

Handout # 2

Square Root Retrieval

$1 \times 1 = 1$	$11 \times 11 = 121$	$21 \times 21 = 441$	$31 \times 31 = 961$
$2 \times 2 = 4$	$12 \times 12 = 144$	$22 \times 22 = 484$	$32 \times 32 = 1024$
$3 \times 3 = 9$	$13 \times 13 = 169$	$23 \times 23 = 529$	$33 \times 33 = 1089$
$4 \times 4 = 16$	$14 \times 14 = 196$	$24 \times 24 = 576$	$34 \times 34 = 1156$
$5 \times 5 = 25$	$15 \times 15 = 225$	$25 \times 25 = 625$	$35 \times 35 = 1225$
$6 \times 6 = 36$	$16 \times 16 = 256$	$26 \times 26 = 676$	$36 \times 36 = 1296$
$7 \times 7 = 49$	$17 \times 17 = 289$	$27 \times 27 = 729$	$37 \times 37 = 1369$
$8 \times 8 = 64$	$18 \times 18 = 324$	$28 \times 28 = 784$	$38 \times 38 = 1444$
$9 \times 9 = 81$	$19 \times 19 = 361$	$29 \times 29 = 841$	$39 \times 39 = 1521$
$10 \times 10 = 100$	$20 \times 20 = 400$	$30 \times 30 = 900$	$40 \times 40 = 1600$

$41 \times 41 = 1681$
 $42 \times 42 = 1764$
 $43 \times 43 = 1849$
 $44 \times 44 = 1936$
 $45 \times 45 = 2025$
 $46 \times 46 = 2116$
 $47 \times 47 = 2209$
 $48 \times 48 = 2304$
 $49 \times 49 = 2401$
 $50 \times 50 = 2500$

What Can You See From Up There?

Math Assessment

Part One: Use Handout #1: World Structures Data Sheet and Handout #2: Square Root Retrieval Sheet to answer the following questions:

1. The Great Wall of China ranges in height from 20-30 feet. Using the square root retrieval sheet what would be the best square root to use?
2. The Watch Tower of the Great Wall of China is 40 feet. Which square root, 6 or 9, would be better to use in the formula?
3. What would be the nearest square root for the height of Big Ben in London?
4. Which number, 21 or 22, would be a better square root to use to determine the visibility from the Great Pyramid? Why?
5. The Empire State Building in New York City is 985 feet high. What would be the best square root to use in the formula?

Part Two: Use Handout #1: World Structures Data Sheet and the formula: $V=1.22 \times \sqrt{A}$ to answer the following questions:

6. What would be the distance one could see (in one direction) from the top of the Eiffel Tower in Paris, France?
7. What would be the visibility (in one direction) in miles from the top of the Sears Tower in Chicago, Illinois, USA?
8. Determine the visibility (in one direction) from the top of the CNN Tower in Toronto, Canada.

“What Can You See From Up There?”

Assessment Answer Key

1. 5
2. 6
3. 18
4. 22 because the square of 22 is 484 and the height of the Great Pyramid measure 480 feet.
5. 31
6. Approximately 37.82 miles
7. Approximately 46.36 miles
8. Approximately 52.46 miles

Name _____

Handout #1 World Structures Data Sheet

Visibility Formula $V=1.22 \times \sqrt{A}$

Visibility is in one direction.

Structure	Location	Height	Visibility
Great Wall	China	20-30 feet (walls) 40 feet (watch towers)	
Big Ben	London, U.K.	330 feet	
Great Pyramid	Egypt	480 feet	
Empire State Building	New York, NY USA	985 feet	
Eiffel Tower	Paris, France	990 feet	
Sears Tower	Chicago, IL USA	1,454 feet	
CNN Tower	Toronto, Canada	1,815 feet	

Handout #1 World Structures Data Sheet Answer Sheet

Visibility Formula $V=1.22 \times \sqrt{A}$

Visibility is in one direction.

Structure	Location	Height	Visibility
Great Wall	China	20-30 feet (walls) 40 feet (watch towers)	Avg: 6.68 miles
Big Ben	London, U.K.	330 feet	22.16 miles
Great Pyramid	Egypt	480 feet	26.72 miles
Empire State Building	New York, NY USA	985 feet	38.28 miles
Eiffel Tower	Paris, France	990 feet	38.38 miles
Sears Tower	Chicago, IL USA	1,454 feet	46.52 miles
CNN Tower	Toronto, Canada	1,815 feet	51.97 miles