Rivers, Rivers Everywhere	Name _____ Group Members**:**
A. What are 6 major rivers of Arizona according to the Arizona Topography and Rivers map?	
1.	4.
2.	5.
3.	6.
B. What is the name of Arizona's watershed according to the Water Resource Regions map?	
C. What are some major rivers and tributaries of this watershed according to the Arizona Topography and Rivers map?	
1.	4.
2.	5.
3.	
D. What are 5 major dams on the Colorado River according to the Important Dams in Arizona map? When were they built? What is their water flow according to	
Dams Date Built	Water Flow
1.	
2.	
3.	
4.	
5.	
E. What is the waterflow at entry (Lee's Ferry) of Colorado River into Arizona?	
Maximum Flow at Lee's Ferry years ago	Minimum Flow at Lee's Ferry in recent times
F. Find the waterflow at each of the dams and place the cfs in 2nd column for question D	
G. Where do the rivers of Arizona flow to?	
H. Vocabulary words	
river-	
tributary-	
cubic feet per second (cfs)-	
watershed	
acre-foot-	

Name_____ **Cubic Foot (ft^3) of Water**

Cubic Foot Formulas: Rectangle: V = length x width x height Cylinder: V = xr^2 x height

Draw picture of your container in box below with its dimension in inches. Calculate the volume of your container in square inches (in^2).

Type of Container	Length or Diameter	Width in Inches	Height in Inches	Total Volume in Cubic Inches	Containers to Make 1 ft^3

How many cubic inches are in 1 ft^3? _____

How many cubic inches in your container? _____

How many of your containers would make 1 ft^3_____

(1728/cubic inches for your container)

Cubic Inches/feet	Gallons	Pounds (lbs) 1 gallon of water = 8.3 pounds	Size 10 ft high and 1 ft wide
1728 in^3 = 1 ft^3	1 ft^3 = 7. 5 gallons	7.5 gallons x 8.3 lbs = 62.4 lbs	
1000 ft^3			
10,000 ft^3			

ARIZONA GEOGRAPHIC ALLIANCE

Name_____ **Cubic Foot of Water Per Second (cfs)**

Cubic feet	Gallons 1 ft^3 = 7. 5 gallons	Pounds 1 gallon of water = 8.3 pounds	Size If it is a wall of water 10 feet high.
100 ft^3			
1,000 ft^3			
10,000 ft^3			
100,000 ft^3			

Describe the wall of water at the different levels of cfs.

CFS	Size of water wall	Gallons	Description
100 cfs			
1,000 cfs			
10,000 cfs			
100,000 cfs			

ARIZONA GEOGRAPHIC ALLIANCE

Rivers, Rivers Everywhere

Answer Key

A. What are 6 major rivers of Arizona according to the Arizona Topography and Rivers map?

1.Colorado River	4.Gila River, Santa Cruz River, Rillito Creek, San Pedro River, Aravaipa Creek, San Carlos River, San Simon River, San Francisco River, Blue River
2.Bill Williams River, Big Sandy River, Santa Maria River, Date Creek	5.Verde River, Sycamore Creek, Oak Creek, East Verde River, Big Bug Creek,
3.Salt River, Tonto Creek, New River, Hassayampa River, White River, Black River, Cherry Creek, Agua Fria River	6.Little Colorado River, Zuni River, Puerco River, Chevelon Creek, Clear Creek,

B. What is the name of Arizona's watershed according to the Water Resource Regions map? Lower Colorado

C. What are some major rivers and tributaries of this watershed according to the Arizona Topography and Rivers map?

1.Colorado River	4.Gila River
2. Little Colorado River.	5.Salt River
3.Bill Williams River	6. Verde River

D. What are 5 major dams on the Colorado River according to the Important Dams in Arizona map? When were they built? What is their water flow according to

Dams	Date Built	Water Flow
1.Glen Canyon Dam-1964		12860 cfs
2.Hoover Dam-1936		12792 cfs
3.Davis Dam-1949		12830 cfs
4.Parker Dam-1939		8820 cfs
5.Imperial Dam-1938, Morelos Dam-1950, Laguna Dam-1909		1885 cfs

E. What is the waterflow at entry (Lee's Ferry) of Colorado River into Arizona?

Maximum Flow at Lee's Ferry years ago 300,000 cfs (1880's)	Minimum Flow at Lee's Ferry in recent times ~20,000 cfs

F. Find the waterflow at each of the dams and place the cfs in 2nd column for question D

G. Where do the rivers of Arizona flow to? Almost all the water of Arizona flow to the Colorado River which flows through Yuma to the Gulf of California (Sea of Cortes).

H. Vocabulary words

river-a large natural stream of water flowing in a channel to the sea, a lake, or another such stream

tributary-a river or stream flowing into a larger river or lake

cubic feet per second (cfs)-a volume measurement equivalent to 1 cubic foot of water flowing past a point in 1 second

watershed-a land area that channels rainfall and snowmelt to creeks, streams, and rivers, and eventually to outflow points such as reservoirs, bays, and the ocean

acre-foot-a unit of volume equal to the volume of a sheet of water one acre in area and one foot in depth; 43,560 cubic feet

Cubic Foot (ft^3) of Water **Answer Key**

Cubic Foot Formulas: Rectangle: V = length x width x height Cylinder: V = xr^2 x height

Draw picture of your container in box below with its dimension in inches. Calculate the volume of your container in square inches (in^2).

Drawing with length and width or diameter and height

Type of Container	Length or Diameter	Width in Inches	Height in Inches	Total Volume in Cubic Inches	Containers to Make 1 ft^3
5 gal H^2O	10 in		15 in	1178 in^3	1.5
½ gal milk	3 3/4 in	3 3/4 in	8 in	112.5 in^3	15.4
1 gal milk	5 3/4 in	5 3/4 in	8.5 in	281 in^3	6.2
cranberry juice	3.5 in	4.5 in	9.75 in	153.6 in^3	11.25
wine bottle	2 3/4 in		8.5	50.5 in^3	34.2
brown bucket	10 in	8 ½ in	11 in	935 in^3	1.85

How many cubic inches are in 1 ft^3? _____12 x 12 x 12 = 1728 in^3_____

How many cubic inches in your container? (use the formula to calculate) _____

How many of your containers would make 1 ft^3_____

(1728/cubic inches for your container)

Cubic Inches/feet	Gallons	Pounds (lbs) 1 gallon of water = 8.3 pounds	Size 10 ft high and 1 ft wide
1728 in^3 = 1 ft^3	1 ft^3 = 7. 5 gallons	7.5 gallons x 8.3 lbs = 62.4 lbs	
1000 ft^3	7500 gal	62,400 lbs	10’ x100’ x 1’ or 32’ x 31’ x 1’
10000 ft^3	75,000 gal	624,000 lbs	10’ x 1000’ x 1’ or 100’ x 100’ x 1’

ARIZONA GEOGRAPHIC ALLIANCE

Cubic Foot of Water Per Second (cfs) Answer Key

Cubic feet	Gallons 1 ft^3 = 7. 5 gallons	Pounds 1 gallon of water = 8.3 pounds	Size Wall of water 10 feet high and 1 ft wide and a standard block of 660 feet
100 ft^3	750 gal	6,240 lbs	10’ wide
1,000 ft^3	7,500 gal	62,400 lbs	100’ wide/1/6 of a block wide
10,000 ft^3	75,000 gal	624,000 lbs	1,000’ wide/1 ½ blocks wide
100,000 ft^3	7,500,000 gal	6,240,000 lbs	10,000’ wide, 15 blocks wide

Describe the wall of water at the different levels of cfs.

CFS	Size of water wall	Gallons	Description
100 cfs	10’ x 10’	750 gallons per second (gps)	It would take 20 seconds to fill an average pool.
1,000 cfs	10’ x 100’	7500 (gps)	A backyard hose puts out between 10 and 15 gallons per minute. It would take about 500 hoses to flow that much water every second.
10,000 cfs	10’ x 1000’ or 10’ x 1 ½ blocks	75,000 (gps)	Remember water is moving downhill (this is a flow rate) but at this cfs water is often only moving at 1-3 mph. (It will move faster if the river is steeper.) Go to: The Colorado River in Grand Canyon: How Fast Does It Flow? https://pubs.usgs.gov/fs/FS-168-97/pdf/fs-168-97.pdf
100,000 cfs	10’ x 10,000’ or 15 blocks wide x 10’	750,000 (gps)	