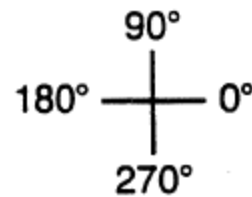
Protractor Golfing

CCSSM -

This activity can grow with the maturity of your students.



1. Have your students (or you can do this) draw some golf holes with sand (use tan paper) and/or water hazards (use blue paper) or decide on a symbol for sand and another for water.
2. The placement of the tee/ball on the game board should be represented by a compass marking (0-180 degrees or 0-360 degrees). The original ball placement is at the crosshairs of the diagram to the right.
3. Put a flag on the game board to identify where the hole is.
4. Copy the following table many times and give one to each student to glue on their holes.



Angle	Length	Strokes water hazard = +2 sand trap = +1
Total		

5. To determine par for each hole, have 5 students play the hole (level 2) and take the average number of strokes and use it for par or come up with a formula based on number of hazards and length of golf shot that needs to be made. Feel free to have your students make up their own rules for finding par. They'll have a good time!

* If you want to be able to use these golf holes over and over again, either make transparencies of each of them, laminate (or put clear contact paper on) each hole, or put the holes inside the clear plastic protectors (which makes them easy to store in a three ring binder for later use. Let students use dry erase markers or overhead markers when they play.



RULES

Level 1: Have students work individually. Measure the distance and the angle to hit the hole in one shot from the original ball placement. Decide if you want the students to measure in centimeters or inches. Have students record the number of the hole and their measurements for each hole on a sheet of paper.

Level 2: Have students work in pairs. One student estimates the angle and the length of the hit. The second student records the guess and measures according to the estimation. If the ball goes in the hole or within 3 mm of the hole, that hole is over and the student records the number of strokes on his/her score card. However, if the ball did not go in the hole, the number of strokes (including penalty strokes) should be recorded, the first player guesses again - the second shot begins where the first estimate left off. . . and continue recording estimations and playing. Make up your own rules about balls that go into a water hazard! (Do you start in the water on the next hit, or do you move the ball to a place outside the water and how do you determine this place?) Continue playing until the ball goes in the hole.

Then change game boards (holes) and have the student who was the recorder and measurer trade and do the estimating and the player that did the estimating then becomes the recorder/measurer. Have students keep a score card at the end of each hole for the holes they play. Note: Make sure to change holes or player #2 definitely has an advantage because of the estimates of player #1 made on the same hole.

Golf SCORE CARD		Name: _____
Hole # _____	Par _____	_____ Strokes
Hole # _____	Par _____	_____ Strokes
Hole # _____	Par _____	_____ Strokes
Hole # _____	Par _____	_____ Strokes
Hole # _____	Par _____	_____ Strokes
TOTALS		_____ Strokes

If you want to identify the **class pro**. . . have students divide their strokes by the total of the pars for the holes that they played. The best score is the smallest decimal. A score of 1 indicates that the golfer made par, a score less than one indicates that the golfer had a score below par (VERY GOOD!), and a score greater than one indicates that the golfer's average was over par for the holes that he/she played.

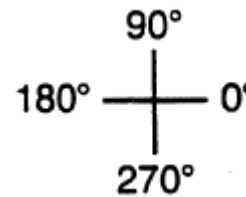
Level 3: Either put each of the student's holes on a transparency and then put a piece of graph paper under each transparency or have students draw their holes on cm or 1/4" graph paper to begin with! The rules of the game remain the same as Level 2. However, students can use the grid to help them estimate the distance to hit the ball using the Pythagorean Theorem. Calculators would be helpful here! There still will be an element of estimation because of the size graph paper used and it is very important for students to know their trig ratios even if they have a calculator.

Level 4: Either put each of the student's holes on a transparency and then put a piece of graph paper under each transparency or have students draw their holes on cm or 1/4" graph paper to begin with! The rules of the game remain the same as Level 2. However, students can use the grid to help them estimate the distance to hit the ball using the Pythagorean Theorem and estimate the angle to hit the ball using their knowledge of right triangle trigonometry. Calculators would be helpful here! There still will be an element of estimation because of the size graph paper used and it is very important for students to know their trig ratios even if they have a calculator.

Adapted from "Golfing with a Protractor" by Ronald Souza, *Arithmetic Teacher*, April 1988

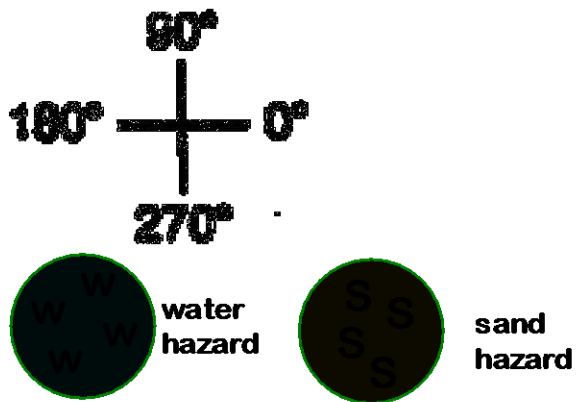
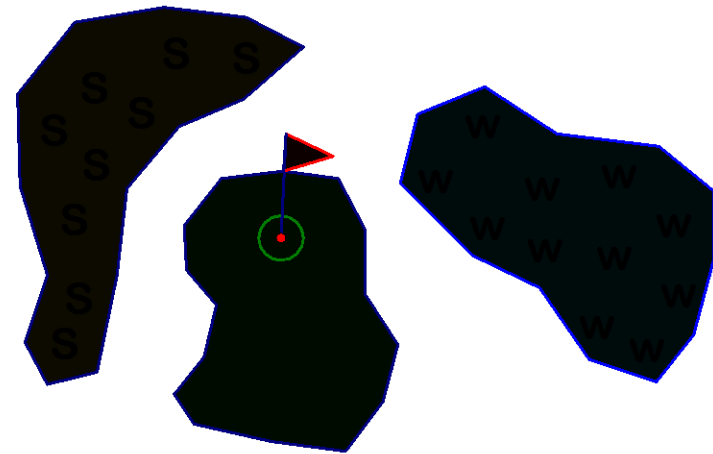
 Cut these out and glue them to your sample protractor golf holes:

Angle	Length	Strokes water hazard = +2 sand trap = +1
Total		



Sample Hole

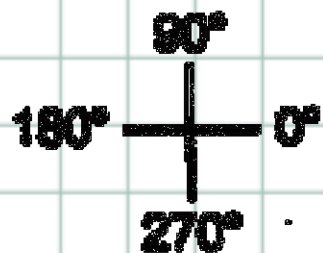
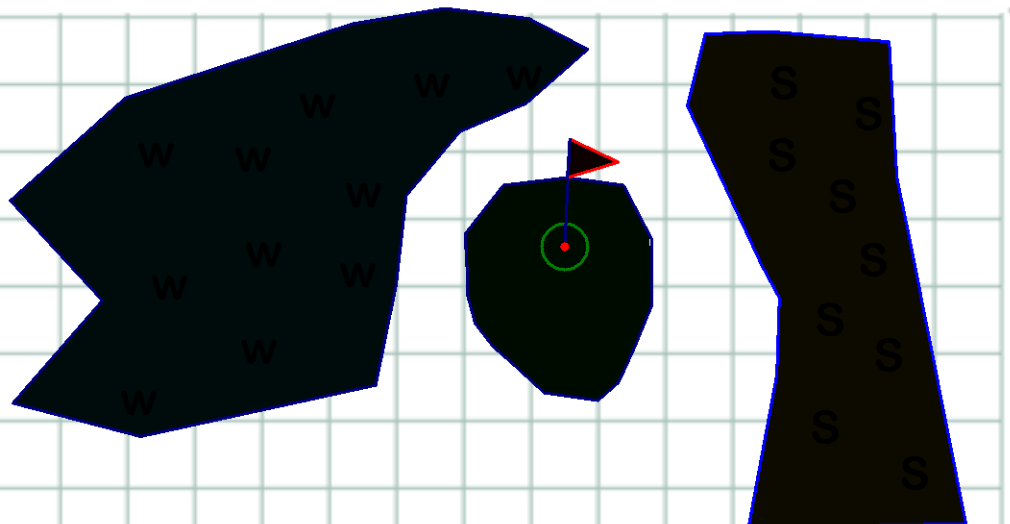
Par 3



Angle	Length	Strokes water hazard = +2 sand trap = +1
Total		

Here is a sample hole if you want to use trig or Pythagorean theorem with the aid of graph paper! Level 3 or 4

Practice Hole Par 2



water hazard



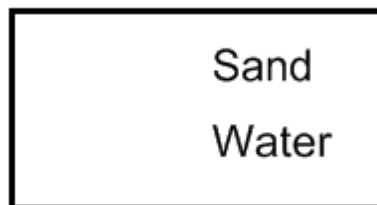
sand hazard

Angle	Length	Strokes water hazard = +2 sand trap = +1
Total		



Make your own golf hole!

Par _____



Angle	Length	Strokes water hazard = +2 sand trap = +1
Total		