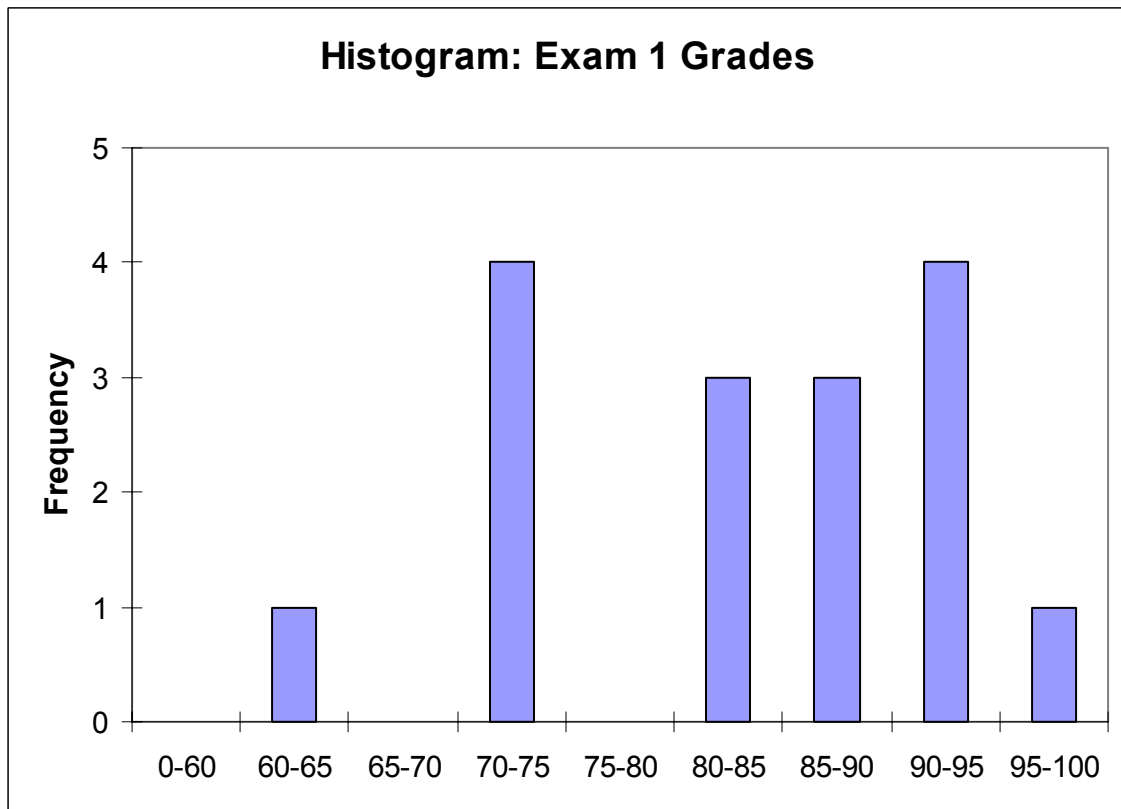


CVEN 463 – Exam #1 – Fall 2003

Grade Statistics

Median	85.3
Mean	83.7
Std. Dev.	10.5
Maximum	100
Minimum	63.5



Name: _____

CVEN 463 –Engineering Hydrology
Fall Semester 2003
Dr. Kelly Brumbelow, Texas A&M University

Exam #1

Closed-book, Closed-notes (3 pages, 4 questions in this section, max. 30 minutes)

Complete this section, and submit it to the proctor who will give you the Open-Book section

1. Give complete and intelligible definitions for the following (2 points each):
 - a) Exfiltration

 - b) Divide

 - c) Mixing ratio

 - d) Dew point temperature

2. What are the three basic precipitation mechanisms? Explain how each of them works. Include appropriate diagrams. (12 points)

3. If a storm is referred to as a “10-year, 15-minute” storm, what is meant by this description? (5 points)

4. Why is the Penman equation sometimes referred to as a “combination equation”? (5 points)

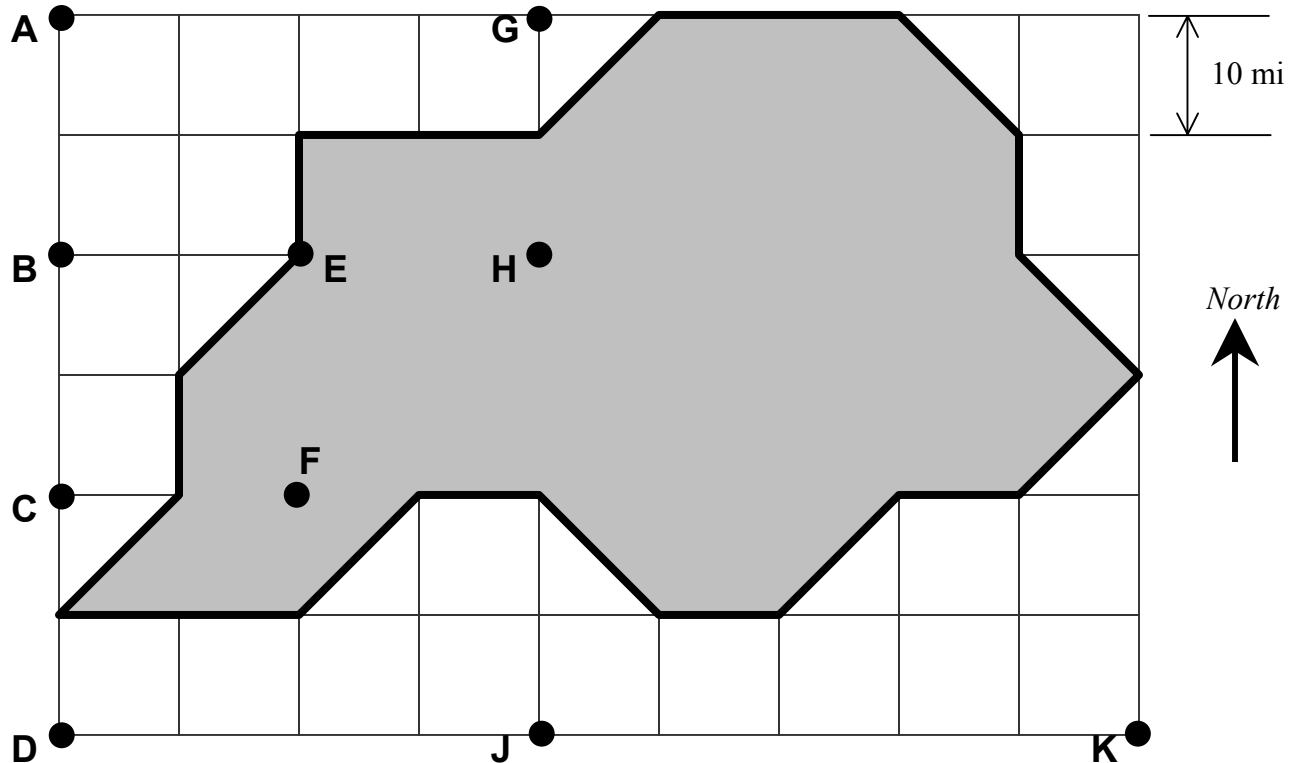
Name: _____

CVEN 463 –Engineering Hydrology
 Fall Semester 2003
 Dr. Kelly Brumbelow, Texas A&M University

Exam #1

Open-book, Open-notes (5 pages, 3 questions in this section, time allowed is rest of class after submission of closed-book section)

1. Given below is a map of a network of raingages (black circles) and a watershed (light gray area). A grid is also shown to assist you in areal measurements. For the data recorded in the table below, *determine mean areal precipitation on the watershed using the Thiessen polygon method.* (25 points)



Gage	Precip. (in.)	Gage	Precip. (in.)
A	0.23	F	0.34
B	0.21	G	0.57
C	0.15	H	0.50
D	0.10	J	0.44
E	malfunction – no data	K	2.59

2. (a) In problem #1, assuming that the dominant precipitation mechanism during the period of measurement was convective precipitation, *would you expect your MAP estimate to be more accurate if the data were recorded over a period of 1 day or 1 month? Explain your answer.* (7 points)

(b) In problem #1, now assume that a large mountain range extends from North to South across the Easternmost 30 miles of the map, and prevailing winds are from West to East. *Would your MAP calculation tend to be an overestimate, an underestimate, or neither? Explain your answer.* (8 points)

3. A rainstorm occurs with the hyetograph shown below. The storm occurs over a small watershed covered in grass (height 24 inches). The soil is a silty clay loam with porosity 0.423, saturated hydraulic conductivity 0.08 in/hr, and wetting front suction head of 7.48 in. Initial soil moisture content is 0.356. A layer of impermeable rock lies beneath the surface at a uniform depth of 16 inches. Depression storage capacity is 0.03 in. *What will be the depth of runoff from this storm on this watershed?* (30 points)

