

Circles, Planes & Volleyballs

Name _____

Cast Away

In the movie *Cast Away*, Federal Express engineer Chuck Nolan (Tom Hanks) struggles to survive on a deserted tropical island after a plane crash in the Pacific. In an effort to comprehend the seriousness of his situation, Chuck computes the size of his search area, centering the region on the point of last radio contact. Chuck laments to his inanimate companion, Wilson (a volleyball), that they may never be found.

1. Are Chuck's calculations correct? In the movie, Chuck is seen performing multiplication using an approximation of π and appears to arrive at his answer very quickly. Check his computations. Find a more accurate computation by using the full calculator listing of π .

Chuck's computations:

He determines that due to the storm, the plane was 400 miles off course from its charted location. This creates a search radius of 400 miles.

The AREA of the search region will be:

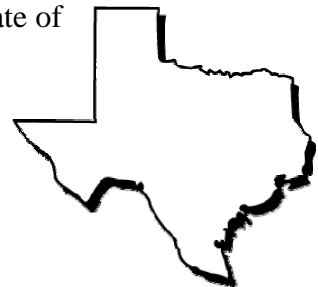
$$A = \pi r^2 = \pi \cdot 400^2 = (3.14) \cdot 160000 \\ = 502,400 \text{ square miles}$$

Is this computation correct? _____

Your computations using the calculator π :

2. Chuck states that the search area is "twice the size of Texas". If the diameter of Texas is 926 miles and we assume Texas to be a circle, what is the number of square miles in its area, to the *nearest square mile*?

3. Obviously, Texas is not a circle. The exact square mileage of the state of Texas is listed to be 261,797 square miles. What is the radius of the smallest circle that would contain this number of square miles, to the *nearest mile*?



4. a. The airplane's stated speed of 475 mph was to be sustained throughout the entire $11\frac{1}{2}$ hour trip. How far would the plane have traveled at this speed in that amount of time?

b. Due to the storm, the plane reduced speed to 375 mph after traveling for 7 hours at 475 mph. If the reduced speed was maintained for the remainder of the trip, how much longer will this trip take, to the *nearest tenth* of an hour?

5. Chuck's friend Wilson, is actually a volleyball. The circumference of a regulation volleyball is 26 inches. What is Wilson's radius to the *nearest tenth* of an inch?

6. If the radius of the search area was 400 miles, what was the circumference of the search area to the *nearest mile*?