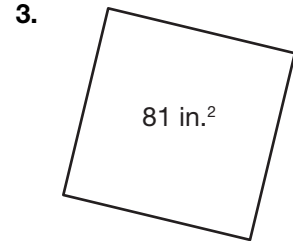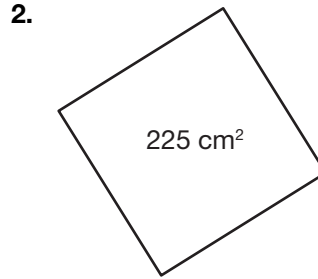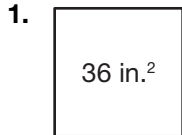# Assignment

Name _____ Date _____

Tiling a Bathroom Wall
Simplifying Square Root Expressions

Find the side length of each square tile. Use a complete sentence to explain how you found your answer.

1.

36 in.^{2}

2.

225 cm^2

3.

81 in.^{2}

4. The table below shows the numbers 1 through 15 and their squares. Complete the table.

n	n^2	n	n^2	n	n^2	n	n^2	n	n^2
1	1	2		3		4		5	
6		7		8		9		10	
11		12		13		14		15	

For each square root, write the two consecutive whole numbers it is between. Then circle the integer it is closer to.

5. $\sqrt{60}$

6. $\sqrt{28}$

7. $\sqrt{45}$

8. $\sqrt{108}$

Rewrite each radical expression in simplest form.

9. $\sqrt{60}$

10. $\sqrt{28}$

11. $\sqrt{45}$

12. $\sqrt{108}$

Simplify each radical expression.

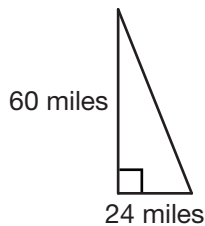13. $\dfrac{1}{\sqrt{5}}$

14. $\dfrac{3}{\sqrt{2}}$

15. $\dfrac{3}{\sqrt{6}}$

4

Assignment

Name _____ Date _____

Installing a Satellite Dish
The Pythagorean Theorem

1. A plane takes off from an airport and travels 24 miles due west and then 60 miles due north, landing on an island. How far is the airport from the island? Show all your work.
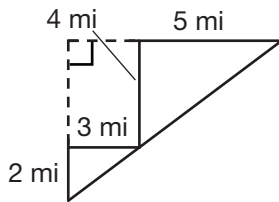
60 miles

24 miles

2. A helicopter is flying 40 feet above the ocean and spots a man-eating shark directly below. The distance from the shark to the beach is 60 feet. How far is the helicopter from the beach? Show all your work.

40 ft

60 ft
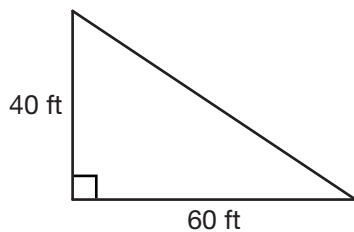
3. The perimeter of a rectangular area rug is 120 feet. Its width is 24 feet. What is the distance between two corners of the rug that do not share a common side? Show all your work.

24 ft

4

4. A bird leaves its nest and flies two miles due north, then three miles due east, then four miles due north, and then five miles due east, finally reaching the ocean. How far is its nest from the ocean? Show all your work.


5. Two friends leave Pittsburgh at the same time in separate cars. One car travels due east, while the other car travels due north. Both cars travel at 55 miles per hour. Each car has a two-way radio with a talking range of 400 miles. In how many hours will they be too far apart to communicate on their radios? Show all your work.

6. A tree was planted 15.9 feet from a house and eventually grew to a height of 23 feet. During a particularly bad electrical storm, lightning struck the tree, causing the top of the tree to break off 6 feet above the ground. If the severed part of the tree is falling toward the house, will it hit the house? Use a complete sentence to explain your reasoning.
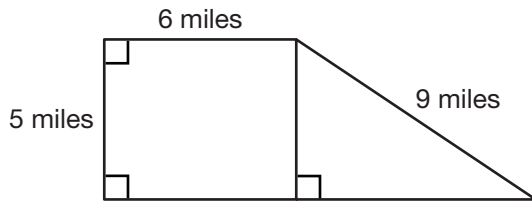
7. A plane is 5 miles directly above a house and 42 miles from an airport. How far is the house from the airport? Show all your work.
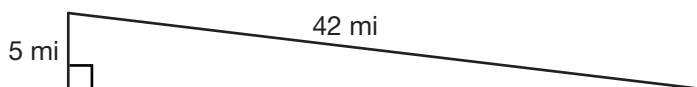
8. The figure below is composed of a triangle and a semicircle. Find the area of the figure. Use 3.14 for π. Show all your work.

20 mm

15 mm
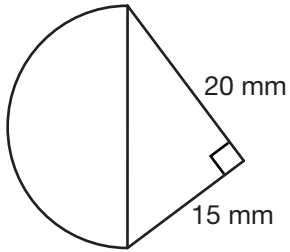
9. Find the length of the longest side of the trapezoid.
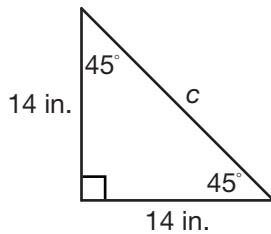

6 miles

9 miles

5 miles

10. A boat drops an anchor with a 200-foot chain. The lake is 75 feet deep. How far can the boat drift in any one direction? Show all your work.
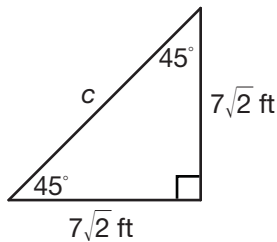
4

4

Assignment

Name _____ Date _____

Drafting Equipment
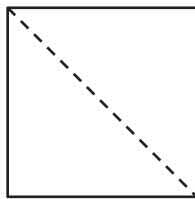## Properties of 45°-45°-90° Triangles

1. The legs of the isosceles triangle each measure 14 inches. Find the length of the hypotenuse.
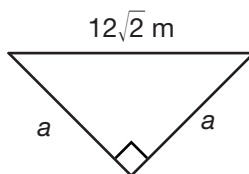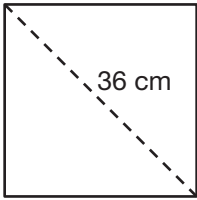

2. Find the value of c.

3. The perimeter of the square is 32 centimeters. Find the length of its diagonal.
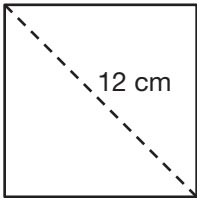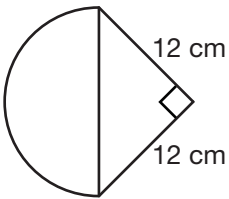

4. Find the value of a.

5. The length of a diagonal of the square is 36 centimeters. Find the length of each side.

36 cm

6. The diagonal of the square is 12 centimeters. Find the area.
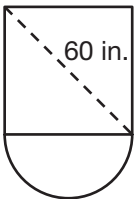

12 cm

7. Find the area of the figure below using the information given in the diagram. The figure is composed of a triangle and a semicircle. Use 3.14 for π.

12 cm

12 cm

8. The diagonal of the square in the figure below is 60 inches. Find the perimeter of the figure. The figure is composed of a square and a semicircle.
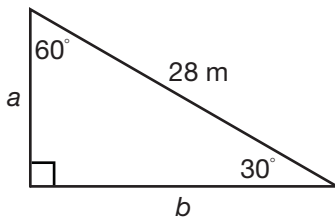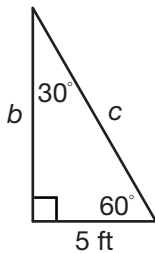

60 in.

Assignment

Name _____ Date _____

Finishing Concrete
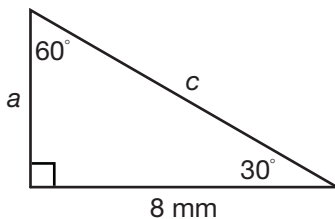## Properties of 30°-60°-90° Triangles

1. The measure of the hypotenuse in the 30°-60°-90° triangle below is 28 meters. Find the length of sides *a* and *b*.


2. The measure of the side opposite the 30° angle is 5 feet. Find the length of sides *b* and *c*.
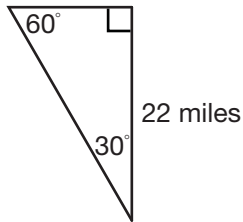

3. The measure of the side opposite the 60° angle is 8 millimeters. Find the length of sides *a* and *c*.

4. A broadcast antenna is situated on top of a tower. The signal travels from the antenna to your house so you can watch TV. The angle of elevation from your house to the tower measures 30° and the distance from your house to the tower is 500 feet. Find the height of the tower and the distance the signal travels.

Antenna

60°

30°

500 feet

House
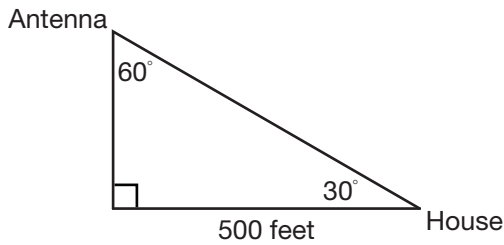
5. The measure of the longer leg in the 30°-60°-90° triangle below is 22 miles. Find the length of the hypotenuse.

60°

22 miles

30°

6. The length of the shorter leg in the 30°-60°-90° triangle below is 13 meters. Find the length of the hypotenuse.

13 m

60°

30°

7. Find the perimeter of the trapezoid.

6 cm

60°

60°

14 cm

8. Find the area of the triangle.

20 cm

60°   60°

9. Find the area of the trapezoid.

6 cm

8 cm

45°
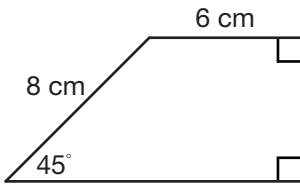
10. A broadcast antenna is situated on top of a tower, and the signal travels from the antenna to your house so that you can watch TV. The angle of elevation from your house to the tower measures 30° and the distance from your house to the tower is 775 feet. Find the height of the tower and the distance the signal travels.
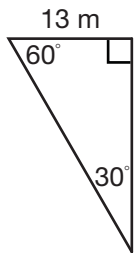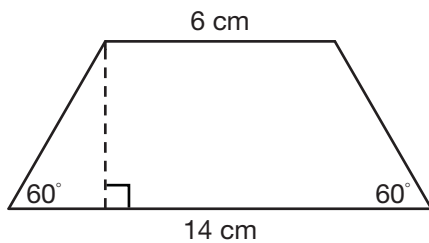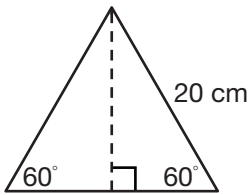
Antenna

60°

a c

30°

775 feet   House

4
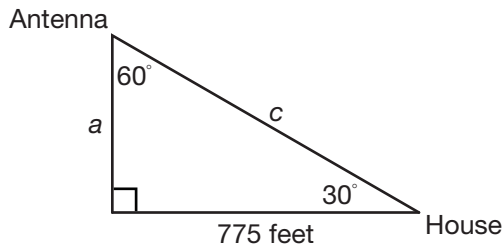
Assignment

Name _____   Date _____

Meeting Friends
The Distance Formula

Ben is playing soccer with his friends Abby and Clay. Use the graph below to answer Questions 1 through 4.

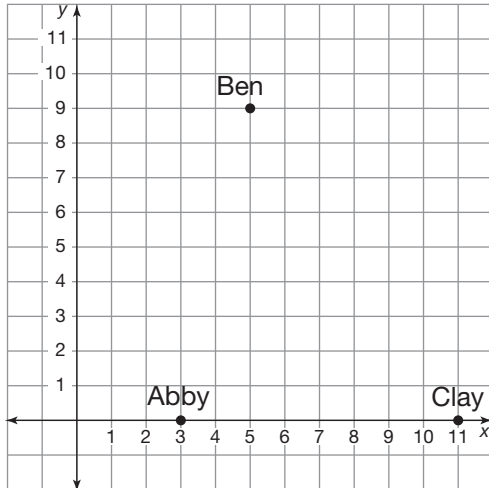1. What is the location on the grid of each player?

2. How far does Abby have to kick the ball to Clay if each interval is measured in meters?
    Use a complete sentence to explain how you found your answer.

3. How far does Ben have to kick the ball to Abby? Use a complete sentence to explain
    how you found your answer.

4. How far does Ben have to kick the ball to Clay? Use a complete sentence to explain how
    you found your answer.

5. Use the grid below to graph and connect each given pair of points. Beside each pair of points, write the distance between them.
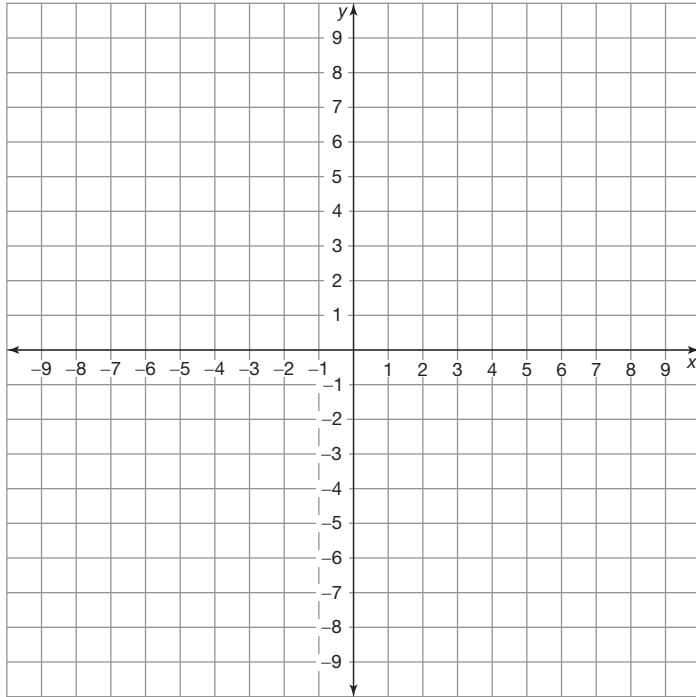

a. (–8, 3) and (–8, 9) Distance: _____

b. (–6, 8) and (–1, 8) Distance: _____

c. (8, –7) and (–4, –7) Distance: _____

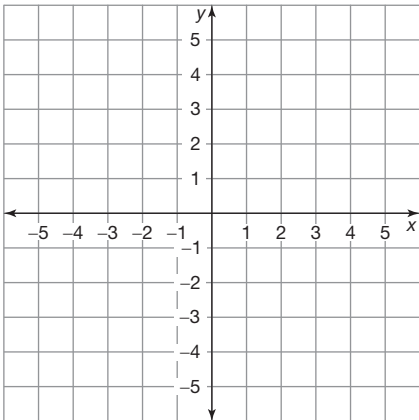**d.** (8, 8) and (8, –2) Distance: _____

6. Use a complete sentence to describe the method that you used to find the distance between each pair of points in Question 5.

7. In Question 5, suppose that you were only given the coordinates of the points and did not graph them. Use a complete sentence to describe the method that you would use to find the distance between each pair of points.

8. Use the grid below to graph and connect the given set of three points. Then, find the distances between the points.

a. (4, 1), (2, 1), and (4, 4)
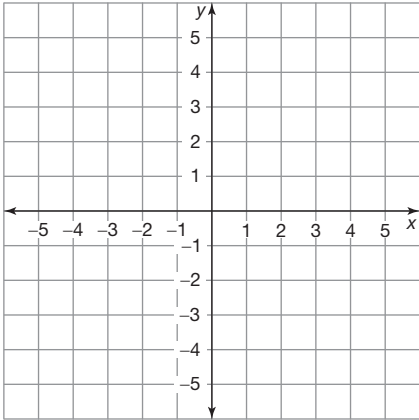
b. (1, −4), (1, 1), and (−2, −4)

9. Use a complete sentence to describe the method that you used to find the distances between the points.

10. Find the distance between each pair of points.

    a. (–37, –100) and (14, 0)

    Distance: _____

    b. (3, 9) and (4, 10)

    Distance: _____

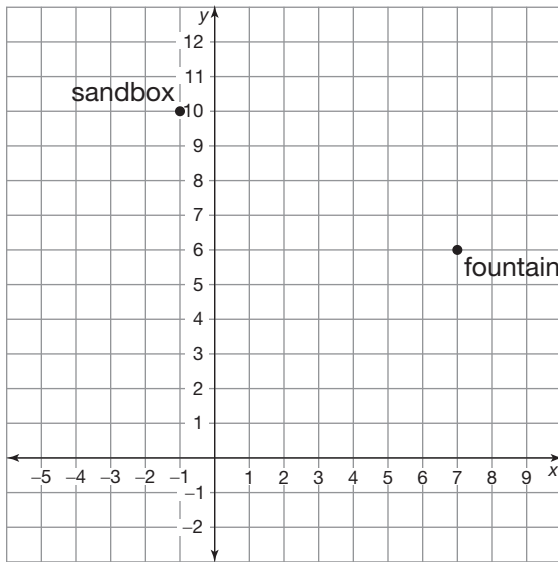   **c.** (–10, –7) and (13, 17)

    Distance: _____

4

Assignment

Name _____ Date _____

Treasure Hunt
The Midpoint Formula

**While playing in the sandbox, you see your friend at the water fountain.
Use the graph below to answer Questions 1 through 3.**

1. What are the coordinates of the sandbox and fountain?

2. Find the distance between the point representing the sandbox and the point representing the fountain. Each grid square represents a square that is one meter long and 1 meter wide. Show all your work and use compete sentences in your answer.

3. You decide to meet your friend halfway between the fountain and sandbox. Find the midpoint of the line segment that passes through the point representing the sandbox and the point representing the fountain. Show all your work and write your answer using a complete sentence.

Use the Midpoint Formula to find the midpoint of each line segment with the given endpoints.

4. (–2, 5) and (4, 1)

5. (4, 3) and (–2, –5)

6. (–3, –4) and (3, –6)

7. If you know the midpoint of a line segment is (2, 1), and one endpoint is (3, –2), how can you find the other endpoint?

8. Find the midpoint of the line segment with endpoints (–3, 8) and (4, 1).

9. Use complete sentences to explain how you can prove that your answer in Question 8 is the midpoint.